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Predicting Banks' Performance: A Case Study of 10 Leading Banks in Nigeria Using Bankometer S-Score Model

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Abstract
The study assesses whether Bankometer S-score model is capable of predicting bank performance in Nigeria. The population of the study consists of 21 banks that registered with Corporate Affairs Commission in the year 2015 and 10 banks formed the sample for the study. Data for the study were obtained from the financial reports of the selected banks. This research reveals that Bankometer S-score is found to be capable of predicting bank performance in Nigeria. The result shows the solvency (s-score) of the ten selected banks for the period (2013-2017). This table is constructed to know whether the selected banks have been consistently doing good and whether they have been financially sound for the last five years. Based on the computation from the table, all the banks, except Eco Bank Plc. are performing very well and therefore can be described as "super sound" while the Eco Bank Plc. needs to undergo a sort of financial surgical operation in order to put the bank back on its right footing. On the average, however, the bank industry look very attractive for the period as an average of 138.43% was recorded over the five years period.
***Keywords**: Predicting, Bank, Performance, Lending.*

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I. Introduction

The primary activity of Banks in any capital economy like that of Nigeria is to balance their liability with the asset composition of the balance sheet in order to maintain equilibrium. The core business of banking, which is credit, involves financial intermediation manifested in the mobilization of deposit from the surpluses units and the passing on of the funds sourced to the deficit units of the economy. They do this by way of promoting investments by providing facilities for mobilizing savings and appropriate instruments with which such funds can be channeled into productive investments without which neither economic growth nor development can take place smoothly and efficiently. These deposits are mobilized at a cost to the banks and this cost is often called interest. The deposit is then passed to the users who pay interest usually at higher rates than the deposit rate. In performing the above functions, the objective of the bank is to make profit. This profit is a measure of the difference between the cost of deposits and other costs and the income from credit advances and other investments (Oluitan, 2014).

If this important function is only perfunctorily and inefficiently performed, the negative impact on the economy will be far-reaching. Nigeria has experienced a significant number of bank failures in recent years, some of which could have been avoided. Early detection of bank failure is a matter of concern to bank regulators worldwide as it is probably the best way to minimize and avoid systemic risk by taking prompt corrective action before the propagation and hence the escalation of the problem. Given the recent episodes of banking crises, bank failure prediction has rekindled the interest in the adoption of suitable early warning signal in bank supervision and regulation. Bank failures continue to occur despite tightening regulations imposed by regulators worldwide. This study sought to explore the development and adoption of an early warning signal which can estimate bank rating and probability of failure twelve months in advance for Nigeria banks.

The rate of business failure particularly in the banking sector of Nigeria economy calls for regular checkup or regular diagnosis of these banks to know their healthy position. If this is done properly, it will protect the users of financial statements of these banks from imminent danger which the failure of the banks might impose on them. In Nigeria, however, a lot of researches has taken place on the measurement of the banks' performances but none of these researchers ever made use of bankometer as a model for measuring bans' soundness in Nigeria.These above reasons and many more prompt these researchers to embark on this study.

Since financial stability still remains as one of the crucial issue of discussion in developing economies like Nigeria, this study therefore wishes to evaluate the financial soundness of some selected banks in Nigeria. The research was therefore set to achieve the following objectives:

- To familiarize bankometer's framework for effective measurement of financial soundness.
- To compare financial position among selected banks based on solvency rating.

To identify the key variable determining the solvency of banks in Nigeria.

The study will put investors on their toes whether to investe or to disinvest in a particular bank. It will also serve as a warning signal to the management of the banks to know their current performance. The result of this study if adopted will reduce the rate of bank failure in Nigeria and help in sustainability and establishing a new one which will go a long way in fulfilling our aspiration for the sub-sector to increase its share of the domestic market from the present position 12 percent to 25 percent by 2020

Furthermore, it will enable the investing public to be wary of where they invest their resources and the regulatory authorities intervene early enough before much damage is done to the economy and thus achieving their goal of maintaining stability in the banking system and generating continued confidence by the public in the system.

Significance for the study is equally premised on the fact that there is no other auspicious time to embark on such a research like this other than now for some obvious reasons:

First, the research work will not only complement other research works earlier done in the same area, but also improve upon them by using appropriate econometric early warning model to predict the level of bank performance in Nigeria.

