

ANALYSIS OF THE EFFECT OF CENTRAL BANK OF NIGERIA'S RECAPITALISATION POLICY ON AGRICULTURAL DEVELOPMENT

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Abstract

The study examined the effect of bank recapitalization policy of the Central Bank of Nigeria (CBN) with respect to commercial banks' loans and advances to agriculture, and total agricultural output within the period 1997 and 2013. The data for the study were obtained from the records of the Central Bank of Nigeria (CBN), Food and Agriculture Organization (FAO) and Federal Bureau of Statistics (FBS). Pearson square correlation, linear regression and Chow test were used for the analysis. The average total loans and advances to agriculture stood at N41.04 million. This figure is not statistically significant at 5% level. But there is a significant relationship between average total loans and advances to agriculture and bank recapitalization. This means that there is an increase in total loans and advances to agriculture as a result of increase in bank capitalization. There are no significant break / change point for bank recapitalization in predicting total loans and advances to agriculture. There is a significant positive correlation (0.93) between agricultural output and total loans and advances to agriculture. The coefficient of determination (R^2) is 0.869. The average agricultural output is 1,483.441 tonnes, and significant at 5% level. Agricultural output and average total loans and advances exhibit positive relationship. A million increase in total loans and advances to agriculture, increases agricultural output by 41.565 tonnes, and is significant at 5% level. The structure of total agricultural output exhibits specified breakpoints in 1999, 2003, 2007 and 2011. These years coincided with the advent of new governments signifying new policy directions.

Keywords: Capital, recapitalization, loans / advances, consolidation, mergers and acquisition, lending.

Introduction

The Nigeria banking sector was highly oligopolistic with remarkable features of market concentration and leadership. There were ten banks that control more than 50% of the aggregate assets of the banking sector; more than 51% of the aggregate deposit liabilities; and more than 45% of the aggregate credits (Akpan, 2007). The sector was characterized by small sized banks with high overheads; low capital base averaging less than N10million; heavy reliance on government patronage and loss making.

The banking sector reforms and recapitalization have resulted from deliberate policy response to correct perceived or impending banking sector crises and subsequent failures (Oboh, 2005). A banking crisis can be triggered by weakness in banking system characterized by persistent illiquidity, insolvency, undercapitalization, high level of non-performing loans and weak corporate governance, among others (Ajayi, 2005). Similarly, highly open economies like that of Nigeria, with weak financial infrastructure, can be vulnerable to banking crises emanating from other countries through infectivity (Oluajakaiye, 2010).

Prior to 1992, the minimum paid up capital requirement for banks in Nigeria was N12 million for merchant banks and N20 million for commercial banks. A review that year moved the requirements to N40 million and 50 million, respectively. In 1997 a uniform N500 million minimum capital was introduced. In 2000, the minimum capital was moved to N1 billion for new banks while existing banks were expected to meet this level by December 2002.

Some of the reasons for these adjustments include:

- i. Minimizing the risk of distress
- ii. Strengthening the operational capacity of the banks
- iii. Increase in cost particularly of IT and other infrastructures

There was also the need to curb the spate of requests for licenses which in many cases were not backed with any serious intention. There were the problems of executive capacity to run the banks, supervisory resources and a cut throat competition resulting in malpractices.

On July 6, 2004, Nigeria banks were asked to further recapitalize. The main thrust of this new reform program was the prescription of a minimum shareholders' funds of N25 billion for all the banks. The banks were expected to increase their capital through the injection of fresh funds where applicable, enter into merger/acquisition arrangements with other relatively smaller banks thus taking the advantage of economies of scale to reduce cost of doing business and enhance their competitiveness. The new minimum capital base according to the CBN (2009) was aimed at enhancing capabilities to finance large projects as well as ensure a capital base that can support service delivery channels. Ultimately, CBN (2009) posited that the recapitalization/consolidation policy is expected to result among others in:

- i. Cost savings due to economies of scale and a more efficient allocation of resources

- ii. Revenue enhancement as a result of consolidation on size, scope and market power, and
- iii. Facilitate risk reduction due to change in organizational focus and efficient organizational structure

Concept of Bank Recapitalization

Capital refers to the sum invested in a business. It is funding provided by risk-seeking investors (shareholders). Capitalization is the act of supplying a business with money so that it can operate properly and achieve the aims and objectives of the owner. Consequently, bank capitalization is an act of supplying long term funds to a bank so as to place such bank on good standing financially in order to be able to carry out the business of banking. It is the restructuring of a bank's debt and equity mixture with the aim of making the bank's capital structure more stable (Garba, 2004).

