



DOES BANKING SECTOR REFORM BUY EFFICIENCY OF BANKING SECTOR OPERATIONS? – EVIDENCE FROM RECENT NIGERIA’S BANKING SECTOR REFORMS

Martina Chinazom Okorie¹ --- David Onyinyechi Agu^{2†}

^{1,2}Department of Economics, University of Nigeria, Nsukka, Nigeria

ABSTRACT

There is a growing concern associated with the recent banking sector reform on whether it achieved its purpose of making banks efficient or not. Several studies have had several opinions with respect to the real impacts of banking sector reforms on banking sector efficiency. Consequently, this study examines the impact of Nigerian banking sector reforms on Nigerian banks’ performance and efficiency in two time periods – pre -consolidation period and post-consolidation period. To evaluate this, the researchers adopt a non-parametric (Data Envelopment Analysis) approach, and the factors that determine efficiency are examined. The findings of this study reveal varying levels of efficiency in both periods. Although some banks still remained inefficient, there was a general improvement in efficiency in the post-consolidation period. This improvement was not entirely attributed to the consolidation policy as two immediate years after the consolidation exercise still recorded poor levels of efficiency among many banks. Further investigation reveals some effects of the recent financial crisis on the overall efficiency of Nigerian banking sector.

© 2015 AESS Publications. All Rights Reserved.

Keywords: Reforms, Banking sector, Recapitalisation policy, Banks’ efficiency, Data envelopment analysis.

JEL Classification: G14; G21; G28.

Contribution/ Originality

This study contributes to existing literature on banking sector efficiency by adopting the data envelopment analytical method. Taking a deeper look into Nigerian banks, this study finds out that some level improvement in banking sector efficiency was recorded as a result of the recent banking sector reforms in Nigeria.

† Corresponding author
DOI: 10.18488/journal.aefr/2015.5.2/102.2.264.278
ISSN(e): 2222-6737/ISSN(p): 2305-2147
© 2015 AESS Publications. All Rights Reserved.

1. INTRODUCTION

Nigerian banking industry in 2004 was generally described as fragmented into relatively small, weakly capitalized banks with most banks having paid up capital of US\$10 million or less. The best capitalized bank had capital of US\$240 million as compared to a small developing economy like Malaysia where the least capitalized bank had capital of US\$526 million within the same period. [Ebong \(2006\)](#) described the system as exhibiting other features like high non-performing loans, insolvency and illiquidity, low capital base, over dependence on public sector deposits, poor asset quality, weak corporate governance, a system with low depositors' confidence and a banking sector that could not support the real sector of the economy at 25% of GDP compared to African average of 78% and 272% for developed countries. As stated by [Soludo \(2004\)](#) "the system faces enormous challenges which, if not addressed urgently, could snowball into a crisis in the near future". To address these issues and to reposition the banking system, the monetary authority came up with a 13-point reform agenda centered on consolidation and recapitalization.

Available evidence shows that there has been a consistent increase in the number of failed banks despite the various reforms undertaken since 1987. This is further substantiated by [Sanusi \(2010\)](#) in his assertion that despite the consolidation, when in mid-2008 the global financial and economic crisis set in, the banking system witnessed the re-emergence of an extremely fragile financial system similar to pre-consolidation era. However, eight banks were adjudged insolvent and received a total sum of ₦620 billion (approximately US\$4.1 billion) from the CBN in conjunction with NDIC and the Federal Ministry of Finance (MOF). This amount represents 2.5% of Nigeria's entire 2010 GDP of US \$167 billion ([Alford, 2012](#)).

However, [Ogujiuba and Obiechina \(2011\)](#) noted that eight interdependent factors are believed to have led to the creation of an extremely fragile financial system that was tipped into crisis by the global financial crisis. These factors include; macroeconomic instability caused by large and sudden capital inflows; major failures in corporate governance of banks; lack of investor and consumer protection; inadequate disclosure and transparency about the financial position of banks; critical gaps in regulatory framework and regulations; uneven supervision and enforcement; unstructured governance and management process at the CBN; and weaknesses in the business environment in the country.

In order to respond to the above-listed problems, the Central Bank of Nigeria (CBN) unveiled a ten-year reform blue print anchored on four cardinal reform programmes for the stabilization of the banking sector and the finance sector in general. The four cardinal programmes for the sector's transformation involve enhancing the quality of banks; establishing financial stability; enabling healthy financial sector evolution and ensuring that financial sector contributes to the real economy.

Nevertheless, there is no universal agreement in the literature as to whether banking reform really help to improve the efficiency of banking institutions. Several scholars (like [Hardy and Patti, 2001](#); [Ahmed et al., 2009](#); [Olaosebikan, 2009](#); [Iganiga, 2010](#)), etc) assert that banking reform contributes to the efficiency with which banks transform savings into investment and growth, while

others (e.g. (Ikhide and Alawode, 2001; Ogun and Akinlo, 2011); etc) emphasize that banking reform policies may make it more difficult for banks to function properly and that such policies help in triggering financial and economic crises.

