



Munich Personal RePEc Archive

Financial Performance Analysis Of Distressed Banks: Exploration Of Financial Ratios And The Z-score

Matey, Juabin

Divass Services

12 November 2019

Online at <https://mpra.ub.uni-muenchen.de/104499/>
MPRA Paper No. 104499, posted 04 Dec 2020 03:16 UTC

Financial Performance Analysis of Distressed Banks: Exploration of Financial Ratios and the Z-score

Juabin Matey
Divass Services
Bolgatanga, Ghana
e.juabin@gmail.com

Abstract

A robust bank industry is a major player in the stability of an economy, and therefore the macroeconomic decisions of most countries revolve around the bank-based financial sector. The Ghana financial industry witnessed a cleanup exercise in 2017 due to the impaired conditions under which it operated in the past. This study used financial ratios aided by the Z-score to analyse the financial performance of UT Bank prior to the 2017 bank industry health check in Ghana. Annual financials over a ten-year period (2007-2016) were used. It was realised that debt management practices of UT Bank were quite unsatisfactory and unimpressive. This was observed in the poor leverage and risk management variable ratios. Considering the results, UT Bank clearly had difficulty obliging to customers' maturing debts. The average mean values of debt-to-equity and debt-to asset of 7.6 and 0.90 respectively pointed to a case of distress. The entire bank sector stands to benefit if credit management practices of banks, especially UT Bank and all other banks that suffered the same fate, are improved on. As a policy recommendation, the regulator of the bank industry should tighten up its supervisory and monitoring powers to help in detecting early signs of non-performing banks. The study further recommends that statutory lending limits of banks be re-enforced to uphold the threshold of 10 percent for unsecured loans and 25 percent for secured loans of net owned funds of banks.

INTRODUCTION

Background to the Study

Torna and DeYoung (2013) have followed the sequence of global bank industry instability and have revealed that an estimated 10 percent of US commercial banks have failed in the early 1980s and 1990s. These disturbing occurrences have not spared the European Central Bank where 25 out of 130 largest Eurozone banks failed a distress test (Tassev, 2019). Similarly, the Central Bank of Nigeria (CBN) closed down 21 banks between 1930 and 1958 due to leverage issues and high risk taking resulting from debt to asset and equity challenges (CBN Bulletin, 2010). A similar exercise was replicated in Kenya, where the Imperial Bank, Dubai Bank and the Chase Bank were closed down for various reasons of non-performing loans, liquidity challenges, credit risk mismanagement and capital deficiency (Taboi, 2017). Indeed, it will constitute a half-baked discussion on global bank collapse without a mention of Barings Bank, Enron and Lehman Brothers Holdings Inc as central points of reference to emerging financial malfeasance. History identifies the year 1995, 25 February as a period that witnessed the unfortunate and “unbailable” collapse of Barings bank of England. The root cause of the collapse was the over ambitious engagement in a secret derivative bet trade by one of its employees (Nick Leeson).

Over the immediate past few years, the Ghana bank industry has had its portion of these crises culminating into a loss of about 2,700 jobs with an estimated debt pile of 1.7 US dollars (Nyalatorghi, 2019). The governor of Bank of Ghana (BoG), Dr. Ernest Addison, attributed the crisis to poor banking practices, weak supervision and indifference to regulatory measures by the immediate past administration of the Central Bank. Most of the affected banks were found to have exceeded their regulatory single obligor limits, the

governor revealed. For instance, the UT Bank exceeded its single obligor limit of GH¢20m when it advanced a loan of GH300m to a politically exposed customer, the governor added (Nyalatorgbi, 2019). Apart from the aforementioned, uncertainties surrounding the source of shareholder funds raised suspicions (Ghana Banking Survey, 2019).

The Banks and Special Deposit-Taking institutions Acts 2016 (Act 930), Section 62 of Ghana has a legal lending limit which demands that beyond a certain threshold of unimpaired capital and surplus accounts, the bank is not permitted to grant a loan to a single customer. This requirement is meant to reduce the risk exposure of a single customer. It further emphasises that, depending on whether such a loan is secured or unsecured, it must not exceed 10 percent of net owned funds of the bank in the case of an unsecured loan and not more than 25 percent if a loan is collateralized (see Abor et al, 2019).

