Effect of Interest Rate Spread and Bank Specific Factors on Survival of Tier-One and Tier-Two Deposit Money Banks in Nigeria

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Volume 12 No 2 (2022) | ISSN 2158-8708 (online) | DOI 10.5195/emaj.2022.264 | http://emaj.pitt.edu

Abstract

In today's economic setting, there must be a healthy banking sector for banks to survive. Banks survival determine sound financial mediator in achieving economic performance. However, bank spread and unstable policies towards bank specific factors have become threat to bank survival in Nigeria. Secondary data and ex-post facto research design were used within the period of 2011-2020 for both Tier-1 and Tier-2 deposit money banks in Nigeria. The study found that interest rate spread, asset quality, management efficiency, bank size and board size affect bank survival in Nigeria. The study suggests that bank managers should give maximum attention to interest rate spread, and bank specific factor like asset quality, management efficiency, bank size and board size so as to ensure their survival.

Keywords: Assets Quality, Bank Size, Capital Adequacy, Management Efficiency, Spread

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Volume 12 No 2 (2022) | ISSN **2158-8708** (online) | DOI 10.5195/emaj.2022.264 | http://emaj.pitt.edu

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I. Introduction

Banks and other financial entities are pivotal in mediating the flow of funds within the economy. Channeling funds from the surplus side to the deficit side of the economy to enhance economic growth and productivity, bank's stability becomes a significant factor for the government to always consider, monitor, and carefully promote since any threat to banks' survival is an indirect threat to economic stability and productivity. The survival of banks for economic growth and development cannot be overemphasized as they are the mediator in the finance of the economy (Kocenda & Iwasaki, 2021). For an economy to be stable in its growth, it is mandatory to have a banking sector that is financially healthy. The CAMELS supervisory rating method is utilized for accurate bank health assessments. Capital sufficiency, asset quality, management quality, profitability, liquidity, and market vulnerability are the six pillars of the CAMELS framework (Kocenda & Iwasaki, 2021). The insolvency of a bank contributes to the population experiencing financial difficulties in view of them entrusting all their resources to the banking institution. Insolvency of a bank has severe effects on the financial system and the entire population's economic activities especially in a country like Nigeria.

Survival in this context is measured with Capital Adequacy Ratio (CAR) which describes a firm's ability to continue with operations regardless of any changes they might be confronted with (Cefis & Marsili, 2012; Kocenda & Iwasaki, 2021). For a firm to survive as long as intended is subject to the acquisition of inputs from suppliers, its processes and provision outputs to stakeholders. To this end, a firm is regarded as having failed when it is unable to achieve both short-term and long-term obligations to its stakeholders. Odibi et al (2015), revealed the connection between internal and external factors necessary for bank survival. Bank specific features as indicated in the acronyms CAMEL as seen in Kocenda and Iwasaki (2021) represents the premise for the discussion. Helmers and Rogers (2010) in their study examined the factors that can contribute to the survival of a firm, to which human capital, firm size, market level, productivity, environment, research activities and innovation amongst other factors were identified. The study by Rahman and Islam (2018) opined that CAMEL is used in the evaluation and prediction of banks' survival.

In the business world today, one needs to put plans into action if he/she wants to stay in business. The government pressure and poor economic forecasts in Nigeria have prompted the central bank to employ hostile and unorthodox monetary policies, making this task much more difficult. This has led to fears being entertained in view of negative interest rates, that such steps can place pressure on the already weak banking sector that reduce rates below the zero level as a result of poor economic growth, unemployment, financial instability, low levels of inflation and volatile asset prices. The rationale behind this is to encourage borrowing in order to finance investment and consumption, which sets off a self-sustaining growth cycle. With the continuous economic crunch being experienced, policymakers have slashed interest rates more, resulting in a flattening of the yield curve. The implication of this is that banks, which possess huge amounts of government debt, tend to experience a further decline in their profits thus threaten Nigerian bank survival (Mbachu, 2022). Literature has revealed that a bank's survival is subject to various factors such as the bank's internal factors, as well as macroeconomic factors. This is especially true in the Nigerian banking industry where interest rate spread (spread) is unstable as well as smoothing of asset quality, management efficiency, bank size with bias board size which directly collapse deposit money banks in Nigeria. Studies have not been carried on combined effect of spread and bank-specific factors on the survival of Nigerian banks of Tier-1 and Tier-2 categories. This study is therefore focused on the gap in the literature which serves as the motivation for this study.