Surprisingly however, only a limited number of studies have looked into the efficiency effects of banking reform policies in Nigeria. An evaluation of available studies in Nigeria shows that many of them focus on the financial sector as a whole; leaving open the possibility that bank efficiency may improve after reform due to external effect from other financial institutions, while with just banking sector reform the opposite may be found. Moreover, most of such studies did not adopt Data Envelopment Analysis (DEA) in their analyses. Where there exist some evaluations of the efficiency of banks in Nigeria, the studies did not take into account the extent to which reform policies have been carried out, and they generally do not evaluate changes in these policies over time. This study is therefore aimed at bridging those gaps as outlined above.

2. RELATED LITERATURES

In the banking literature, there has been some disagreement on the definition of banks' inputs and outputs and how they could be measured, despite the increasing interest in studying the banking industry. These terms from the quantum of services banks provide as well as the different views regarding the treatment of such services as inputs and/or outputs. The measurement problem is worsened by the lack of theoretical basis for this definition.

Despite the disagreement as to the definition of inputs and outputs in the banking industry, there is a general agreement in the literature among authors on two main approaches that could be used to define the input and output variables in the spectrum of services that banks provide. These two approaches are based on the functions of banks. The production approach and the intermediation approach. In the production approach, banks are modeled producers of deposits and loans by using inputs labour and capital. Within this approach, deposits are treated as outputs. The production approach is also regarded as Value Added Approach. While the intermediation approach models financial institutions as intermediating funds between savers and investors, it measures the efficiency of banks in converting deposits into loans. Therefore, in the context of intermediation approach, deposits are treated as inputs. In this study, we have used the intermediation approach by incorporating deposits, labor and capital as inputs and loans & advances and investment as outputs.

2.1. Theories

There are three basic strands of theoretical issues raised in the literature on banking sector reform. These are banking reform and efficiency; banking reform and competitiveness; and banking reform and economic growth.

On a divergent approach, efficient structure theory denotes that industrial concentration would intensify the general efficiency of the industry. This approach sees gradualism coming into play since efficient banks grow rapidly than inefficient banks or acquire the less efficient banks to

become efficient (Egwakhe and Osabuohien, 2009). However, proponents of financial reform argue that financial reform may affect bank efficiency in two different ways; positive and negative ways.

On the positive side, it is argued that reform policies targeted towards the elimination of government control and intervention aimed at restoring and strengthening the price mechanism will lead to more efficient allocation of scarce financial resources. Competitive pressure stimulates banks to become more efficient by reducing overhead costs, improving bank management, improving risk management, and offering new financial instruments and services (Denizer *et al.*, 2007). More so, if domestic banks are opened up to foreign competition, this will further increase pressures to reduce costs, whereas at the same time, new banking and risk management techniques, as well as of new financial instruments and services may be imported (Claessens *et al.*, 2001). Agca *et al.* (2007) identifies removing of bank entry barriers as one of eight factors of financial sector reforms that helps in improving efficiency of banks.

However, on the negative side it has been argued that government dominant control of the financial market adversely affect the efficiency with which banks and other financial institutions are able to intermediate funds from savers to investors (McKinnon, 1973; Shaw, 1973), since they interfere with the price mechanism, regulate entry of banks, and weaken or even eliminate market competition. More competition in financial markets may also mean a reduction of profit margins and an increased financial fragility of banks. Hellmann *et al.* (2000) pointed out that banking reform reduces the franchise value of banks, which makes them more prone to financial disruption and stimulates moral hazard behavior and risk taking in order to try to increase profits under the pressure of falling interest rate margins. Reduced margins may also stimulate banks to economize on screening and monitoring efforts and they may be more willing to opt for a gambling strategy when allocating loans that is putting less emphasis on risk and more on profit. Thus, financial reform may trigger crises if it leads to excessive risk taking under the pressure of increased competition (Demirguc-Kunt and Detragiache, 1998).

There is a general consensus that financial repression, the practice of controlling interest rates below their market clearing levels and rationing credit on non-price basis, creates competitive intermediary based financial markets (Reinhart and Tokatlidis, 2003) as cited in Mwenda and Mutoti (2011). The contestability of financial markets which financial liberalization facilitates increases the competitiveness of financial markets, which in turn leads to more effective delivery of their multiple functions. Economic theory suggests that performance measures such as the size of banking margins, interest spread, or profitability, do not necessarily indicate the competitiveness of a system. As such, these measures can be poor indicators of the degree of competition (Hauer and Peiris, 2008). As observed by Stiroh and Strahan (2003), competition could accelerate a decline in the population of banks in the banking sector. Omoruyi (1991), CBN (2004) and several financial sector analysts summarized the objectives of banking reform among others to include fostering competition in the provision of banking services.