Adam (2003), and Akpan (2007) traced recapitalization as taking its roots from bank failures. According to them most banks in Nigeria failed as a result of inadequate capital base, bad management of funds, overtrading, lack of regulation and control, and unfair competition from the foreign banks. For these reasons, they posited that commercial banks must have enough capital to provide a cushion to absorb possible loan losses, funds for its internal needs, expansion and added security for depositors.

Mergers and Acquisition

The inability of many banks to meet the minimum capital requirement of N25 billion within the period of eighteen (18) months' notice as at the 31 December 2005 deadline prompted bank consolidation through mergers, acquisitions and take-over. A merger is the combination of two or more separate firms into a single firm. The firm that results from the process could take any of the following identities: acquirer target or new identity.

Acquisition on the other hand, takes place where a company takes over the controlling shareholding interest of another company. Usually at the end of the process, there exist two separate entities or companies. The target company becomes either a division or a subsidiary of the acquiring company. Bank consolidation therefore refers to the joining together of banks in order to make their positions stronger and more likely to maintain or improve on their level of performances. The bank recapitalization policy in Nigeria was achieved primarily through mergers and acquisition.

Literature and Theoretical Review

Generally, capital is needed to support business. A very important function of capital in a bank is to serve as a means of absorbing losses. Capital serves as a buffer between operating losses and being unable to pay debt (insolvency). Adequate capital protects the depositors and creditors in time of failure, strengthens banks' ability to attract funds even at lower cost and enhances banks liquidity position. The larger the liquidity of a bank, the less the bank is exposed to risk. Therefore, the regulatory authorities consider capital adequacy a primary index to monitor bank.

The minimum capital adequacy ratio as prescribed by the Basle committee of central banks supervision is 8%. This ratio relates capital to credit which is believed to be the banks biggest risk. The Basle committee is a group of international bankers that met to fashion out more stringent ways of determining a bank's capital adequacy ratio. The 8% ratio implies that for every N100 credit, a bank needs N8 capital (Adegaju and Olokoyo, 2008)

Consolidation in a banking system can either be market-driven and or government induced. The market-driven consolidation sees consolidation as a way of broadening competitiveness with added comparative advantage in the global

context and eliminating excess capacity more efficiently than bankruptcy or other means of exit. On the other hand, government induced consolidation stems from the need to resolve problem of financial distress in order to avoid systematic crises as well as to restrict inefficient banks (Ajayi, 2005). In this light, one of the general effects of consolidation is the reduction in the number of players and thereby moving the industry more toward an oligopolistic market.

Bank Capital and Lending

There are several theories that attempted to explain how the level of bank capital could influence the propagation of economic activity through lending. These are categorized as (i) the bank concentration theory and (ii) the bank capital channel.

Bank Concentration refers to the degree of control of economic activity by large firms. It states that increase in concentration levels could be due to considerable size enlargement of the dominant firms, and that the size of a bank is largely determined by its financial capacity. The proponents of this theory argue that economies of scale drive bank recapitalization / mergers and acquisitions so that increased concentration can be used to achieve improvements and efficiency (Afolabi, 2004; Allen and Rai, 1996). This theory concludes that a concentrated banking system enhances economic activities and profits and also diminishes bank financial weakness.

The Bank Capital Channel is based on adverse selection problems that affect banks fund raising. It is usually presented under three premises: (i) an imperfect market for bank equity (ii) a maturity mismatch between assets and liabilities that exposes banks to interest rate risk; and (iii) a direct influence of regulatory capital requirements on the supply of credit. The bank capital channel works this way - After an increase in market interest rates, a lower

fraction of loans can be renegotiated with respect to deposits (loans are mainly long term, while deposits are typically short term): banks suffer therefore a cost due to the maturity transformation that reduces profits and then capital. If equity is insufficient and issuing new shares are impossible, banks reduce lending because prudential regulation establishes that capital has to be at least a minimum percentage of loans (Bolton and Freixas, 2001; Van den Heuvel, 2001).

