

Nigerian Banking Economy Response to The Economic Meltdown

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Abstract

This study observed the response of banking economy to the economic meltdown as justified by the means of technical, allocative and cost efficiency of the Nigerian commercial Bank between the years 2002 to 2011. Ten Nigerian Banks were randomly selected out of 15 banks quoted in Nigeria. For this intention, the Data Envelopment Analysis (DEA) model was used. Having got the results of the analysis, some banks were found perfectly efficient with efficiency scores of 1.000 meaning (100%) efficiency, whereas those that were below 1.000 were not fully efficient. The mean technical efficiency, allocative efficiency and cost efficiency for the period examined stood at 0.938 (93.8%), 0.896 (89.6%), 0.844 (84.4%) respectively. These mean results depict the fact that Nigerian banking sector generally needs managerial attention beyond the emphasis on continual banking reforms of recapitalization, merger and acquisition and the likes, so as to be ranked with the global perspective. The banking economy response to the meltdown is noticeable on the graph drawn through the mean results of the technical, allocative and cost efficiency being glaringly understood through the graph that 2008, 2009 and part of 2010 were noticed for the gross effects of the meltdown on the banking economy, though the mild effect is still being felt till 2013 but not pronounced as such.

Keywords: evaluation, technical efficiency, allocative efficiency cost efficiency, financial intermediation, banking sector, economic meltdown

1. Introduction

The financial crisis of 2007–2008, also known as the Global Financial Crisis is considered by many economists the worst financial crisis since the Great Depression of the 1930s. It resulted in the threat of total collapse of large financial institutions, the bailout of banks by national governments, and downturns in stock markets around the world. In many areas, the housing market also suffered, resulting in evictions, foreclosures and prolonged unemployment. The crisis played a significant role in the failure of key businesses, declines in consumer wealth estimated in trillions of U.S. dollars, and a downturn in economic activity leading to the 2008–2012 global recession and contributing to the European sovereign-debt crisis. The active phase of the crisis, which manifested as a liquidity crisis, can be dated from August 9, 2007 as sighted by Wikipedia (2014). The bursting of the U.S. (United States) housing bubble, which peaked in 2006, caused the values of securities tied to U.S. real estate pricing to plummet, damaging financial institutions globally. The financial crisis was triggered by a complex interplay of policies that encouraged home ownership, providing easier access to loans for (lending) borrowers, overvaluation of bundled sub-prime mortgages based on the theory that housing

prices would continue to escalate, questionable trading practices on behalf of both buyers and sellers, compensation structures that prioritize short-term deal flow over long-term value creation, and a lack of adequate capital holdings from banks and insurance companies to back the financial commitments they were making.

The current global financial crisis has important implications for banks, companies, investors and government. In a flow of fund context, the main implication for banks is the centrality of the financial intermediation role, such that there must be a stable source of funding for all types of banks, including commercial banks and investment banks. Hence, it is very important for banks to maintain capital ratios to avoid liquidity and solvency risks. For example, commercial banks ignore the basic principal of deposits ratio and over-rely on the money market financing, once market confidence is lost, the liquidity crisis of banks may soon appear. When the subprime mortgage crisis broke out in 2007, the loss of market confidence made liquidity extremely difficult (Victor, 2009).

2. Problems Statement

Governments have attempted to eliminate or mitigate financial crises by regulating the financial

sector. One major goal of regulation is transparency: making institutions' financial situations publicly known by requiring regular reporting under standardized accounting procedures. Another goal of regulation is making sure institutions have sufficient assets to meet their contractual obligations, through reserve requirements and capital requirements as done in Nigeria in 2005 by the then CBN governor, Charles Soludo. Some financial crises have been blamed on insufficient regulation, and have led to changes in regulation in order to avoid a repeat. For example, the former Managing Director of the International Monetary Fund, Dominique Strauss-Kahn, has blamed the financial crisis of 2008 on 'regulatory failure to guard against excessive risk-taking in the financial system, especially in some advanced countries and mostly in the developing countries. Another factor believed to contribute to financial crises is asset-liability mismatch, a situation in which the risks associated with an institution's debts and assets are not appropriately aligned. For example, commercial banks offer deposit accounts which can be withdrawn at any time and they use the proceeds to make long-term loans to businesses and homeowners. The mismatch between the banks' short-term liabilities (its deposits) and its long-term assets (its loans) is seen as one of the reasons bank runs occur (when depositors panic and decide to withdraw their funds more quickly than the bank can get back the proceeds of its loans). Wikipedia (2014).