The works of McKinnon (1973) and Shaw (1973), supports the preposition that a well-functioning banking sector, nurtured by sound banking sector policies, is a necessary condition for

accelerating private investment, economic growth and development. Banking reform leads to economic growth through various transmission channels like encouraging private investment among others. In the works of Allen and Ndikumana (2000), financial development enhances allocative efficiency, reduces liquidity risk, and facilitates risk management by offering savers and investors investment alternatives for portfolio diversification. It also makes possible maturity transformation, the channeling of short term assets into more productive long term assets, all of which promote economic growth. Financial liberalization enhances economic growth by influencing savings and investment through their effects on assets returns and the availability and allocation of credit.

2.2. Empirical Studies

Ikhide and Alawode (2001) study on financial sector reforms, macroeconomic instability and the order of economic liberalization adopted the use of discriminant analysis to demonstrate the health of banks following the reforms of 1987 to 1993. Their study revealed that the results from the implementation of the reforms were disappointing since it led to deterioration in the health of banks. However bank insolvency, high inflation and excessively high interest rates have become common phenomena in the economy. The study cautiously identifies a wrong sequencing process as a major factor in the poor performance of the financial sector reforms, but agrees that a lot more research needs to be done in this area.

Iganiga (2010), Evaluated the Nigerian financial sector reforms using the classical least square technique with emphasis on the banking sub-sector. The results show that the performance of the financial sector has been greatly influenced overtime by these reforms that began in 1986. The adoption of market determined cash reserve requirement caused cash intensity and domestic savings to increase by 5.54 and 5.00 percent respectively. The gradual increase in the capital base of these firms rekindled the public confidence in the sector by increasing savings by 3.6 percent. Also the findings support the view that financial liberalization promotes the efficiency of the financial intermediation process. The policy implications of these results are that the monetary authorities should direct their efforts towards achieving a positive interest rate regime, increasing the scope of financial reform arsenal including financial instruments and improving the regulatory framework.

Olajide *et al.* (2011), examined the impact of financial reforms on banks' organizational performance in Nigeria between 1995 and 2004. It specifically determined the effects of policies of interest rates deregulation, exchange rate reforms and bank recapitalization on banks performance, and analyzed how banks internal characteristics and industry structure affect the performance of Nigeria banks. The study utilized panel data econometrics in a pooled regression, the result confirmed that the effects of government policy reforms, bank specific characteristics and industry structure has mixed effects on banks profitability level and net interest margin of Nigerian banks. Bank specific characteristics appear to have significant positive influence on banks profitability and efficiency performance of banks in Nigeria.

With the aim of assessing the effects of the financial sector reform on the profitability and efficiency of the Pakistani banking system, Hardy and Patti (2001) carried out a study on bank reform and bank efficiency in Pakistan. To assess these effects, profitability, cost and revenue efficiency frontiers were estimated using the Distribution Free Approach, from which can be derived certain measures of the efficiency of banking system relative to the best available practice. The results revealed that revenue performance of all banks, and especially the privatized banks, improved significantly, although costs also rose and relative performance across banks did not converge. Also the reform did not lead to a rise in overall profitability and it led to increase in both costs and revenue.

Nazir and Alam (2010) used the DEA Approach to analyze the impact of financial restructuring on the performance of Pakistani banks. Its objective was to evaluate the operating efficiency of 28 Pakistani commercial banks over a five year period i.e. 2003-2007, through the traditional method and Data Envelopment Analysis (DEA) approach. The results of the traditional approach suggest that privatization cannot help banks in improving their operating income. These results add further robustness to the findings of the DEA approach of measuring efficiency, which show that public banks are better able to cover their interest and non-interest expenses from their corresponding revenues.

Ahmed *et al.* (2009) carried out a research on efficiency Dynamics and Financial reform: case study of Pakistani banks. The study used data sets of 20 domestic commercial banks of Pakistan, to measure the banking efficiency through Data Envelopment Analysis (DEA) malmquist index of Total factor productivity (TFP) from 1990 to 2005; the impact of reforms on banking sector was assessed. The result showed that financial sector reforms are successful in improving the efficiency of the domestic commercial banks role as intermediations in Pakistan.

Olaosebikan (2009) in surveying efficiencies of Nigerian banks before and after the minimum capital requirement increase investigates the efficiency of the Nigerian banking system between the years of 1999 and 2005. Data Envelopment Analysis (DEA) was used to evaluate bank efficiency and the main determinants are identified by using a Tobit model. While reforms imposed during the late 1990s have reduced the number of distressed banks, the efficiency of the banking system was volatile until the minimum capital requirement was imposed in 2004. The consolidation process that followed has strengthened the banking system and led to an increase in efficiency.