The above theories suggest the existence of market imperfections. If capital markets were perfect a bank would always be able to raise funds (debt or equity) in order to finance lending opportunities and her level of capital would have no responsibility towards the lending pattern.

Empirical evidences of bank recapitalization

The empirical literature is divided on the effect of recapitalization and consolidation in improving the performance and efficiency of banks. Berger *et al.* (1999), suggest that bank consolidations do not significantly improve the performance and efficiency of the participating banks. In contrast, Berger and Humphrey (1992), Allen and Rai (1996) posited that there is a substantial potential for efficiency improvements from mergers of banks. This finding accordingly is as a result of technological progress, regulatory changes and the beneficial effect of lower interest rates.

Many other empirical studies reveal that recapitalization will ginger and revive the economy through lending to real / productive sector of the economy and through its multiplier effect. It will also lead to economic growth and development (Garba, 2004).

The idea underlying the consolidation promotion policy is that bank consolidations should reduce the insolvency risk through asset diversification (Akhavain, 1997). There are a number of empirical studies which confirm the

risk diversifying effect of bank consolidation whether directly or indirectly. On the other hand, there is the possibility that credit risk could increase in the event a sound bank merges with an unsound one (Akhavain 1997).

Haynes and Thompson (1999) working on the productivity effects of acquisitions for a panel of UK building societies discovered that significant and substantial productivity gains follow acquisition. These gains were observed not to be the result of economies of scale but are found to be consistent with a merger process in which assets are transferred to the control of more productive managements. Sawada and Okazaki (2004) also investigated the effects of policy-promoted consolidation on the stability of the financial system using the data on pre-war Japan. The result is that policy-promoted consolidations enhanced the ability of the bank to collect deposits.

Akhavain *et al.* (1997), examine the efficiency and price effects of mergers by applying a frontier profit function to data on bank mega mergers in the US banking industry. It was reported that merged banks experience a statistically significant 16 percent point average increase in profit-efficiency rank relative to other large banks. Most of the improvement is from increasing revenues including a shift in outputs from securities to loans, a higher-valued product. Improvements were greatest for the banks with the lowest efficiencies prior to merging who therefore had the greatest capacity for improvement.

Going by both theory and empirical evidences, it becomes obvious that there remain divergent views and opinions on the effectiveness and performance implications of recapitalization policy on banks.

The objective of this study is to investigate the relationship between bank recapitalization, loan and advances to agriculture in Nigeria and the ultimate performance of the agricultural sector in terms of total agricultural output.

Methodology

The study adopted time series data from 1997 to 2013. The data were obtained from FAOSTAT, Central Bank of Nigeria, and the National Bureau of Statistics (NBS).

Data collected include figures on total agricultural output, contribution of agriculture to gross domestic product GDP, banks' capital requirement and total loan and advances granted to the agricultural sector between 1997 and 2013. The data for the study were processed using correlation analysis and linear regression. Chow test was used to test for possible structural break / stability in the data considering pre and post recapitalization periods.

In examining the effect of bank recapitalization on agricultural credits, loan and advances, we specified a correlation analysis and a linear regression following the work of Obilor (2013) as;

$$\text{ALOAN} = \beta_0 + \beta_1 \text{BANKCAP} + \mu_t \quad (1)$$

where;

- ALOAN = Commercial bank loan and advances to agriculture.
- BANKCAP = Bank capital requirement.

- β_0 = Intercept
- β_1 is the slope coefficient
- μ = stochastic disturbance factor

The apriori expectation is that as capital base increases, loan and advances to the agricultural sector will also increase.

To investigate the effect of bank recapitalization against agricultural output, correlation analysis was specified as used by Obilor (2013);

$$\text{AGRICOUTPUT} = \beta_0 + \beta_1 \text{ALOAN} + \mu_t \quad (2)$$

where;

- AGRICOUTPUT = Total agricultural output
- ALOAN = Commercial banks' loan and advances to agriculture
- β_0 = Intercept
- β_1 is the slope coefficient
- μ = stochastic disturbance factor

Data Presentation and Analysis

Descriptive statistics

Table 1 is the descriptive statistics of the variables. The average bank capitalisation for the period under review is N13.7 billion, the highest and the lowest bank capitalization for the period are N25 billion and N50 million respectively, and the total bank capitalization during the period stood at N233 billion.