3. Objective Study

- To present the efficiency graph showing Nigerian banking response to the economic meltdown
- To measure the relative efficiency of Nigerian banks

4. Literature Review

There have been several studies analyzing banks financial crises and meltdown in Nigeria and other countries of the world stating the causes, effects and lasting solutions which many countries have been battling with since 2008. Following are the review facts of the literature relating to the studies. Olaniyi and Olabisi (2011) evaluated the causes and implications of the global financial crisis on the performance of Nigerian banks with a view to determine the extent of this impact and determining various options that could cushion the impact as well as avoiding future reoccurrence. The secondary data used in this study are those relating to loans and advances, customers deposit and investment in securities (independent variable), while the dependent variable is bank performance. Ordinary

Least Square method of Multiple Regression Analysis was used to manipulate the time series data into Econometric model of inflation, while F test was used to test the formulated hypotheses. This study reveals that global financial crisis has a negative impact on the performance of Nigerian banks despite in defiance of high liquidity possessed by these banks immediately after the consolidation exercise of 2005.

Radelet et al., (1998) as quoted by Olaniyi and Olabisi (2011) they said that the ongoing financial crisis has been triggered and spread by the U.S subprime mortgage losses due to improper use of financial derivatives, such as securitization of U.S mortgage agencies into mortgaged – backed securities for sale in the market. When the crisis occurred, key financial indicators, such as exchange rates, stock prices, short term interest rates, asset prices, number of business bankruptcies and collapse of several financial institutions, produced very rapid deterioration in the host countries.

Peter (2009) examined the impacts of the global financial crisis on the Nigerian banking industry. In relation to what was embarked upon by the The Central Bank of Nigeria (CBN) where it initiated the first phase of the bank consolidation in 2005, to provide a strong and reliable banking sector that would guarantee the safety of depositor's money. The consolidated banks were expected to play a very active role in the economic growth and development of Nigeria. The consolidation exercise was remarkable as some of the Banks merged while other went for outright takeover of the assets and liabilities of the weak banks. Within the short period of consolidation there were positive changes in the entire system, as interest and lending rates became stabilized. And some of the consolidated banks became partners and correspondent banks to foreign counterparts. Unfortunately, the current global financial crisis, which has its roots in the United State of America and Europe, has spread to other part of the world. The crisis has eroded the confidence of the general public in the Nigerian banking industry, despite their consolidation. Even the Nigerian Stock Market (NSM) which is expected to act as buffer of fund is not left out of the financial crisis. It was concluded that the statistical analysis pointed out, implying that the global financial crisis is significantly related to top management of consolidated banks and the ownership structure of banks in Nigeria

Andrew (2013) measured efficiency and productivity changes during the period of the crisis through an analysis of bank performance over the

period 2000 — 2010 using a two stage methodology framework. The recently developed Hicks-Moorsteen total factor productivity (TFP) index approach developed by O'Donnell (2010a) as opposed to the popular Malmquist TFP was utilised. Our first stage results showed that during the crisis period there was a noticeable but mild deviation of total factor productivity and efficiency measures. Second stage analysis using the censored Tobit model showed that the financial crisis was the main determinant of bank efficiency, indicating that total factor productivity efficiency was 16.96% lower during the crisis period compared to the pre-crisis period.

Kumbirai and Webb (2010) investigated the performance of the five largest South Africa's commercial banks for the period 2005 — 2009. Three aspects of bank performance namely profitability, liquidity and credit quality were analyzed using financial ratio analysis. The findings showed that overall performance improved considerably in 2005 and 2006. However, the impact of the global financial crisis was evident when the overall performance deteriorated in 2007 until 2009. Using the student t test to test if there was any significant difference in profitability performance for the period 2005-2006 and the period 2008 -2009, their results indicated that profitability deteriorated during the later period. However, they concluded that the South African banking system remained stable as there were adequately capitalized and profitable.