Ghanaian banks that suffered this crisis showed early symptoms of distress when they started depending heavily on emergency financial facilities from the regulator to meet depositors' withdrawal requests. After the crisis, it was established that, certain banks never provided collateral before liquidity support was given to them and that these funds were eventually misapplied (Nyalatorgbi, 2019). The governor of BoG noted that, Uni-Bank for instance, loaned out an undisclosed sum to Belstar Capital Ltd to acquire shares in Agricultural Development Bank. This move was to facilitate Uni-Bank's bid to becoming the third largest stockholder of Agricultural Development Bank of Ghana. Overzealous equity owners of banks coupled with internal wrangling with bank managers

over lending threshold and a neglect of best risk management practices are central to most banks' distress situations.

An estimated GH860m and GH620m in liquidity support were given to the UT Bank and Capital Bank respectively in 2015 by the BoG to strengthen their operations. All these notwithstanding, issues of rising non-performing loans and capitalisation challenges eventually broke the camel's back as it compelled the central bank to unleash the inevitable measures to salvage deposits of unsuspecting customers (Nyalatorghi, 2019). The reports further states; between 2015 and 2018, Uni-Bank took an estimated GH3.1billion, of which more than half was uncollateralized, exposing the central bank itself to a naked risk. Having observed these, closures, mergers and takeovers of certain banks are said to have been politically motivated and rushly executed. This study was undertaken to indeed accept or otherwise of the general null hypothesize of the Ghanaian society on realities regarding bank closures and mergers.

Review of Related Literature

Embarking on the bank sector "health check", the Central Bank of Ghana considered a number of parameters that pointed to non-performance. The profit structure relationship is one of available theories that are linked to bank performance as it has attracted much attention in industrial finance and the bank industry. Berger (1995) identified two competing theories that explain the positive relationship between bank performance on one side and market power and efficient structure theories on the other.

The Market Power-Theory vs. Efficient Structure Theory

Two hypotheses are linked to the market-power theory; the traditional structure-conduct-performance and the relative market hypotheses. The traditional structure conduct performance (SCP) occurs where higher loan rates are determined by more concentrated market. This, Aguenou, Lahrech and Bounakaya (2017) submit that tightening up of industry entry requirements forces firms to improve on efficiency in service delivery or are allowed for normal distribution of efficiency. Due to association discipline, banks can collude, reminiscent of high level of their concentration to reduce deposit rates. Similarly, interest on lending could be increased to enjoy relatively high profits due to same advantage of highly concentrated firms. There are sighted failed attempts to establish a strong and a significant link between market structure and bank's efficiency (Aguenou et al, 2017). In the case of Kaufman (1966), he found a non-linear relationship between those two variables (market structure and bank performance). Their findings (Smirklock, 1985; Rhodes; 1985) were not contrary to Kaufman's (1966).

The efficiency theory is decomposed into the X-efficiency and the Scale-efficiency hypotheses. The E-efficiency hypothesis is inclined to the view that, bank managers who efficiently utilise their scarce resources enjoy high profits. In this situation, this calibre of management is able to operate at lower cost per unit service. In the case of the Scale-efficient hypothesis, instead of riding on the back of efficiency, volume of operation is central in their argument. Those banks that have the ability to operate on large scale tend to do so at lower cost per service, and are able to translate operations into higher profits (Berger, 1995). Seelanatha (2010) studied bank's profitability using these

theories. He found performance to have a high dependency on bank's efficiency as opposed to the market structure.

Plethora of researchers has had challenges with the use of market share as a function of efficiency (see Berger, 1995; Shepherd, 1986; Seelanatha, 2010; cited in Aguenous et al, 2017). As an elongation of available empirics on bank performance measures, Sheikh-Waqas (2005) found a positive relationship between debt-to-equity ratio, equity multiplier and bank's insolvency risk ratio. In their study of financial ratio approach to evaluating financial performance, Attefah and Darko (2016) realised that debt-to-equity, debt-to-asset and equity multiplier positively influence bank risk, insolvency and instability.