Secondly, in the Nigerian banking landscape, the regulatory authority (i.e. the Central Bank of Nigeria) reported in the second quarter of 2009 that some banks have continued to display signs of failure despite the earlier financial reforms in the banking sector that saw the emergence of 24 out of the existing 89 banks operating in the country before the reforms. Specifically, 8 of the banks were sanctioned in one way or the other due to the triple problem of huge concentrations in their exposure to certain sectors of the economy, a general weakness in risk management and poor corporate governance (CBN, 2009). Hence, adopting a veritable early warning model that is capable of predicting the level of performance of a bank will definitely be in order. This will enable the investing public to be wary of where they invest their resources and the regulatory authorities intervene early enough before much damage is done to the economy and thus achieving their goal of maintaining stability in the banking system and generating continued confidence by the public in the system.

II. Literature Review

Bank is a financial institution and a financial intermediary that accepts deposits and channels those deposits into leading activities, either directly or through capital markets. A bank holds people's fund in trust and connects customers that have capital deficits to customers with capital surpluses. Due to their critical status within the financial system and the economy generally, banks are highly regulated. Most banks operate under a system known as fractional reserve banking where they hold only a small reserve of the funds deposited and lend out the rest for profit. They are generally subject to minimum capital requirements which are based on an international set of capital standards, known as the Based Accords. Since banks are heavily regulated, is there no way to know the state of the banks before they eventually collapse?

According to Sanusi (2010), eight main interdependent factors led to the creation of an extremely fragile financial system that was tipped into crisis by the global financial crisis and recession. These eight (8) factors were; macro-economic instability caused by large and sudden capital inflows, major failures in corporate governance at banks, lack of investor and consumer sophistication, inadequate disclosure and transparency about financial position of banks, critical gaps in regulatory framework and regulations, uneven supervision and enforcement, unstructured governance & management processes at the CBN/Weaknesses within the CBN, weaknesses in the business environment. Each of these factors is serious on its own right. Acted together they brought the entire Nigerian financial system to the bank of collapse.

Gepp and Kumar (2008) used the survival analysis technique to provide business failure process through the interpretation of the hazard and survival function over time and uses the Cox model to interpret and assess the importance of variables that contribute to business failure. Steranova and Thomas (2000), show how using survival analysis tools can help to predict a time till a customer default on their personal loan. Whalen (1991), examines the usefulness of proportional hazard model (PHM) as early warning tool to bank failure prediction. The results obtained strongly suggest that a PHM with a relatively small number of explanatory variables constructed only from publicly available data could be an effective early warning tool. The overall classification accuracy of the estimated model is high, while both type I and type II error rates are relatively low.

The banking industry is the live-wire or equivalent of the central nervous system of humans in all capitalist economies. According to Adewumi (1992), the institutions provide the vital link between the surplus unit and the deficit unit of the economy. They promote investments by providing facilities for mobilizing

savings and appropriate instruments with which such funds can be channeled into productive investments, without which neither economic growth nor development can take place smoothly and efficiently. The need for regular monitoring of books activities become paramount in the sense that banks have custody of large volume of money, including cash and negotiable instruments, whose physical security has to be assured. Banks also engage in a large volume and variety of transactions both in terms of number and value. They in most countries, normally operate through a wide network of branches and departments which are geographically dispersed. All these and many more make banks vulnerable to several of manipulations. It is for these reasons that the health conduction of the banks is of great concern. Altman (1968) conducted the first study to examine the use of financial ratio analysis as a tool to predict corporate bankruptcy by using discriminant analysis. Altman model has a high accuracy of the model of 90% in correctly classifying the bankrupt firms and 80% accurate in predicting the next financial difficulties. However, according to Anita et. al. (2013), the use of z-score model in banking has shown inaccuracies up to 70% and in other words the model z-score early it is not accurate in predicting the likelihood of financial distress in the banking industry. These make Altman to revised the initial model and introduce Altman's four-variance model Altman, (2000).

III. Research Method

Secondary data was used in this study since all information required for the study were historical in nature and available. Other important sources such as journals, magazines, newspaper and websites have been chosen when found relevant. The target population for the study were all banks in Nigeria that at one time or the other registered with Corporate Affairs Commission and got enlisted in the Stock Exchange Market. The data used was gotten from the audited financial statements of the ten selected banks. The study adopted the purposive sampling technique for the selection of the 10 banks for the study in order to reflect the objective of theresearchers.

Data Analysis and Interpretation

The data so collected from the secondary source, that is, the financial reports of the selected banks were subjected to multiple discriminate analysis using the Bankometer S-score model as predicted by International Monetary Fund(2000).