Considering the gap identified, hypotheses below were developed:

Hypotheses

H_{01}*:* There is no combined significant effect of spread, asset quality, management efficiency, bank size and board size on capital adequacy ratio of Tier-1 deposit money banks quoted in Nigeria.

H_{02}*:* There is no combined significant effect of spread, asset quality, management efficiency, bank size and board size on capital adequacy ratio of Tier-2 deposit money banks in Nigeria.

II. Literature Review and Hypothesis Development

Bank survival is the continuous financial and non-financial operations of deposit money bank assets in managing and overriding internal and external environmental factors. In this study, bank survival was measured with capital adequacy ratio. CAR assesses the strength of the bank while taking into account the quality

of its assets. Its financial health and capital adequacy are all key factors to protect the investment of depositors. It is intended to safeguard depositors while also enhancing the efficiency and stability of the global financial system (Ajayi et al., 2019). One way to assess a bank in term of safety is the portion of its capital ratio, the higher the ratio, the safer the bank is and vice versa. The CAR embodies two forms of capital: Tier 1 and Tier 2 are separately calculated to determine the capital adequacy ratio of the bank (Brian, 2018).

Interest rate spread is the spread difference between the interest rate paid for demand, time, or savings deposits and the interest rate that banks charge on loans. Bank specific factors are bank internal indices that determine bank continuity. In this study, bank specific factors were asset quality, management efficiency, bank size and board size.

Using CAR, one can see where problems exist in the lending portfolio. If the ratio increases, this could be an indication that the quality of the loan portfolio is declining, which would result in an increased credit risk. The exposures to core capital are included in this. The formula for calculating this ratio is to take the total outstanding balances of all loans with balances of at least 10% of the bank's core capital and divide that number by the total outstanding balances of all loans with balances of at least 10% of the bank's core capital. This ratio illustrates the concentration problems that exist with credit risk. An important stage of risk is initiated which exceed 10% of the core capital of the firm. A separation of the ratio of non-performing loans (NPLs) from provisions to core capital is the final indicator. To calculate the percentage of loan loss, the loan loss provision is divided by the value of the loans that are not being repaid.

Management efficiency is a measure and determinant of bank survival. The management efficiency is proxy with ratio of cost to income. Bank management efficiency indicates that bank costs are maximally utilized to achieve targeted income.

Mekonnen (2015), found that the larger the bank, the more likely will the CAR. Similar studies such as El-Ansary and Hafez (2015), as well as Polat and Al-khalaf (2014) also supported that bank size has great impact on CAR. Bateni et al., (2015) and Alajmi and Alqasem (2015) found that bank size has significant negative impact on CAR (2014) in which CAR decreases when there is an increase in bank size and vice versa. In order to get a ballpark estimate of how big a bank is, the natural logarithm of its total assets is sometimes utilized. The size of a bank is significant because it influences how it is owned and how easy it is to obtain equity capital and survive.

According to Price (2017), one of the topics that is being discussed in the new best practices is the question of whether or not board size matters. To this, there is no consensus yet regarding the actual number that should make up the board of directors. Price referenced a study conducted by GMI Ratings that came to the conclusion that smaller boards have more returns, better monitoring, and are better overall. He reasoned that in order to be effective, boards of directors "must meet the particular demands of each organization when determining board size and makeup." That the size of the company, the type of industry it is in, its strategic needs, and where it is in its business cycle all have a part in determining how few board members it requires to function optimally.