Methodology

This study adopts a panel data analysis to test the financial performance of distressed banks using the Z-score (see Srairi, 2013; Lepetit, Nya, Rous & Tarazi, 2008; Altman, 1968). Specifically, the study looks at how justifiably distressed certain banks were prior to the 2017 financial turbulence in Ghana. The UT Bank Ghana is a case under consideration. The researcher seeks to investigate its stability and insolvency using its published financials between 2007 and 2016.

Return on Assets (RoA) is the basic variable that is traditional in computing the Z-score. RoA is computed by taking the balance sheet figure of income after tax dividing

it by the value of average Total Assets. The Z-score is also arrived at by taking the mean of RoA combined with Capital-to-Assets Ratio (Equity/Total Assets) further divided by the standard deviation of RoA.

$$RoAZ - Score = \frac{\mu (RoA) + (CAPAR)}{\sigma(RoA)} \dots\dots\dots (1)$$

It must be stressed that, equity capital to asset ratio is computed using only shareholders' equity, subordinated debt exclusive (Li, Tripe & Malone, 2017).

Table 1: Correspondence between the Z-score and Standard and Poor' Rating

| Interpretation | Rating | Zth-score Threshold | Rating | Zth-score Threshold | Interpretation |
|----------------|--------|---------------------|--------|---------------------|----------------|
| | AAA | > 8.15 | BB+ | 5.65 | |
| | AA+ | 8.15 | BB | 5.25 | |
| | AA | 7.6 | BB- | 4.95 | Grey Area |
| Safe Area | AA- | 7.3 | B+ | 4.75 | |
| | A+ | 7 | B | 4.4 | |
| | A | 6.85 | B- | 4.15 | |
| | A- | 6.65 | CCC+ | 3.75 | |
| | BBB+ | 6.4 | CCC+ | 3.2 | Distress Area |
| | BBB+ | 6.25 | CCC- | 2.5 | |
| | BBB- | 5.85 | D | <1.75 | |

Source: Altman and Hotchkiss (2006, p.314)

For purposes of doubtfulness, a double check was done as the study considered the Z-score Plus model proposed by Altman (2006) for evaluating corporate credit which was tested to have had between 70%-95% accuracy and reliability at different time periods. Accordingly, a bank with a Z-score below 1.8 has the likelihood of going bankrupt, while companies with a Z-score above 3 are deemed efficient and to be in good standing and by extension likely not to go bankrupt. Companies within the region of 1.8 and 3.0 are said to operate in the grey area and that bankruptcy is as likely as not.

$$Z_1 = 1.2 \beta_1 + 1.4 \beta_2 + 3.3 \beta_3 + 0.6 \beta_4 + 1.0 \beta_5 \dots\dots\dots (2)$$

Where

β_1 = Net Working Capital divided by Total Assets (WC/TA)

β_2 = Retained Earnings for the year divided by Total Assets (RE/TA)

β_3 = Earnings before Interest and Tax divided by Total Assets (EBIT/TA)

β_4 = Market Value of Shareholders' Equity divided by Book Value of Total Liabilities
(MVE/TL)

β_5 = Revenue divided by Total Assets

Table 2: Classification according to Altman (1993) Z-score

| Z-score | Safe Zone | Gray Zone | Distress Zone |
|-----------------------|-----------|-----------|---------------|
| Initial Model | | | |
| Z-score < 1.81 | | | √ |
| 1.81 < Z-score < 2.99 | | √ | |
| Z-score > 2.99 | √ | | |
| Revised Model | | | |
| Z-score < 1.1 | | | √ |
| 1.1 < Z-score < 2.66 | | √ | |
| Z-score > 2.66 | √ | | |

Adopted from Alman (2006)

Results and Analysis

The researcher analysed the financial performance of defunct UT Bank Limited with financials between 2007 and 2016 using a number of bank stability and insolvency measures. The study was limited to only UT Bank Limited due to unavailability of published financials of other banks that suffered the same fate.