Okeahalam (2006) employed the Bayesian stochastic frontier approach to assess the production efficiency of 61 South African bank branches in the 9 provinces for the year 1999. The author found productive efficiency of banks to be 83.1% suggesting that on average banks could reduce their costs by 16.9% without altering their current output levels. Okeahalam also found that all branches were operating at increasing returns to scale and recommended levels of output to be increased either through regulatory reforms or competitive incentives.

Nicholas and Maria (2013) considered the hypothesis that economic capacity can be permanently damaged by financial crises. A model which allows a financial crisis to have both a short-run effect on the growth rate of labour productivity and a long-run effect on its level is estimated on a panel of 61 countries over 1955–2010. The main finding is that a banking crisis as defined by Reinhart and Rogoff on average reduces the short-run growth rate of labour productivity by between 0.6% and 0.7% per year and the long-run level by between 0.84% and 1.1% (depending on the method of

estimation), for each year that the crisis lasts. A banking crisis also reduces the long-run level of capital per worker by an average of about 1%. The corresponding effect on GDP per capita is about double the effect on GDP per worker since there is a long-run, negative effect on the employment ratio.

Michael and Nicolas (2010) reviewed the impact of the global financial turmoil and the subsequent recession on the economies of southern and eastern Mediterranean countries. It was found that the region faced significant challenges. In particular, many countries need significantly higher growth rates to address the employment challenge posed as a consequence of demographic developments.

Chung et al. (2011) have found out that changes in the economic environment have had a negative impact on customer loyalty in the context of the retail stores in China. They also found that many marketing strategies were implemented by retailers to increase customer loyalty. For instance, changes in the distribution channels were made. However, it is also valid to note that the researchers failed to provide practical recommendations to the companies on improving customer loyalty.

Lee et al. (2011: 150) also revealed that the number of ads published by banks was reduced during the economic recession. This was one of the reasons that allowed the researchers to conclude that advertising and customer loyalty were related. According to Lee et al, (2011: 150) companies use advertising to popularize the brand image, which in turn stimulates consumer behaviour. Consumer behaviour then determines whether customers become loyal to the brand or not. However, it can be argued that the number of ads fell because the banks and other companies attempted to cut their expenses and remain profitable.

Wheelock (2011) finds that acquisitions of failed banks by in-market competitors (i.e., banks that already had branches in the markets served by the failed bank) during 2007-10 did not substantially increase concentration in most local banking markets. However, such acquisitions had a substantial impact in a few, mostly rural, banking markets. This section examines the impact on market concentration of acquisitions of non-failed banks by in-market competitors during those years.

Abdulmonem and Reji (2013) discussed how Islamic Banks are able to withstand the severity of financial recession, with special emphasis on Al Rajhi Bank in the Kingdom of Saudi Arabia. Al Rajhi is among the most profitable banks in the Middle East; its robust profitability has been largely

driven by increasing business volumes, higher margins, and low labor costs. The financial recession has its impact on all banks in the middle east along with western counterparts, but its severity was not heavy for Islamic Banks compared to the latter and the paper concludes that there can be no doubt that Islamic finance has an exciting future; the quest for a financial system based on moral values rather than greed and fear, is bound to enhance its position in the global system.

The study of Smolo and Mirakhor (2010) show that although the crisis had limited impact on Islamic financial institutions, the major flaws of the capitalist financial system are relevant to the development of such institutions; without learning and applying the lessons from the crisis, Islamic financial institutions runs a risk of committing the same mistakes. The study concludes that greater attention should be given to the fundamental principles of Islamic finance in order to ensure the future development of industry.

Wigglesworth (2009) analyzed the implications of financial recession on the Islamic banks in Saudi Arabia. After a stock market crash in 2006, the Saudi banks entered the financial crisis with little leverage, modest real estate exposure and healthy balance sheet. Nor had relatively insular Saudi banks been active borrowers on international money markets, and a reliance on deposits has shielded them from the liquidity problems that have played other Gulf banks. Wigglesworth (2010) also said The important challenges for the Islamic banks to maintain its momentum in facing crisis include mismatch between short-term debt and long term investments, sector concentration, poor risk management, and a reliance on bulky but volatile market-to- market investment revenue, rather than diversified, fee based income streams.