Kristijan and Mirjana (2020) looked at how NPLs changed in the banking industry of the Republic of Serbia from 2010 to 2019. They did this to find out what factors have a big effect on credit risk. The research that looked at data from a vector autoregressive model found that things like capital adequacy ratio, inflation, GDP, ROA, income diversification, unemployment and cost efficiency all have an effect on NPLs (VAR). The analysis showed that the number of loans that are not being paid back relies on macroeconomy and the extent to which it affects bank-specific factors that regulatory authorities have to take into account when figuring out the credit risk that banks face.

Yilmaz (2019) using panel data sought out the determinant of bank survival between 2000 and 2013. The result revealed that economic growth, economic freedom and inflation are essential for bank survival. Other factors identified include return on assets and equity, and non-interest income to total income all hurt non-performing loans. On the other hand, public debt, unemployment, lagged values of nonperforming loans, credit growth, cost to income ratio, and lagged values of performing loans all helped nonperforming loans.

Moeidh and Khalid (2015) conducted a study from 2005 to 2013 to determine how seven internal factors affected the CAR of five traditional banks in Kuwaiti. The proportions of loan to assets and deposits, non-performing loans as a percentage of total loans, returns on assets and equity, dividends paid out, and total liabilities as a percentage of the total assets are all taken into account. According to the results, when a fixed effect model was employed, neither DIVIDEND nor LAR nor LDR nor NPLLR nor ROE influenced the Capital Adequacy and Liquidity Ratio. Capital adequacy ratio was discovered to have a substantial and inverse relationship with both ROA and SIZE. Based on the random effect model, it is found that CAR negatively impacts SIZE (the proportion of a bank's total liabilities to its total assets), and ROA has a robust and negative relationship with capital adequacy ratio. A definite and positive correlation existed, however, between the Loan to Deposit Ratio (LDR) and the Capital Adequacy Ratio. In contrast, the random-effect model found no relationship between CAR and dividend per share, loans to assets, Quasi Loans to Total Loans, or Return on Equity.

Using data from the year 2020, Feyen and Huertas (2020) analyzed the movements of nominal lending interest rates and the lending-deposit interest rate spreads in emerging and developing markets. Data from 140 developing and emerging economies were analyzed, and the results showed that between 2003 and 2017 both nominal lending rates and spreads declined, while regional diversity was observed. Correlations between nominal lending rates and other factors were found in the illustrative regressions. Inflation, public debt, and the policy interest rate are all examples of macro-financial conditions; banking characteristics such as overhead expenses, non-interest income, and non-performing loans; and finally, credit bureau coverage and the time it takes to resolve insolvency are examples of banking characteristics (business environment). Finally, breakdowns of the level and 10-year change in nominal loan rates between 2007 and 2017 illustrated regional differences. The years 2007-2017 were the focal point of these studies. The authors attribute the observed decline in nominal interest rates to a combination of factors, including falling inflation, the policy interest rate, and

overhead costs, as well as an improved business climate. The study, which was carried out in light of the current international financial crisis, found that a worldwide component led to the current downward trend in nominal lending rates.

Between 2007 and 2018, Usman, Lestari, and Puspa (2019) analyzed the factors affecting the CAR of 27 randomly selected conventional banks listed on the Indonesia Stock Exchange (IDX). Estimates were made using the regular General Least Squares (GLS) approach, and the information was examined using a panel data regression. Liquidity was found to have little effect on CAR in the banking industry, although bank size, leverage, loan loss reserve, net interest margin, and loan asset ratio all had substantial effects.

In a study covering 2011-2019, Washeka (2021) looked into what effects conventional banks in Bangladesh had on the interest rate spread. Banks' interest rate spread was one of the variables taken into account among others such as those unique to the banking industry, the economy as a whole, and macroeconomic conditions. Credit risk, operating costs, and liquidity risk were found to positively affect interest rate spread. Depending on the context, a positive or negative correlation between asset size and Gross Domestic Product (GDP) was discovered. Contrarily, an inverse link was discovered between market share and variables such net interest income, capital adequacy, return on assets, and return on equity.