There are many models available for analyzing bank's soundness, among them Bankometer is recently developed and simple approach that uses financial ratios which are derived from both CAMELS framework and CLSA-stress test parameters with slight modifications in percentages to synthesize bank's soundness. In this model, soundness of bank is measured by a score which is called solvency score (S-Score). In determining insolvency issues and eradicating the shortcomings pointed out by Bankometer approach, this procedure may be helpful to the bank's internal management. It can be used not only by individuals but also by supervisory bodies to have an instant look over any bank's soundness or solvency position. Following IMF (2000) recommendations, the researcher has undertaken the initiative and used a comprehensive procedure called Bankometer which has the quality of providing maximum accurate results with minimum number of parameters. However, the expression of the "Bankometer model as predicted by IMG is:

$S = 1.5X1 + 1.2X2 + 3.5X3 + 0.6X4 + 0.3X5 + 0.4X6$

Where,

"S" stands for solvency which is dependent variable.

Independent variables under this model are:

- X1 = Capital to Assets Ratio (CA) :≥04%
- X2 = Equity to Assets Ratio (EA) :≥02%
- X3 = Capital Adequacy Ratio (CAR) :≥40%≤CAR≥08%
- X4 = Non-performing Loans to Loans Ratio (NPL) :≤15%
- X5 = Cost to Income Ratio (CI) :≤40%
- X6 = Loans to Assets Ratio (LA) :≤65%

However, above mentioned percentages explain a bank that has

- CAR ratio between 8% to 60%;
- CA ratio higher than 4%;
- EA ratio greater than 2%;
- Controlled NPL ratio below 15%;
- Maintained CI ratio less than 40%;
- Maintained liquidity by controlling LA ratio below 65%

Discussion of Results

Variables	x_1	x_2	x_3	x_4	x_5	x_6	**S-Score Max 70% & Min. 50%**	**Rank**
	CA	EA	CAR	NPL	CL	LA		
Criteria	CA≥4%	EA≥2%	40%≤CAR≥8%	NPL≤15%	CL≤ 40%	LA≤ 65%		
Guaranty Trust Bank	16.49	20.69	25.50	7.66	38.10	44.81	172.77	2nd
Zenith Bank	11.66	14.68	24.43	4.07	52.72	40.25	154.97	3rd
Access Bank	12.00	14.73	18.18	4.80	61.10	50.61	140.76	7th
First Bank	11.87	12.52	17.74	22.80	15.36	44.88	141.96	5th
Eco Bank	DIV/0!	15.31	#DIV/0!	14.55	51.20	49.54	62.28	10th
Fidelity Bank	13.00	14.74	16.03	6.40	67.50	55.74	139.69	9th
Diamond Bank	11.43	12.60	16.34	15.88	97.58	44.56	147.48	4th
UBA PLC	8.70	14.34	20.16	6.31	69.90	40.02	141.59	6th
Stanbic Bank	11.79	10.41	20.46	7.87	70.28	30.30	139.71	8th
Union Bank PLC	13.60	31.71	17.80	10.38	82.36	53.79	173.21	1st
Industry Average							141.44	
Classification	Super Sound							
Source: Author's Calculation								

Analysis of the Results

The table above exhibits the computation of solvency Score, that is, the s-score of the ten selected banks in Nigeria for the year 2017 and the results of the computations show that in the year 2017 nine of the banks have attained solvency scores over and above the limit of at least 70 per cent.

S-scores of 62.28% required financial surgical operation although this might be due to non-availability of data for about two years for the bank. Apart from Eco-Bank Plc. all other banks under consideration have ensured healthy financial positions classifying themselves as "Super Sound Banks" and have not experienced any financial distress for the year 2017 and the probability of any of them going bankruptcy is very low for the next few years. On the basis of the computation, Union Bank Plc. has stood at the first position with the highest S-score (173.21%) closely followed by Guarantee Trust Bank Plc. with S-score of (172.77%) in the second position. Similarly, it has been found from the results that average S-score of the banking industry is 141.44% which is over and above the safety limit of 70%.

Capital to Asset Ratio (CA) is the ratio which reveals the proportion of total capital. It measures whether the bank has adequate capital to support its assets. The higher this ratio the more of the internal and external sources of funds have been used for investment in assets. According to the TMF, the minimum limit recommended for this ratio is 4%. Based on the results, the selected banks have met the requirement of (CA) except Eco-Banks Plc. where this ratio can't be computed due to insufficient data sub-mitted by the bank. Guaranty Trust Bank have the highest (CA) of 16.49%.

Equity to Assets ratio (EA) determines that percentage of a company's assets which are financed by equity capital and not leveraged. The higher the (EA) ratio, the less leveraged the company is, this simply means that a larger percentage of its assets are owned by the bank and its investors and therefore less dependent on external sources for financing. TMF recommendation, for EA ratio must be higher than 2% and from computation above, Union Bank Plc. has the highest ratio of 31.71% while Stanbic Bank Plc. has the lowest with 10.41% for the year 2017.