The Unique Trust Bank (UT Bank) Ltd was rebranded in May 2009 and got listed into the Ghana Stock Exchange in 2010 under the brand name UTB. It was one of privately owned indigenous commercial banks in Ghana prior to the revocation its licence together with Capital Bank Ltd amidst the 2017 bank crisis. In order to compare average performance over ten (10) years, analysis was done under two headings; Risk and Leverage / stability and solvency.

Risk and Leverage Measurement Ratios

Debt-to-Equity-Ratio (DER)

DER measures long term financial stability of commercial entities. It looks at external claims against the bank relative to its shareholder equity. It looks at claims of creditors and depositors over bank assets, in our situation. Though controversial, higher DER is panacea for insolvency and likelihood of failure.

Table 3: Bank Level Stability Variable Performance

| | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | μ | σ | CV |
|-----|------|------|------|------|------|------|------|------|------|------|-------|----------|-----|
| DER | 5.83 | 6.54 | 8.1 | 9.1 | 10.6 | 6.7 | 9.4 | 10.8 | 4.8 | 4.5 | 7.6 | 2.30 | 3.3 |
| EM | 6.8 | 7.6 | 9.1 | 10.1 | 11.6 | 7.7 | 10.4 | 11.8 | 5.8 | 5.5 | 8.6 | 2.30 | 3.8 |

DAR 0.85 0.86 0.89 0.9 0.91 0.87 0.9 0.91 0.83 0.82 0.9 0.03 26.4

Source: Author's own computation from bank financials (2007-2016)

DER (Debt to Equity Ratio), EM (Equity Multiplier) and DAR (Debt to Assets Ratio)

It is realised that, an average mean score of 7.6 over the ten year period was recorded in terms DER (see Table 3). One of the implications is that UT Bank's creditors provided 0.76 pesewas (or 76% of 100%) out of every one cedi financed by the bank. In an unlikely event where the value of assets declines, it will have the potency of damaging lenders, since they have preferential rights of payment. In fact, it's unsafe to go beyond 50% DER threshold. That is, a bank should finance 0.5 of every GH¢1 (Creditors bear 0.5). Equity owners are comfortable with high DER values. The reverse is true of lenders and depositors. Lenders tend to interfere with the decisions of management of the bank due to higher DER which allows them a higher stake in financial decisions either directly or otherwise.

Banks that are associated with high DER values tend to have lower borrowing rights, even in emergencies, since financial ratios play a very key role in how businesses fair. In worst scenarios, the central regulatory body could interfere in borrowing arrangements of banks that have a higher DER. The results of UT Bank appear to defeat the purpose of the efficiency theory that posits that bank managers who efficiently utilise their scarce resources enjoy high profits, and by protraction, continuity.

Equity Multiplier (EM)

Equity Multiplier (EM) is one of financial leverage ratios that is a representation of the proportion of bank's assets financed by shareholders' equity relative to lenders

(Asset to Equity). It is estimated that, about 70-90 percent of banks' assets is tied to loans and advances (Koflowits, 2019). Table 3 shows that 8.6 percent of UT Bank's assets were financed by owners' equity as against 1.4 percent financed by lenders/customers' deposits. A higher EM value draws the bank closer to risk of failure (Sheikh-Wagas, 2005). That perhaps would have gratified investors because UT Bank used more equity to purchase assets than they purportedly used debt to finance assets purchase. It must quickly be stressed that, a higher equity multiplier ratio sometimes could be a strategy used by the bank to look profitable so as to purchase assets at a low cost or gain favour from lending institutions.

Traditionally, a higher EM is not a safe place for a bank to stay, and very risky as it is an unhealthy practice and serves as a conduit for discontinuity. It means the bank relies heavily on debt than it does on shareholder equity. A trigger of high default by debtors to the bank in the form of non-performing loans, UT Bank in this case had a high tendency to go distressed as was the case.