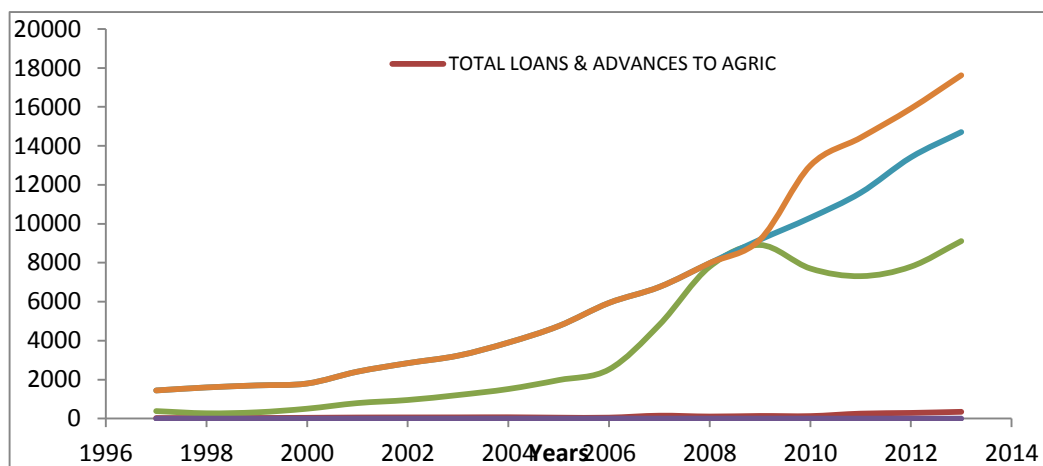


Figure 1: Graphical Presentation of major variables

Table 1: Descriptive statistics of important variables

	Bank Capitalization	LOAN AND ADVANCES(NM)			FOOD BALANCE	
		Total Loans & Advances to agric A/LOAN	Total Loans & Advance TLOAN	Proportion of Agric Loan to Total Loan Proportion	Agric Output per Tonnes Aoutput (Tonnes)	Agric gdp AGDP (₦)
Mean	13,700	110.91	3,760.459	0.047566	6,093.542	6,736.294
Median	25,000	62.10	1,976.700	0.038213	4,752.979	4,753.000
Maximum	25,000	348.20	9,112.200	0.099670	14,709.10	17,625.10
Minimum	50	27.20	272.9000	0.013642	1,445.147	1,445.100
Std. Dev.	12,400	98.3666	3,499.651	0.028079	4,386.127	5,427.702
Skewness	-0.124341	1.3085	0.435659	0.515020	0.637102	0.819990
Kurtosis	1.024009	3.4620	1.420427	2.041495	2.097521	2.276060
Sum	233,000	1,885.500	6,3927.80	0.808630	103,590.2	114,517.0
Observations	17	17	17	17	17	17

Source: Computed from data, 2016

The average total loans and advances to agriculture for the period under review is N110.91 million. The highest and the least amount of loans and advances to agriculture within this time frame are N348.20 million and N27.20 million respectively, while the cumulative value is N1.886 billion. The average agricultural output for the period is 6,093.542.

The highest and the lowest agricultural output for the period 1997- 2013 are 14,709.10 tonne and 1,445.147 tonne respectively. The cumulative value of agricultural output within the period in reference is 103,590.2 tonne.