5. Methods: Data Analysis

The method that will be used for this research is Data Envelopment Analysis (DEA). DEA is an increasingly popular management tool. DEA is commonly used to evaluate the efficiency of a number of producers. The DEA approach was pioneered by Charnes, Cooper and Rhodes. (1978) and later extended by Banker Charnes and cooper. (1984). DEA decomposes cost (input saving) efficiency into technical and allocative efficiencies. It also allows the decomposition of technical efficiency.

The DEA approach refers to the ability of banks to control cost and generate revenue and it is a linear programming based technique for measuring relative

efficiency and management performance of firms where presence of multiple inputs and outputs make comparison difficult. It uses observed values of inputs and outputs and attempts to find which of the firms in the given sample determine an envelopment analysis. Widespread usage of DEA for examining scale economies is because it requires no explicit specification of functional form. It is practically difficult to parametrically specify and estimate a production or cost function for the banking business because deregulation and advances in technology hence brought many outputs other than the traditional output loans (Harada and Ito 2005).

DEA serves as an alternative to regression technique since regression is based on central tendencies, while DEA is based on extreme observation. Moreover the merit with the DEA is that unlike regression analysis. It does not require a prior assumption about the analytical form of the production function; instead it derives the best production function solely on the basis of observed values making it impossible to misspecify the production technique.

The efficiency scores were based on the CCR model of DEA.

Charnes, Cooper and Rhodes- Model:

CCR- Model is introduced by Charnes, Cooper and Rhodes (1978). This model measures the efficiency of each DMU which is obtained as a maximum of a ratio of total sum of weighted output to total sum of weighted inputs.

The weight for the ratio are determined by the restriction that the similar ratios for every DMU have to be less than or equal to unity. Therefore, the efficiency score is a function of the weights of the “Virtual” input- output combination. Suppose that there are n DMUs, each within input and output, relative efficiency score of a given DMU is obtained by solving the following linear programming model.

$$Max\ ho(u, v) = \frac{\sum_{r=1}^s u_r y_{ro}}{\sum_{i=1}^m v_i x_{io}} \quad (1)$$

- s = number of outputs;
- u_r = weight of output r;
- y_{io} = amount of output produced by the DMU
- m = number of inputs
- x_i = weight of input i; and
- x_{io} = amount of input i used by the DMU

Equation 1 assumes constant returns to scale and controllable inputs, while both inputs and output can be measured and entered in this equation without standardization, determining a common set of weights can become difficult. DMU might assess output and inputs quite differently. The CCR model takes into account this concern.

$$Max\ ho(u, v) = \frac{\sum_{r=1}^s u_r y_{rj}}{\sum_{i=1}^m v_r x_{ij}} \leq 1 \text{ for each DMU in the sample ... (2)}$$

Where $j = 1, \dots, n$ (number of DMUs)

- y_{io} = The amount of input i utilized by the jth DMU
- y_{o} = The amount of output r produced by the jth DMU
- x_i = weight given to input i
- u_r = weight given to output r

To measure efficiency, equation 2 is converted into the more familiar components of a linear programming problem. In equation 3, the denominator is set to a constant and the numerator is maximized.

$$Max\ ho = \sum_{r=1}^s u_r y_{rj}$$

Subject to:

$$\sum_{i=1}^m v_r x_{ij} = 1$$

$$\sum_{r=1}^s u_r y_{rj} - \sum_{i=1}^m v_r x_{ij} \leq 0$$

$u_r \geq 0 ; r = 1, 2, \dots, s$
 $v_r \geq 0 ; r = 1, 2, \dots, m$

| Inputs | | Outputs | |
|--------------------|-------|---------------------|-------|
| Deposits | i_1 | Loan and Advances | O_1 |
| Operating expenses | i_2 | Investments | O_2 |
| Assets | i_3 | Interest Income | O_3 |
| | | Non-interest income | O_4 |

6. Data Model Specification

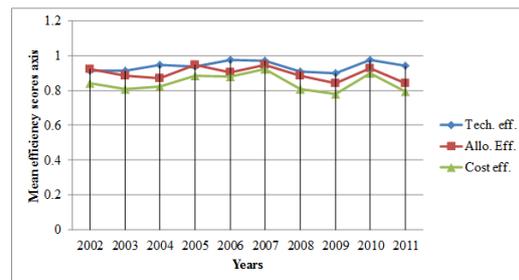
The data for the research were obtained from the published financial statements of Nigerian banks from 2002-2011. Information required for the analysis was extracted for all the banks randomly sampled operating in Nigeria during the period of 2002-2011. The banks include; First bank, Union bank, UBA, Zenith, GTbank, Diamond bank, Wema

bank, Access bank, FCMB and Fidelity. All financial data are denominated in terms of Nigerian Naira (in thousands). Inputs used in the study are deposits (D), operating expenses (OE) and other assets (OA), while the outputs represent loans and advances (L), investment (I), interest income (IY) and non-interest income (NIY).