Capital Adequacy Ratio (CAR). This ratio measures banks' capital in relationship to its risk weighted assets. This ratio gives banks' capacity to meet their liabilities as they fall due. This ratio that is CAR has a great influence on the value of S-score. Based on the computations, it is found that all banks under consideration have higher CAR values than the limit of 8% set by the IMF. Guaranty Bank has the highest with CAR value of 25.5% while the least come from Eco-Bank Plc. This result shows that all banks except Eco-Bank Plc. have enough capital requirement thus ensured their safety position for the year 2017.

Non-performing loan to loan ratio (NPL) shows the percentage of the loan which is classified as non-performing loans. The higher the ratio the more the non-productive loans given by the bank. NPL limit must be less than 15% as righty suggested by IMF. Only two banks fall below this limit as their NPL are over and above the limit set by the IMF with NPL of 22.80% and 15.88% respectively, whole Zenith Bank Plc. and Access Bank Plc. with 4.07% and 4.80% respectively shows a sound management performance as regards to NPL.

Cost to Income ratio (CI) is another very important variable of bankometer model as this ratio determines the profitability of the bank. The lower the ratio is the more profitable the bank is, to this end, of all the banks under consideration, Guaranty Trust Bank Plc. with CL ratio of 38.10% is the most profitable of all these banks which is below the limit of less than 40% set by the IMF. Diamond Bank Plc. with CL of 97.58%

which is a value that is well above the limit set by IMF gives the least performance in term of profitability for the year 2017.

Loan to Assets ratio (LA) measures the proportion of total assets used in advancing the loans. The higher the LA ratio the more the loans provided by the bank and hence the more the expected earnings coupled with higher risk due to low liquidity maintained by bank and vice versa. Based upon the computations from table 1 above all the banks have LA below the IMF recommended value of less than 65% it can therefore be concluded that these banks have loaned below their capacity thus maintaining high liquidity.

Table 2

$$\mathbf{S = 1.5 \times 1 + 1.2 \times 2 + 3.5 \times\ 3 + 0.6X4 + 0.3 \times 5 + 0.4\ \times 6}$$

Banks	2017	2016	2015	2014	2013	Mean
Guaranty Trust Bank	172.77	150.57	144.40	153.62	158.43	155.96
Zenith Bank	154.97	148.64	145.21	139.72	168.66	151.44
Access Bank	140.76	145.86	141.57	137.67	136.41	140.45
First Bank	141.96	152.06	146.37	127.35	125.59	138.67
Eco Bank	62.28	114.20	125.04	40.18	43.07	76.95
Fidelity Bank	139.69	149.39	153.52	170.10	175.04	157.55
Diamond Bank	147.48	139.71	148.73	138.95	130.26	141.03
UBA PLC	141.59	142.89	140.66	118.16	137.84	136.23
Stanbic Bank	139.71	148.17	144.38	128.05	134.61	138.98
Union Bank PLC	173.21	150.66	136.84	136.87	174.41	154.50
Industry Average	141.44	144.22	142.67	129.07	138.43	

Table 2 above shows the solvency (s-score) of the ten selected banks for the period (2013-2017). This table is constructed to know whether the selected banks have been consistently doing good and whether they have been financially sound for the last five years. Based on the computation from the table, all the banks except Eco Bank Plc. are performing very well and therefore can be described as "super sound" while the Eco Bank Plc. need to undergo a sort of financial surgical operation in order to put the bank back on its right footing. On the average, however, the bank industry look very attractive for the period as an average of 138.43% was recorded over the five years period.

IV. Conclusion

S-score distress prediction model is found to be accurately predicting banks quoted at Nigeria Stock Exchange as all the ten banks were correctly classified, representing 100% validity for the model.

Recommendations

In the light of the above, following strategies should be adopted by the Commission to reduce the incidences of inaccurate corporate financial reporting:

a. Banks should file quarterly, interior financial statement and annual reports in accordance with accounting standards.

b. Segmental reporting in financial statements of quoted banks that operate in different lines of business or in different jurisdictions, multinational corporation or group of banks should be adopted in line with global best practices. The Commission regards this as essential to full disclosure of banks activities because a group, when viewed from one segment, may appear profitable, whereas in actual fact, it is doing poorly on aggregate thereby concealing the inherent risk factor in the business from investor.

c. External auditors should be changed every five (5) years in order not to get friendly or compromise their position with the company being audited.

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