The linear regression model fitted is given by:
 $ALOAN = \beta_0 + \beta_1 BANKCAP$

Table 2: Parameter Estimation Variables

Parameter	Coefficient	Std. Error	t-Statistic	P-value
β_0	41.04055	28.76620	1.426693	0.1742
β_1	5.10E-09	1.58E-09	3.226116	0.0057

Source: Computed from data, 2016

The estimated regression model is given as:

$$ALOAN = 41.04055 + 0.0000000051 * BANKCAP \dots \dots \dots \text{Model 1}$$

This shows that on the average total loans and advances to agriculture would stand at N41.04 million if bank capitalization and other factors remain constant. However, this figure is not statistically significant at 5% level. But there is a significant relationship between average total loans and advances to agriculture and bank capitalization. For an increase of a million Naira in bank capitalization, there will be a corresponding increase in total loans and advances to agriculture by 0.0000000051 factor. This means that there is just little

increase in total loans and advances to agriculture as a result of increase in bank capitalization and this relationship is significant.

Table 3 shows that the R^2 is 0.4096, meaning that 40.96% of the proportion of the total variations in total loans and advances to agriculture can be explained by variations bank capitalization, while the remaining 59.4% can be explained by other factors other than bank capitalization. The Akaike Information Criterion (AIC) is 11.6629 while the Schwarz Criterion is 11.7610. These measures are used to compare models. The model with the lowest AIC or SC is the best model.

Table 3: Diagnostic parameter estimation test

R-squared	0.4096	Mean dependent var	110.9118
Adjusted R-squared	0.3703	S.D. dependent var	98.3666
S.E. of regression	78.0592	Akaike info criterion	11.6629
Sum squared resid	91398.47	Schwarz criterion	11.7610
Log likelihood	-97.1350	Hannan-Quinn criter.	11.6727
F-statistic	10.4078	Durbin-Watson stat	0.5719
Prob(F-statistic)	0.0057		

Source: Computed from data, 2016

Table 4 shows that there is no particular year within the period under review that can be describe as a significant break / change point

for bank capitalization in predicting total loans and advances to agriculture.

Table 4: Chow's test for structural breaks/ stability for model 1

Chow Breakpoint Test: 2003

Null Hypothesis: No breaks at specified breakpoints

Varying regressors: All equation variables

Equation Sample: 1997 2013

F-statistic	0.065749	Prob. F(2,13)	0.9367
Log likelihood ratio	0.171094	Prob. Chi-Square(2)	0.9180
Wald Statistic	0.131497	Prob. Chi-Square(2)	0.9364

Source: Computed from data, 2016

Correlation and regression analysis

The correlation between agricultural output and total loans and advances to agriculture is 0.93, meaning that there is a significant positive correlation between agricultural output per tonne and total loans and advances to agriculture. Also, the coefficient of determination, R^2 is 0.869, meaning that 86.9% of the proportion of the total variations in agricultural output per tonne can be explained by variations in total loans and advances to agriculture, while the remaining 13.1% can be explained by other factors other than loans and advances.

Fitting this model give the below result:

$$\text{AGRICOUTPUT} = 1,483.441 + 41.56548\text{ALOAN} \dots \text{Model 2}$$

This shows that on the average agricultural output will be 1,483.441 tonne assuming that total loans and advances to agriculture and other factors remain constant. This figure is very statistically significant at 5% level. There is a significant relationship between agricultural output and average total loans and advances to agriculture. For a million increases in total loans and advances to agriculture, there will be a corresponding increase in agricultural output by 41.565 tonnes. This relationship is very significant at 5% level.

Table 5: Correlation and Regression Tests for Agricultural Output and Total Loans/Advances to Agriculture

Variable	Coefficient	Std. Error	t-Statistic	P-value
β_0	1483.441	609.7965	2.432682	0.0280
ALOAN (β_1)	41.56548	4.167682	9.973286	0.0000
R (Correlation coef.)	0.9321	Mean dependent var		6093.542
R-squared	0.8690	S.D. dependent var		4386.127
Adjusted R-squared	0.860221	Akaike info criterion		17.75272
S.E. of regression	1639.843	Schwarz criterion		17.85074
Sum squared resid	40336254	Hannan-Quinn criter.		17.76246
Log likelihood	-148.8981	Durbin-Watson stat		1.089647
F-statistic	99.46643			
Prob(F-statistic)	0.000000			

Source: Computed from data, 2016

Structural break test

One of the deductions from Table 6 is that there are specified breakpoints in agricultural output. For the years 1999, 2003, 2007 and 2011, there are different significant breakpoints in the ability of total loans and advances to agriculture in predicting agricultural output. There are periods that can be describe as change points in agricultural output as a consequence of

changes in total loans and advances to the sector. The three test, F-test, χ^2 and t-test all show significance difference at these points. These periods coincided with the advent of new governments. This could imply that every new political phase or a change in government comes with new policy directives that affect the quantum of loans and advances to agriculture and ultimately the final output from agriculture.