7. Results and Discussion

| S/N | BANKS YEARLY MEAN | TECHNICAL EFFICIENCY | ALLOCATIVE EFFICIENCY | COST EFFICIENCY |
|-----|-------------------|----------------------|-----------------------|-----------------|
| 1 | 2002 | 0.915 | 0.922 | 0.839 |
| 2 | 2003 | 0.915 | 0.882 | 0.806 |
| 3 | 2004 | 0.946 | 0.871 | 0.822 |
| 4 | 2005 | 0.936 | 0.948 | 0.886 |
| 5 | 2006 | 0.975 | 0.902 | 0.879 |
| 6 | 2007 | 0.972 | 0.946 | 0.921 |
| 7 | 2008 | 0.906 | 0.886 | 0.810 |
| 8 | 2009 | 0.897 | 0.840 | 0.779 |
| 9 | 2010 | 0.974 | 0.926 | 0.901 |
| 10 | 2011 | 0.941 | 0.840 | 0.792 |
| | Mean | 0.938 | 0.896 | 0.844 |

Researcher computation using DEAP Version 2.1



Source: Field Data (2013)

From the results of the findings, some banks were found perfectly efficient with efficiency scores of 1.000 meaning (100%) efficiency, whereas those that were below 1.000 were not fully efficient. The mean technical efficiency, allocative efficiency and cost efficiency for the period examined stood at 0.938 (93.8%), 0.896 (89.6%), 0.844 (84.4%) respectively. These mean results depict the fact that Nigerian banking sector generally needs managerial attention beyond the emphasis on continual banking reforms of recapitalization, merger and acquisition and the likes, so as to be ranked with the global perspective. The banking economy response to the meltdown is noticeable on the graph drawn through the mean results of the technical, allocative and cost efficiency being glaringly understood through the graph that 2008, 2009 and part of 2010 were noticed for the gross effects of the meltdown on the banking economy, though the mild effect is still being felt till 2013 but not pronounced as such.

Deep understanding is revealed by the graphs of technical efficiency, allocative efficiency and cost

efficiency where banks that were excellent in their efficiency score were clearly shown by the graphs.

On the graph of technical efficiency, zenith bank, GT bank and Access bank holds the efficiency frontier fully and consistently, whereas others disperse away from the frontier. On the graph of allocative efficiency, GT bank is almost found fully efficient among others and the bank following it is the access bank which is fairly efficient. It means other banks sell their banking products at higher prices than necessary.

On the graph of cost efficiency, as it has been established that both technical efficiency and allocative efficiency are determinants for cost efficiency, all other banks in the sample disperse away much more from the frontier whereas GT bank is outstanding in holding the cost efficiency frontier. In the mean efficiency scores curve, the three efficiency curves skydive to reach the frontier. This shows the rise and fall nature of banking sector and developing nature of Nigerian banking system.

8. Conclusion

In conclusion, it could be seen that most of the banks were satisfactorily efficient. The average efficiency of the banking sector ranges above 80% via technical, allocative and cost efficiency and it indicates the satisfactory conversion of inputs into outputs, though not fully efficient. Most of the banks selected were almost equally efficient the same way. Therefore, the only way to better meet the challenge of increased competitive pressure in order to overcome the meltdown-posing effects would be to increase technical and allocative efficiency which will determine an overall efficiency and banking sector will set a platter of emulation to other sectors of economy, invariably driving them to the zone of economic efficiency. To the larger extent, size and resources of the banks are good proxy for better management; therefore, banks ought to appoint professional bankers and managers in order to adopt the appropriate policies leading to a better use of their resources. Continuous development of human resources through training is also necessary in order to keep up with the productivity, improving cost-saving and rapid changes in techniques, financial instruments and technological development in banking.

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