Okpara (2011) conducted an empirical analysis on bank reforms and the performance of the Nigerian banking sector. The researcher adopted a one sample t statistics using the population average as the test value. The findings revealed that apart from the reform period of financial liberalization which affected significantly virtually all the banking sector performance indicators and the financial deepening, the rest of the reforms made no significant impact on the performance variables. However, with the exception of the recapitalization reform exercise that started in 2004 which deteriorated financial deepening and made insignificant impact in all but return on equity which is drastically reduced, all other reforms exerted significantly on financial deepening. The merger and acquisition associated with the recapitalization reform were more or less a forced or

compelled one, so un-spontaneous that it could not significantly improve the efficiency and performance of the participant banks. In the light of this, the researcher sees the simultaneous consideration of all the items in the CAMEL acronym and undue interference from board members, political crisis, undercapitalization and fraudulent practices as a necessity while proposing a reform.

Mwenda and Mutoti (2011) investigated the effects of market-based financial sector reforms on the competitiveness and efficiency of commercial banks, and economic growth, in Zambia. The study used the P-R method, or H measure of competition, to measure the degree of bank competitiveness and the results indicate the existence of a commercial bank market characterized by imperfect or monopolistic competition. A two-step procedure is used to evaluate the effects of financial sector reforms on bank cost efficiency. In step one a grand trans-log cost stochastic frontier equation is estimated to measure bank cost efficiency performance. In step two a cost efficiency regression equation is estimated by panel OLS method to evaluate the main determinants of bank cost efficiency. The results indicate that, at the aggregate level, there has been a general increase in bank system cost efficiency over time. The findings show that significant factor determinants of bank cost efficiency are financial infrastructure development, and bank features including liquidity levels, profits, quality of loan portfolios, and type of bank ownership. Also an endogenous economic growth equation is estimated by the panel OLS method to evaluate the main determinants of economic growth and results show that bank cost efficiency; financial depth; a degree of economic openness, and the rate of inflation are the main determinants of economic growth. With the exception of Phase II policies and inflation, all of which have negative effects, the rest of the augments have positive impacts on economic growth.

Fadare (2010) analyzed the effect of banking sector reforms on economic growth in Nigeria over the period 1999 - 2009. Using the ordinary least square regression technique, we established that interest rate margins, parallel market premiums, total banking sector credit to the private sector, inflation rate, inflation rate lagged by one year, size of banking sector capital and cash reserve ratios account for a very high proportion of the variation in economic growth in Nigeria; and although there is a strong and positive relationship between economic growth and the total banking sector capital, the relationship between economic growth and other exogenous variables of interest rate margins, parallel market premiums, total banking sector credit to the private sector, inflation rate and cash reserve ratio reveal the wrong signs. The implication which emerges from the empirical results with regards to the wrong signs of these parameters is that theoretical expectations would only be valid when all conditions are normal. This outcome has important policy implications as market realities resulting from factors such as market inefficiencies, policy conflicts, information asymmetry and government interference in the interaction of market forces may produce results in direct contradiction to theoretical expectations.

Using descriptive statistics and Vector Autoregressive Model, Ogun and Akinlo (2011) measured the impact of financial sector reforms on the performance of the Nigerian economy. The findings of the study indicated that though financial reform has led financial depth, increase in

credit to private sector, and growth of stock market activities, real interest rate is still negative and the performances of financial intermediaries were still largely inefficient. Analysis indicated that the mean of performance indicators — saving rate, investment ratio and growth of real GDP were very low relative to pre-reform period. The correlation matrices also show that the correlation of financial indicators with performance indicators were mostly low or negative under reform. Moreover, evidence from the VAR analysis also showed that shocks to financial indicators (in most cases) had either negative or insignificant positive effect on the saving rate, investment and growth. These results suggest that financial sector reform has not actually improved the performance of the Nigerian economy. The poor performance of the economy under reform could be attributed to macroeconomic stability, poor sequencing of reform programme, structural bottlenecks and other non-financial factors.

Hauner and Peiris (2008) conducted a study on Banking efficiency and competition in low income countries: the case of Uganda. This study systematically analyses the impact of the far-reaching banking sector reforms undertaken in Uganda on banking sector competition and efficiency. Using Panzar and Rosse (PR) models of banking competition and efficiency, the study observed that the Ugandan banking system has become more competitive and efficient as a result of the far-reaching reforms embarked upon in the last few years. Moreover, on average, larger banks and foreign-owned banks are more efficient than others while smaller banks have fallen back in efficiency with the increase in competitive pressures.

3. THE MODEL

In economic theory there are algebraic and geometric characterizations of production plans that can unambiguously be regarded as non-wasteful (efficient). A production vector $y \in Y$ is efficient if there is no $y_i \in Y$ such that $y_i \geq y$ and $y_i \neq y$. This concept means a production vector y is efficient if there is no other feasible production vector y_i that generates as much output as y using no additional inputs. This philosophy is the basis of illustrative production possibility frontier (PPF), from which the methods of analysis used in this study originate. Charnes *et al.* (1978), provided the original Data Envelopment Analysis (DEA) Constant Returns to Scale (CRS) model, later extended to Variable Returns to Scale (VRS) by Banker *et al.* (1984). DEA assumes that all the firms use the same level of technologies to produce output from a given set of inputs. DEA is used to measure the efficiency of each Decision Making Units (DMUs) that is obtained as a maximum of a ratio of weighted outputs to weighted inputs. This denotes that the more the output produced from given inputs, the more efficient is the production.