A theory that aptly fits this study is the Buffer Theory of Capital Adequacy given its view that banks have a preference for absorbing excess capital with the intent of preventing any shortcomings in the legal capital requirements. The Buffer Theory, based on its observation of the capital requirement serving as one of the important basis of primary banking supervisory instrument in Nigeria, has indicated that failure to attain this requirement will be considered as infringement of banking stipulations. External auditors are often assigned the task of conducting on site examination, however there is minimum interference in the activities of banks. The recapitalization of Nigerian banks, which took place in 2005 has shown to a great extent that when banks are undercapitalized for long periods, they face the risk of being shut down and having their licenses withdrawn. However, when banks are able to mobilize deposits from the public, they are able to prevent their capital base from being disintegrated (Aruwa & Naburgi 2014).

The buffer theory further propounds that a bank approaching the regulatory minimum capital ratio is influenced to minimize risk and boost their capital to prevent the capital requirements triggering their regulatory costs. This strategy of accepting more risk with the expectation of getting higher expected returns by poorly capitalized banks in order to increase their capital is not advised (Ajayi, Ajayi, Enimola, & Orugun, 2019). When bankruptcy occurs, Nigeria Deposit Insurance Corporation (NDIC), the bank, and the customers absorb the risk (Aruwa & Naburgi 2014). In this regard, customers are specifically concerned about the banks' capital position every time.

As noted by Faisal, Shazaib, Omar and Kiran (2019), the capital buffer theory indicates that when there is excessive increase in capital more than required, it tends to decrease bank risk. According to the theory, capital buffer has a tendency of enhancing the performance of banks as a result of the reduced lending rate, thus leading to increased loan demand. This has the effect of influencing banks to charge on limited loans, a higher rate of interest.

Furthermore, proper screening of borrowers would reduce the default risk, and banks' profitability in the short run. Shim (2013) opined that the challenges of higher deposits faced by banks can be attributed to risks, which has the effect of enabling the increased capital to decrease these risks and funding costs, and eventually increasing profitability (Shim, 2013). This is an indication that banks tend to maintain a capital buffer through their profitability so as to maintained bank survival.

III. Methodology

The study was based on existing data for different purposes, and this is considered to be relevant for the current study. The study used ex-post facto design while the data used were sourced from secondary sources. Data were collected for a period of 25 years spanning between 1997-2021. Data used were sourced from tier-one and tier-two deposit money banks in Nigeria, in which Tier 1 comprised of First Bank, Guaranty Trust, Access Bank, and while Tier 2 comprised of FCMB, Sterling Bank, and Fidelity Bank. Data were collected from the Central Bank of Nigeria Bureau of Statistics for the years investigated. For the study, the dependent variable was bank survival which was proxy by with Capital Adequacy Ratio (CAR). The independent variables and their proxies include:

- Interest rate spread proxy with spread (SPR) between deposit rate and lending rate
- Bank specific factors proxy with asset quality (AQ), management efficiency (ME), and bank size (BAS)

Whereas the Control Variable was proxy by board size (BS). Panel data analysis was carried out using E-Views.

Econometric Model

$$CAR = f(SPR_{it}, AQ_{it,} ME_{it,} BAS_{it}, BS_{it})$$

$$CAR_{it} = \beta_0 + \beta_1 SPR_{it} + \beta_2 AQ_{it} + \beta_3 ME_{it} \beta_4 BAS_{it} + \beta_5 BS_{it} + \mu_i + \varepsilon_{it}$$ ------ Equation for Tier-1 and Tier- 2 Banks

Where;

CAR= Capital Adequacy Ratio proxy with Total Debt/Total Assets
SPR= Interest rate spread proxy with spread between deposit rate and lending rate
AQ= Bank specific factors proxy with asset quality ratio
ME = Management efficiency proxied with ratio of cost to income
BAS=Bank size proxy with Total Assets
BS= Board Size proxy with Total Number of both Executive Directors and Non-Executive Directors
β_0 =constant
β_1- β_5= coefficient
ε_{it} = Error Term

IV. Results amd Imterpretation

The objective model was estimated using the static panel data techniques.