Debt-to-Asset-Ratio (DAR)

This ratio measures an organisation's ability and strength to meet claims by creditors using company's own resources. Higher DAR values signify increased in insolvency risk. Creditors have more claims on the bank's financial and non-financial resources should the inevitable happen. Per the results, ownership of the bank literary rested with creditors. A look at UT Bank's mean average of DAR which is pegged at 0.9, means out of every GH¢1 ownership claim by UT Bank, only 0.1 pesewa is really owned in terms of real assets. Efficiency in banking sector is paramount as it positively impacts

bank stability. Seelanatha (2010) studied bank profitability using the efficiency theories and found better performance and best management practices to have a high dependency on bank efficiency. Inefficient banks are associated with high debt ratios.

Solvency Measurement

The Z-score has gained wide spread acceptance as a measure of bank stability and the inverse of the probability of insolvency in the bank industry and financial stability literature (Bouvatier, Lepetit, Rehault and Strobel, 2017). The researcher used RoA-based Z-score and Altman (2006) Z-score Plus to potentially compare capitalisation and returns or variability and returns. This was made possible by the use of accounting data. Table 4 has computed results.

Table 4: Results of Z-scores computed from different Approaches

| | 2007 | 2008 | 2010 | 2011 | 2012 | 2012 | 2013 | 2014 | 2015 | 2016 | Average |
|-----------------------|------|------|------|------|------|------|------|------|------|------|---------|
| FV-Zscore | 10.6 | 9.4 | 8.3 | 7.6 | 6.8 | 9.4 | 7.4 | 6.8 | 11.8 | 12.3 | 9.04 |
| LN-Zscore | 2.4 | 2.2 | 2.1 | 2.0 | 1.9 | 2.2 | 2.0 | 1.9 | 2.50 | 2.5 | 2.17 |
| Z ₁ -score | 1.7 | 1.5 | 1.1 | 0.9 | 0.8 | 1.3 | 1.4 | 1.7 | 1.50 | 1.9 | 1.38 |

Source: Author's own computation from bank financials (2007-2016)

FV-Zscore (Face Value of the Z-score), LN-Zscore (Natural log of FV-Zscore) and (Z₁) (RoA-based and Altman)

The Z-score is known to be highly skewed, as such; the natural log of the FV-Zscore was used to defuse the likelihood of misleading results. As a result, the researcher

dwelled much on the average Z-scores of the two standardised models. With average Z-scores of 2.17 and 1.38 produced from the RoA-based and Altman (Z_1) respectively, the researcher used Standard and Poor's Ratings Table (Table 1) to form an opinion on the RoA-based Z-score per balance sheet figures. With a score of 2.17, it puts UT Bank under the distress condition, characterised by illiquid assets sensitive to economic downturn. In the case of results from Altman's model (Z_1) an average score of 1.38 was obtained, again, placing UT Bank in the distress zone (see Table 2).

Conclusion and Recommendations

Stability measures of banks and their ability to take risk are very central to arguably determine if they are capable of generating income to meet fixed cost. Uncontrollable rising debt is justifiably a source of concern, especially when used unwisely and without moderation could spark financial crisis. UT Bank's ability to control its debt to assets, debt to equity and equity multiplier was weak. Per results from its financials and the methodology adopted by the researcher, UT Bank relied heavily on external debt since it was unable to internally generate adequate income to meet its fixed costs and to oblige to claims from creditors; hence 90% of its resource ownership literally was to creditors.

Major among failed administrative indicators was poor credit risk management which is central to the bank's survival. In fact, working to construct a structure of proper bank corporate practices, debt seemed to have been intractable to management of UT Bank. This certainly will invite discontinuities and challenges in which distress and limitations placed on borrowing were key. Most banks are noted for poor credit management practices and will need to be worked on if the bank industry in Ghana needs to restore clientele confidence. Policymakers should work on reducing systemic risk emanating from high leverage financial system. The researcher further suggests that bank

annual financials be published to allow for independent computations and unbiased analysis to help draw reliable conclusions.