The relative efficiency of a bank is defined as the ratio of weighted sum of outputs to the weighted sum of inputs available to that bank. The mathematical expression of this relationship is as follows:

$$E_j = \frac{\sum_{r=1}^s U_r Y_{rj}}{\sum_{i=1}^m V_i X_{ij}} \quad (1)$$

where:

E_j = the efficiency ratio of bank j

S = the number of outputs of bank

U_r = the weight of output r

Y_{rj} = the amount of r output produced by bank j

M = the number of inputs of a bank

V_i = the weight of input i ; and

X_{ij} is the amount of i input used by bank j

The efficiency scores are based on the intermediation approach with two outputs (loans, and investments) and three inputs (capital, deposits, and labour). Determining a common set of weights and their appropriate allocation could be difficult as inputs and outputs can be calculated and entered in Equation (1) without standardization. However, different banks may value outputs and inputs in a different way and assign different weights. Charnes *et al.* (1978) addressed this issue and proposed the following linear programming form of Equation (1) to calculate efficiency by using DEA:

$$\text{Max} E_j = \frac{\sum_{r=1}^S U_r Y_{rj}}{\sum_{i=1}^M V_i X_{ij}} \quad (2)$$

Such that

$$E_j \leq 1,$$

$$\sum_{r=1}^S U_r = 1, \sum_{i=1}^M V_i = 1 \text{ and}$$

$$U_r, V_i \geq 0$$

$$U_r, V_i \geq 0$$

The first inequality assures that the efficiency ratio of bank j cannot exceed 1, while the sum of weights of inputs and outputs of banks should be equal to 1. Moreover, the assigned weights should also be greater than 0 and each input and output used to calculate the relative operating efficiency of the bank must have some positive weight. There are two ways to obtain DEA efficiency. The first way is to combine all the DMUs from all the years under study, and the second way is to run the model for each year separately. Since this study analyzed the structural changes that occurred over time, we adopt the second way and apply the model for each year separately. The principal sources of the data are the audited annual balance sheet of these banks from the Nigeria Deposit Insurance Corporation (NDIC) and the websites of the various DMUs. DEA Solver software was used in the analysis.

4. EMPIRICAL FINDINGS

This study adopted ten (10) commercial banks. These include Union bank, United Bank for Africa (UBA), Access bank, Zenith bank, and First Bank of Nigeria (FBN), Diamond bank, Wema bank, Fidelity bank, Guaranty Trust Bank (GTB), and First City Monument Bank (FCMB).

To investigate the structural changes in the pre and post consolidation periods, the following equation was estimated:

$$MaxEj = \frac{\sum_{r=1}^s UrYrj}{\sum_{i=1}^m ViXij} \quad (3)$$

To obtain the structural changes, equation 3 was regressed separately on a yearly basis for all the banks. The abridged result for the estimation of equation 3 for the first four years which comprise of the years before the consolidation period is presented in table 1 below.

Table-1. Abridged Result obtained from regressing equation 3 (pre-consolidation period)

S/N	DMU	2002	2003	2004	2005
1	Union	0.508655(49)	0.719271(28)	0.746002(25)	1
2	UBA	1	1	0.911166(9)	1
3	Access	0.738906(26)	1	1	1
4	Zenith	0.877373(12)	1	1	0.991431(1)
5	FBN	1	1	0.764293(24)	0.243719(76)
6	Diamond	0.611522(39)	0.138278(86)	0.10373(90)	0.516079(48)
7	Wema	0.831076(17)	0.742509(26)	1	1
8	Fidelity	1	1	1	0.784439(22)
9	GTB	0.301717(70)	0.54558(45)	1	0.550784(45)
10	FCMB	1	1	1	0.345702(65)
Average Score		0.786925	0.814565	0.852519	0.743215

Table 1 above shows the efficiency scores and percentage inefficiency score for the 10 banks. The banks with the coefficients of 1 are efficient; while the banks with coefficients below 1 are inefficient. Their respective percentage inefficiency scores are presented in brackets.

In 2002, GTB was the least efficient of all the banks with 70% inefficiency score. This implies that for it to improve its efficiency, it has to decrease its input by 70%. In 2003 and 2004, DIAMOND was the most inefficient bank with 86% and 90% inefficiency scores respectively. This also implies excess inputs; hence it will have to decrease its inputs by 86% and 90% for the years 2003 and 2004 respectively for it to become efficient. In 2005, FBN recorded the highest inefficiency score at 76%. This implies a general improvement in bank efficiency, given that in the previous year, the highest inefficiency score was 90% (14% reduction). It will also, have to decrease its present inputs by 76% to attain efficiency. All the inefficient banks would have to decrease its inputs by its percentage inefficiency score in order to become efficient.