Table 1: Correlation Coefficients for Multicollinearity Test

Variables	SPR	AQ	ME	BAS	BS	VIF
SPR	1	0.164	0.241	0.321	0.352	1.96
AQ	0.521	1	0.563	0.190	0.680	1.80
ME	0.217	0.672	1	0.621	0.220	1.32
BAS	0.332	0.109	0.290	1	0.198	1.24
BS	0.624	0.245	0.621	0.762	1	1.19

Source: Authors' Computation (2022)

Table 1, depicted the connection among the explanatory variables which were below the rule of thumb threshold of 0.8 for testing multicollinearity. This insinuated that explanatory variables in the model do not have problem of severe multicollinearity.

Table 2: Panel Result for Objective of the Study

	Tier-1 Deposit Money Banks		Tier-2 Deposit Money Banks	
Variables	Fixed Effect (FE)	Random Effect (RE)	Fixed Effect (FE)	Random Effect (RE)
SPR	1.627 (0.412) [2.590] {0.042}**	0.011 (0.136) [0.082] {0.103}	-2.624 (1.349) [-3.416] {0.012}**	-1.698 (1.489) [-3.916] {0.090}*
AQ	0.520 (0.527) [7.921] {0.030}**	0.019 (0.089) [3.121] {0.036}**	2.922 (1.046) [4.181] {0.032}**	0.082 (1.536) [5.833] {0.028}**
ME	0.241 (0.380) [5.021] {0.025}**	0.396 (0.813) [4.091] {0.064}*	0.139 (2.158) [3.838] {0.042}**	-0.783 (1.038) [-0.217] {0.099}*
BAS	0.720 (0.191) [4.911] {0.040}**	0.039 (0.126) [5.721] {0.066}*	0.145 (1.046) [0.349] {0.364}	0.910 (1.833) [0.530] {0.210}
BS	-0.521 (0.821) [-2.021] {0.035}**	0.216 (0.282) [4.072] {0.064}*	-0.319 (1.358) [-3.198] {0.031}**	-0.782 (0.067) [-3.411] {0.089}*
Constant	5.217 (1.342) [1.032] {0.202}	4.271 (3.236) [0.072] {0.299}	-1.440 (2.846) [-0.243] {0.884}	-1.245 (1.093) [-0.216] {0.622}
Breusch-Pagan (Lagrange Multiplier) (LM) Test	$\chi^2(1) = 57.12$ (0.0210)	$\chi^2(1) = 5.46$ (0.0367)	$\chi^2(1) = 121.53$ (0.0421)	$\chi^2(1) = 85.53$ (0.0312)
Hausman Test	$\chi2(5) = 25.28$ (0.0212)	$\chi2(5) = 27.30$ (0.0215)	$\chi2(5) = 23.62$ (0.0523)	$\chi2(5) = 18.10$ (0.0416)
F-Test	F(5,49) = 28.24	Wald chi2(5) = 16.14	F(5,64) = 9.62	F(5,64) = 20.17
Pesaran CD	0.482 (p>5% = 0.491)		0.312 (p>5% = 0.721)	
N	55	55	70	70
Ajd-R^2	0.62	0.38	0.512	0.321

Dependent Variable: Capital Adequacy Ratio (Bank Survival)

Notes: Standard errors ( ), t-statistic [ ] and p-value { } are reported in parentheses. *, ** and *** show the 10%, 5% and 1% significance level respectively. Where; Spread (SPR), Asset Quality (AQ), Management Efficiency (ME), Bank Size (BAS) and Board Size (BS) are also indicated.