Limitation of Study

Better comparison of results from many banks would have put the conclusion drawn in this study in a more revealing perspective. This shortfall is as a result of unavailability of financials of banks that suffered same fate as UTB. This problem of unavailability of data on certain banks is cause for worry, since their audited reports are relied upon to determine corporate performance. This is defiance to their financial reporting requirements as public entities.

REFERENCES

- Abor, J.Y., Gyeke-Dako, A., Fiador, V.O., Agbloyor, E.K., Amidu, M., & Mensah, L. (2019). Money and banking in Africa loan portfolio and credit management. *Advances in African Economic, Social and Political Development*, Springer Nature. doi.org/10.1007/978-3-319-77458-9
- Aguentaou, S., Lahrec, A., & Bounakaya, S. (2017). Analyzing banks' efficiency as a measurement of performance in the Moroccan context: Application of CAMEL Framework. *International Review of Research in Emerging Markets and the Global Economy*, 3 (1), 1105-1121
- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance*, 189–209.
- Altman, E.I. & Hotchkiss, E. (2006). *Corporate financial distress & bankruptcy*. 3rd edition. J. Wiley & Sons. Hoboken, New Jersey
- Attefah, E.K., & Darko, E.A. (2016). Financial ratios approach to evaluating financial performance of Cal Bank Ghana from 2010 to 2014 *International Journal of Academic Research in Business and Social Sciences*, 6(6), 150-176

- Basel Committee on Banking Supervision, BCBS. (2010). Basel III and financial stability. *Bank for International Settlement*
- Berger, A. (1995). The profit-structure relationship in banking – Tests of market-power and efficient-structure hypotheses. *Journal of Money, Credit and Banking*, 404-420.
- Central Bank of Nigeria [CBC] (2010). Annual report *bullion; January-march*
- Kaufman, G. (1966). Bank market structure and performance: The evidence from Iowa. *Southern Economic Journal*, 429-439.
- Howells, P. & Bain, K., 2000, Financial markets and institutions, 3rd ed., Pearson Education Limited, England.
- Lepetit, L., Nys, E., Rous, P. & Tarazi, A. (2008). Bank income structure and risk: An empirical analysis of European banks. *Journal of Banking and Finance*, 32(8), 1452-1467
- Li, X., Tripe, D., & Malone, C. (2017). Measuring bank risk: An exploration of z-score
- Prakash, P., Iqbal, T. H., Jennifer, M. Q., & Nympha, R.J. (2017). Capital Structure and Financial Performance of Banks, *International Journal of Applied Business and Economic Research*, 15(23), 300-312
- Nyalatorgbi, E. (2019). Bank of Ghana closes seven banks in banking crisis: African Agenda, *Third World Network Africa*, 21(3), 33-36
- Rhoades, S. (1985). Market share as a source of market power: Implications and some evidence. *Journal of Economics and Business*, 3 (4), 343-355.
- Seelanatha, L. (2010). Market structure, efficiency and performance of banking industry in Sri Lanka. *Banks and bank systems*, 5(1), 65-75
- Sheikh Waqas, A. (2005). *Financial statement analysis of bank, Falah*. Virtual University Pakistan, Pakistan
- Shepherd, W. (1986). Tobins'q and the Structure-Performance Relationship: Comment. *The American Economic Review*, 76(5), 1205-1210
- Smirlock, M. (1985). Evidence of the (non) relationship between concentration and profitability in banking. *Journal of Money, Credit and Banking*, 17(1), 69-74.
- Srairi, S. (2013). Ownership structure and risk-taking behaviour in conventional and Islamic banks: Evidence for MENA countries. *Borsa Istanbul Review*, 13(4)

Taboi, L. (2017). How the Kenyan banks went under African Business.

Tassev, L. (2019). Three bank failures open new chapter in never-ending financial crisis

Torna, G. & DeYoung, R., (2013). Nontraditional banking activities and bank failures during the financial crisis. *Journal of Financial Intermediation* 22, 397-421