The result shows that the efficiency of banks improved each year. In 2003, the number of efficient banks improved from 4 in the previous year to 6. While the number of efficient banks remained at 6 in 2004 however, it declined to 4 in 2005. From the findings, it is clear that no single bank could consistently maintain its level of efficiency throughout the pre-consolidation years under review. The banks that performed best were found to be efficient in at most 3 of the 4 years. These were UBA, FIDELITY and FCMB. On the other hand, GTB and UNION and GTB were observed to be efficient only in 2004 and 2005 respectively. DIAMOND was not efficient throughout the 4 pre consolidation years.

The overall average efficiency score reveals varying efficiency levels. Average efficiency score increased in 2003 and 2004, but declined in 2005. The year 2005 records the lowest average

efficiency score of 74%. The decline in average efficiency score in 2005 could partly be attributed to the announcement of the recapitalization policy of the Central Bank of Nigeria which was expected to be implemented by end-2005.

Table-2. Abridged Result obtained from regressing equation 6 (post-consolidation period)

No	DMU	2006	2007	2008	2009	2010
1	Union	0.15159(85)	0.33508(66)	0.26178(74)	0.51359(49)	1
2	UBA	0.47518(52)	1	0.89934(10)	1	1
3	Access	1	0.14129(86)	1	1	0.69598(30)
4	Zenith	0.76142(24)	0.91835(8)	1	0.99169(1)	1
5	FBN	0.38156(62)	0.31556(68)	0.18582(84)	1	0.62270(38)
6	Diamond	1	0.86139(14)	0.32827(67)	1	0.83061(17)
7	Wema	1	1	1	1	1
8	Fidelity	0.64188(36)	1	0.43433(57)	1	0.51162(49)
9	GTB	1	0.72140(28)	0.46009(55)	0.99079(1)	0.92397(8)
10	FCMB	0.79270(21)	1	0.44642(55)	0.80291(20)	1
Average Score		0.72043	0.729308	0.600604	0.929898	0.858488

Table 2 above shows the result of the post consolidation period. The result shows that the number of efficient banks remained stagnant at 4 in 2006 and 2007 while in 2008 it declined to 3. Unlike the pre-consolidation period where no bank was recorded to be efficient throughout the period, WEMA bank was recorded to be efficient throughout the post-consolidation period. Again, we observed that the least efficient bank was efficient at least once in the post-consolidation era. This is contrary to what was obtained in the pre-consolidation period, where DIAMOND was found to be inefficient throughout the period.

On the other hand, GTB and UNION remained efficient only once in the post-consolidation period, just as in the pre-consolidation period. DIAMOND improved from zero efficiency to being efficient in 2 of the post-consolidation years. However, the efficiency of FCMB and FIDELITY dropped from 3 periods in the pre-consolidation era to 2 in the post-consolidation era each, while that of FBN dropped from 2 to 1.

Inefficiency is usually as a result of the use of more inputs to produce a certain output. Hence, just as in the pre-consolidation period, inefficient banks can only decrease their inputs by the percentage inefficiency score in the bracket in order to become efficient.

Comparing the result of the pre consolidation with that of the post-consolidation period, one may say that the efficiency of banks improved post-consolidation. At individual bank level, there was an improvement in efficiency; for instance, WEMA was found to be efficient all through the post-consolidation years, unlike in the pre-consolidation period where bank like DIAMOND was observed to be inefficient all through. Also at the general level, the post-consolidation era recorded the highest overall average efficiency of 92% in 2009.

Combining table 1 and 2 above obtained from the result of the pre consolidation and post consolidation period, the following ranking is obtained for the ten banks.

Table-3.

No.	DMU	2002	2003	2004	2005	2006	2007	2008	2009	2010
1	Wema	6	7	1	1	1	1	1	1	1
2	UBA	1	1	7	1	8	1	4	1	1
3	Access	7	1	1	1	1	10	1	1	8
4	FCMB	1	1	1	9	5	1	6	9	1
5	Fidelity	1	1	1	6	7	1	7	1	10
6	Zenith	5	1	1	5	6	5	1	7	1
7	FBN	1	1	8	10	9	9	10	1	9
8	GTB	10	9	1	7	1	7	5	8	6
9	Diamond	8	10	10	8	1	6	8	1	7
10	Union	9	8	9	1	10	8	9	10	1

The result obtained from estimating equation 7 in Table 4.3 above presents a ranking procedure for the ten banks. This shows that for the 9 years under study (pre and post consolidation), WEMA bank could be ranked the best performing bank among the ten banks. It was efficient for 7 years out of the 9 years under study. The second most efficient bank is UBA followed by ACCESS both of which were efficient in 6 years of the entire study period. However, 3 banks were efficient only 2 times out of the 9 years under study; these are GTB, DIAMOND and UNION bank though UNION ranked the least.