Source: E-Views Output

Table 2 is a representation of the model for deposit money banks' survival proxy with Capital Adequacy Ratio (CAR) for both Tier-1 and Tier-2 Banks. It is shown by the significant F-statistics that the model is correctly specified and fit. It was concluded by the LM Test and Hausman Rest that the fixed effect model is considered most suitable for this analysis representing the model for the study. In this study, Spread (SPR) between deposit rate and lending rate proxies for interest rate spread while Asset Quality (AQ), Management Efficiency (ME), Bank Size (BAS) and Board Size (BS) were proxied for bank specific factors. Fixed effect (FE) panel regression was adopted for this study. For Tier-1 banks, the results show that spread, assets quality, and management efficiency have positive and significant effect on bank survival while board size has negative and significant effect on bank survival among Tier-1 banks in Nigeria since the p<5% and 10%. For Tier-2 banks, the study found that spread and board size have negative and significant effect on Capital Adequacy Ratio (CAR) proxy with bank survival while asset quality, management efficiency and bank size have positive and significant effect on bank survival. Thus, the study rejected the two null hypotheses that;

H_{01}: There is no combined significant effect of spread, asset quality, management efficiency, bank size and board size on capital adequacy ratio of Tier-1 deposit money banks quoted in Nigeria.

H_{02}: There is no combined significant effect of spread, asset quality, management efficiency, bank size and board size on capital adequacy ratio of Tier-2 deposit money banks in Nigeria.

V. Discussion of Findings

The results of this study indicate that spread, asset quality, and management efficiency have a positive and significant effect on bank survival, while board size has a negative and significant effect on bank survival among Tier-1 banks in Nigeria since p<5% and 10%. These results imply that the increase in the spread of asset quality and management efficiency will bring about increase in bank survival regardless of the size of the board. Bank survival is largely dependent on the extent to which the management efficiently manages both the human capital and other bank resources, especially asset quality. The result of this study which led to the rejection of the null hypotheses implies that the survival bank depends largely on the combined attributes or effects of spread, asset quality, management efficiency, bank size and board size on the Capital Adequacy Ratio (CAR) of Tier-1 as well as Tier -2 deposit money banks quoted in Nigeria. This is because these variables - asset quality, management efficiency, bank size and board size - collectively contributed towards the enhancement of bank capital adequacy, that is, the ability to endure unsound market practices and occurrences of moral hazard, which leads to improved system-wide risk-management capabilities. Banks' credibility is experienced in its ability to return customers' money as when needed while functioning efficiently.

Although there is no study known to the researchers which studied the combined effects of asset quality, management efficiency, bank size and board size on capital adequacy, there have been studies supporting the connection between individual variable with capital adequacy. For instance, the result of this study supports the positive significant connection which El-Ansary and Hafez (2015), Mekonnen (2015), and Polat and Al-khalaf (2014) found between bank size and Capital Adequacy Ratio (CAR) in their respective studies; but disagreed with

the negative connection found between bank size and CAR by Alajmi and Alqasem (2015).

The results of this study also support Pastory and Mutaju (2013) who found a positive significant relationship between asset quality and CAR in 33 commercial banks studied for eight years. For Pastory and Mutaju, the higher the asset quality, the higher the capital adequacy ratio. This finding is consistent with Thoa and Anh (2017) who also found the existence of a positive relationship between bank size, asset quality and board size. In Abusharba et al. (2013), a significant positive relationship was found to exist between bank size, assets quality, management quality and capital adequacy ratio. Other studies that share similar positive relationship, especially between bank size and capital adequacy ratio include Buyuksalvarc and Abdioglu (2011), Williams (2011) and Romdhane (2012) respectively.

VI Conclusions and Recommendations

The results of this study clearly indicated a positive significant effect of spread, asset quality, and management efficiency on bank survival as measured by Capital Adequacy Ratio (CAR) among Tier-1 and Tier-2 banks. Data were collected from CBN statistical bulletin for the period selected for evaluation. Based on the findings there is a significant positive relationship among spread, asset quality, management efficiency and bank survival as measured by Capital Adequacy Ratio (CAR). The implication of this finding is that the increase in spread, asset quality, and management efficiency leads to an equal increase in Capital Adequacy Ratio (CAR). Against this finding, the study recommends that banks should grow their bank and board sizes, increase their asset quality as well as improve on their management efficiency in other to enhance their survival through increasing the capital adequacy.

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