Table 6: Chow's test for structural breaks/ stability model 2

Chow Breakpoint Test: 1999 2003 2007 2011

Null Hypothesis: No breaks at specified breakpoints

Varying regressors: All equation variables

Equation Sample: 1997 2013

F-statistic	5.548648	Prob. F(2,13)	0.0181
Log likelihood ratio	10.49155	Prob. Chi-Square(2)	0.0053
Wald Statistic	11.09730	Prob. Chi-Square(2)	0.0039

Source: Computed from data, 2016

Conclusion and Recommendations

This study examined the links between the value of bank capital, loan and advances to agriculture and agricultural output. One major finding is that positive correlations exist between banks capital requirement and the ability of commercial banks to provide loans and credits for farmers and all stakeholders involved in the

agricultural business in Nigeria. In similar manner, the bank capital requirement was also discovered to exhibit a positive relationship with the total agricultural output.

References

- Adam J.A (2004): "Bank Regulation, Risk Assets and Income of Banks in Nigeria", NDIC Quarterly, Vol. 14 (2).
- Adegbaju, A. A. and Olokoyo F.O (2008) Recapitalization and Banks Performance; A case study of Nigerian Banks, *African Economic and Business Review* 6 (1)
- Afolabi J.A. (2008): "Strengthening the Regulatory/Supervisory Framework to meet the Challenges of Growth in the Financial System", NDIC Quarterly March/June, Vol. 18 Nas. 1/2.
- Ajayi, M. (2005).Banking Sector Reforms and Bank Consolidation: Conceptual framework, *Bullion*, Vol. 29, No. 2.
- Akhavin, J. D., Berger, A. W., and Humphrey, D. B. (1997). The effects of mega mergers on efficiency and prices: Evidence from a bank profit function. *Review of Industrial Organization*: 12.
- Akpan, A.B. (2007) Effectiveness of Bank Capitalization and Consolidation in Building Market Confidence: An Assessment of Customers Perception in Nigeria. Abuja J. Bus Admin., 1(2)
- Allen, F and Gale, D. (2003). Competition and Financial Stability. *Journal of Money, Credit, and Banking*, 36, pp. 433-480.
- Berger, A., and Humphrey, D. (1999). Efficiency of financial institutions: International survey and directions for future research. *European Journal of Operations Research*, 98, 175-212.
- Bolton, P. and Preixas, X. (2000).Corporate Finance and the Monetary, Transmission. Unpublished paper Princeton University.
- Garba, A.B. (2004). Recent Reforms in the Nigeria Banking Industry; Issues and Challenges. The Financier, A.B.U Zaria.
- Humphrey, D. B. (1992). Bank mergers and acquisition. The New York University Salomon Centre series on Financial Markets and institutions. Vol. 3
- Haynes, M. and Thompson, S. (1999), The productivity effects of bank mergers. Evidence from UK Building Societies. *Journal of Banking and Finance* Vol.23 (5): 825-846
- Obilor, S. I. (2013). The Impact of Commercial Banks' Credit to Agriculture on Agricultural Development in Nigeria: An Econometric Analysis. *International Journal of Business, Humanities and Technology*. 3(1): 85-94.
- Oboh, G. A. T. (2005). Selected Essays on Contemporary Issues in the Nigerian Banking System, Ibadan University Press.
- Oluajakaiye, P. (2010). Short run macroeconomic effects of bank lending rates in Nigeria 1987-2009, AERC Research Paper, 34 Nairobi Kenya.
- Skander J. Van den Heuvel, (2001). Does Bank Capital Matter for Monetary Transmission? FRRNY Economic Review.
- Tetsuji Okazaki and Michiru Sawada (2004). Effects of Bank Consolidation Promotion Policy: Evaluating the Bank Law in 1927 Japan. Discussion papers 04004. Research Institute of Economics Trade and Industry