Surprisingly, some of the banks that were able to make up the ₦25billion capitalization on their own and a prior viewed as best performing banks fell short of the expectation of being ranked among the best. For instance, FBN was ranked 7th, ZENITH bank 6th and GTB 8th. Ironically, banks like FBN is rated one of the three largest banks in Nigeria. GTB was rated the Best Bank in Nigeria at the 2009 Euromoney Awards in 2009. Also, ZENITH was awarded the best global bank in Nigeria in 2008 by the African bankers' award and Euromoney. In 2006, UNION received the Euromoney award as the best bank in Nigeria. The above result tends to raise questions like what is really the criterion for rating banks performance. Rating of banks as being considered the best or strongest does not really translate to the efficiency of operations in such banks, as such efficiency at which banks use inputs to produce output is highly important.

4.1. Policy Implications of Findings

Recall that the post-consolidation era recorded the highest overall average efficiency of 92% in 2009. Not only that, it is also clear that the pre-crisis period of the post-consolidation era (i.e. 2006 and 2007) recorded fewer number of banks that were adjudged efficient. This is pre-crisis period is the same as the period when the implementation of the recapitalization policy of the Central Bank was yielding "some fruits". Recall that this period is the same as the time when most banks expanded in number of branches and employed more human resources. Therefore, it may not be surprising that many more banks were using more inputs to get less output. But the recent global financial crisis struck the sector so hard that many of the decision making units (deposit money banks) were forced by the crisis to contract. The contraction implied closing up of some branches that are considered too close to other branches. At this point the banks needed to produce more

output with less of inputs. The closing up of some branches also implied relieving of duties from some human resources that were originally employed in the sector during the boom period.

Thus, many banks were beginning to work with optimal number of inputs and achieving same results that were previously achieved with higher number of inputs. This could be the justification for the observed increase in the number of banks that attained efficient level of operation during the post-crisis period of the post-consolidation era.

Therefore, the policy thrust of the recent reform whose key ingredient is the consolidation of banks has left the banks with fluctuation in their efficiency. While there is improvement in the efficiency of banks, some banks still remained inefficient. This may not be unconnected to several interdependent factors including critical gaps in regulatory framework and uneven supervision and enforcement, unstructured governance and management processes at the CBN/weaknesses within the CBN, which the banks were already engulfed with. The existence of such interdependent factors, could have contributed to the adverse effects of the recent global financial crisis on Nigerian financial sector.

The fact that banks are awarded best banks and achieved the recent ₦25billion capital base requirement on their own does not necessarily make them efficient. Our study reveals that the size of bank does not determine its efficiency as banks like UNION, which has been among the 3 largest banks in the country was presented for the second round of the consolidation policy. This implies that some inputs of the banks are left dormant or at best under-utilised.

5. CONCLUSION AND POLICY RECOMMENDATIONS

As necessary as the banks' recapitalization policy of the Central Bank was as the time it came into implementation, it was not able to bring about efficiency in the operations of the banks. This was partly observed to be attributed to the boom that occurred in the industry due to recapitalization and the consequent employment of excessive inputs (human and material) in the banks. Given the fact that Nigerian banks were already integrated into the global financial sector, the effects of the recent global financial crisis were overbearing on Nigerian banks. Such adverse effects exposed the banks to the critical effects of inefficiency in the face of cash constraints. There was therefore the need to downsize inputs and aim at achieving an optimal level of output.

Going by the findings of this study, it is obvious that Nigerian banking sector reform on its own could not bring about efficiency in the operations of Nigerian banking industry. Rather, it increased their level of inefficiency. But with the interruption of the recent global financial crisis, efficiency in Nigerian banks increased. Overall operations of Nigerian banks became more efficient after the global financial crisis going by evidence from the study period.

Therefore, the Central Bank of Nigeria as the regulatory authority in charge of banks should not fall short of its functions of engendering a viable regulatory framework that will not only consider capital adequacy as enough measurement of competence. Also, appropriate strategies should be mapped out to strengthen the management process of CBN and regular/even supervision

of commercial banks should be conducted. On the part of the decision making units of the deposit money banks, proper checks should be put in place to enhance adequate/appropriate use of inputs.

6. ACKNOWLEDGEMENT

This study proudly acknowledges the research grant received from the Council for the Development of Social Sciences Research in Africa (CODESRIA), Dakar, Senegal.

REFERENCES

- Agca, S., G. De Nicole and E. Detragiache, 2007. Financial reforms, financial openness and corporate borrowing: International evidence international monetary fund, Working Paper No. WP/07/186.
- Ahmed, U., S. Farooq and H.H. Jalil, 2009. Efficiency dynamics and financial reforms: Case study of Pakistani banks. *International Research Journal of Finance and Economics*, (25): 172-182.
- Alford, D., 2012. Nigerian banking reform: Recent actions and future prospects. Available from <http://ssrn.com/abstract=1592599>.
- Allen, D.S. and L. Ndikumana, 2000. Financial intermediation and economic growth in Southern Africa. *Journal of African Economies*, 9(2): 132–160.
- Banker, R., A. Charnes and W. Cooper, 1984. Some models for estimating technical and scale inefficiencies in data envelopment analysis. *Management Science*, 30(9): 1078-1092.
- CBN, 2004. Annual Reports and Statement of Accounts. A Publication of Central Bank of Nigeria Garki Abuja.
- Charnes, A., W. Cooper and E. Rhoades, 1978. Measuring the efficiency of decision making units. *European Journal of Operation Research*, 2(2): 429-444.
- Claessens, S., A. Demirgüç-Kunt and H. Huizinga, 2001. How does foreign entry affect domestic banking markets? *Journal of Banking and Finance*, 25: 891-911.
- Demirguc-Kunt, A. and E. Detragiache, 1998. Financial liberalisation and financial fragility. International Monetary Fund Working Paper No. WP/98/83.
- Denizer, C.A., M. Dinc and M. Tarimcilar, 2007. Financial liberalization and banking efficiency: Evidence from Turkey. *Journal of Productivity Analysis*, 27(3): 177-195.
- Ebong, B.B., 2006. Banking sector reforms: Opportunities and challenges. *Union Digest*, 10: 1-9.
- Egwakhe, A.J. and E.S.C. Osabuohien, 2009. Positioning Nigerian service sector towards vision 2020: Stylized facts from banking sub-sector. *Pakistan Economic and Social Review*, 47(2): 139-156.
- Fadare, S.O., 2010. Recent banking sector reforms and growth in Nigeria. *Middle Eastern Finance and Economics*, 8: 146-160.
- Hardy, D.C. and E.B. Patti, 2001. Bank reform and bank efficiency in Pakistan. International Monetary Fund, Working Paper No. WP/01/138.
- Hauner, D. and S.J. Peiris, 2008. Banking efficiency and competition in low income countries: The case of Uganda. *Applied Economics*, 40(21): 2703–2720.
- Hellmann, T., K. Murdock and J.E. Stiglitz, 2000. Liberalization, moral hazard in banking and prudential regulation: Are capital requirements enough? *American Economic Review*, 90(1): 147-165.

- Iganiga, B.O., 2010. Evaluation of the Nigerian financial sector reforms using behavioral models. *J Economics*, 1(2): 65-75.
- Ikhide, S.I. and A.A. Alawode, 2001. Financial sector reforms, macroeconomic instability and the order of economic liberalization: The evidence from Nigeria. African Economic Research Consortium, Nairobi Paper No. 112.
- McKinnon, R.I., 1973. Money and capital in economic development. Washington DC: The Brookings Institutions.
- Mwenda, A. and N. Mutoti, 2011. Financial sector reforms, bank performance and economic growth: Evidence from Zambia. *African Development Review*, 23(1): 60–74.
- Nazir, M.S. and A. Alam, 2010. The impact of financial restructuring on the performance of Pakistani banks: A DEA approach. *The IUP Journal of Applied Finance*, 16(1): 71-86.
- Ogujiuba and Obiechina, 2011. Financial sector reforms in Nigeria: Issues and challenges. *International Journal of Business and Management*, 6(6): 222-233.
- Ogun, T.P. and A.E. Akinlo, 2011. Financial sector reforms and the performance of the Nigerian economy. *The Review of Finance and Banking*, 03(1): 047—060.
- Okpara, G.C., 2011. Bank reforms and the performance of the Nigerian banking sector: An empirical analysis. *International Journal of Current Research*, 2(1): 142-153.
- Olajide, O.T., T. Asaolu and C.A. Jegede, 2011. The impact of financial sector reforms on banks performance in Nigeria. *The International Journal of Business and Finance Research*, 5(1): 53-63.
- Olaosebikan, B., 2009. Surveying efficiencies of Nigerian banks before and after the minimum capital requirement increase. Honors projects. Paper No. 20.
- Omoruyi, S.E., 1991. The financial sector in Africa: Overview and reforms in economic adjustment programmes. *CBN Economic and Financial Review*, 29(2): 110-124.
- Sanusi, L.S., 2010. Global financial meltdown and the reforms in the Nigerian banking sector. Being a Public Lecture Delivered at the Convocation Square, Abubakar Tafawa Balewa University, Bauchi, December 10, 2010.
- Shaw, E.S., 1973. Financial deepening in economic development. New York: Oxford University Press.
- Soludo, C.C., 2004. Consolidating the Nigerian banking industry to meet the development challenges of the 21st century being an address. Delivered to the Special Meeting of the Banking Committee. Held on July 6, 2004 at CBN Headquarters. Abuja.
- Stiroh, K.J. and P.E. Strahan, 2003. Competitive dynamics of deregulation: Evidence from US banking. *Journal of Money, Credit, and Banking*, 35(5): 801-828.

Views and opinions expressed in this article are the views and opinions of the authors, Asian Economic and Financial Review shall not be responsible or answerable for any loss, damage or liability etc. caused in relation to/arising out of the use of the content.