Effect of Bank's Financial Resilience Predictors on Economic Stability in Nigeria

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Abstract
This study investigates the impact of banks' financial resilience factors on Nigeria's economic stability from 1993 to 2022. Specifically, it analyzes the influence of capital adequacy, asset quality, management quality, bank liquidity, and the bank Z-score on the country's economic stability. Data for this research were sourced from the Central Bank of Nigeria's Statistical Bulletin (2022) and the World Bank Data Bank (2022). The study employed an ex-post facto research design, as the data used were secondary and historical in nature. To analyze the data, the Autoregressive Distributed Lag (ARDL) model was applied, given its ability to handle mixed data integration. Several diagnostic tests, including Multicollinearity, Heteroskedasticity, and the Ramsey Reset test, confirmed the model's suitability for prediction. The regression analysis was conducted using Econometric Views version 9.0. The results showed that capital adequacy, management quality, and bank liquidity have a significant positive effect on Nigeria's economic stability. Conversely, asset quality and the bank Z-score demonstrated a significant negative effect. The study concludes that capital adequacy, management quality, and bank liquidity are positive predictors of economic stability. Based on these findings, the Central Bank of Nigeria is urged to ensure that all commercial banks adhere to capital adequacy standards. Additionally, regulatory authorities are advised to monitor banks' lending behaviors closely to prevent excessive risk-taking that could jeopardize bank survival. This research contributes to the existing literature by proposing a comprehensive financial resilience model that can assist policymakers in evaluating the vulnerability of banks to potential crises.

Keywords: *Financial, Resilience, capital adequacy, management quality, bank liquidity and economic stability.*

Introduction

A stable banking sector is essential to economic growth as it drives financial expansion globally. However, economic and financial crises, such as the 1997–98 Asian financial crisis and the 2008 global financial meltdown triggered by the U.S. sub-prime mortgage collapse, have historically shaken public trust in financial systems, reducing demand for banking services and deterring foreign investment. Nigeria was not exempted, as the 2008 crisis weakened confidence in its financial system (Ozili, 2024). Bank stability is vital since bank failures can contract money supply, disrupt the payment system, and impair economic activity (Lucky, 2017). Regulatory authorities thus prioritize banking stability to avoid economic spillovers (Kirimi, et al, 2020). A fragile banking sector also burdens monetary authorities with unplanned interventions, as seen in

the 2008–2009 crisis when the Central Bank of Nigeria (CBN) injected ₦620 billion to stabilize the sector (Vaithilingam, et al, 2015; Ehiedu, et al, 2022).

The International Monetary Fund (IMF, 2020) defines a stable bank as one with strong capital, quality assets, sound management, and the capacity to withstand shocks. Similarly, the Federal Deposit Insurance Corporation (FDIC) assesses banking soundness using composite ratings. In response to global instability and local regulatory gaps, Nigeria's financial reforms—including the 1952 Banking Ordinance and adoption of Basel III—aim to improve resilience and risk oversight. To reinforce this, the CBN issued a circular in March 2024 revising minimum capital requirements: ₦500 billion for international, ₦200 billion for national, and ₦50 billion for regional commercial banks; ₦50 billion for merchant banks; and ₦10–₦20 billion for non-interest banks depending on scope. Key indicators of a resilient banking system include capital adequacy, asset quality, management efficiency, earnings, liquidity, and bank z-score (Ozili, 2024). This study focuses on these factors to assess their impact on Nigeria's economic stability using aggregate-level data.

Although several factors contribute to bank resilience—such as capital adequacy, asset quality, management efficiency, liquidity, and sensitivity to risk—recent developments highlight persistent challenges. For instance, the CBN's ₦700 billion (approx. USD 2 billion) bailout of Polaris Bank (formerly Skye Bank) illustrates the cost of poor risk oversight and non-compliance with prudential standards (Ozili, 2024; Onuorah & Ehiedu, 2022; Meteke, et al, 2022). Most Nigerian banking reforms have concentrated on recapitalization, often overlooking other resilience indicators. Moreover, many existing studies, both local and international (e.g., Erhijakpor, et al 2022; Seyedi & Abdoli, 2020; Ndungu, 2019), mainly explore the determinants of bank stability without adequately assessing how resilience affects national economic stability. Crucially, variables like bank z-score are often omitted, limiting the robustness of their models. This study addresses these gaps by examining how selected predictors of bank resilience influence Nigeria's economic stability at the macroeconomic level.

Review of Related Literature

This section critically explores the concept of financial resilience predictors and economic stability. It presents a comprehensive review of theoretical and empirical studies related to the topic and establishes the theoretical framework underpinning the study. The aim is to identify existing research gaps and situate the current investigation within the broader scholarly discourse.

Conceptual Review

Financial Resilience

Financial resilience is inherently multi-dimensional, making it complex to conceptualize. It generally refers to the capacity of financial systems to withstand and recover from financial shocks—both systemic and idiosyncratic. Ozili and Thankom (2018) describe financial resilience as the ability of a financial system to absorb shocks from normal or abnormal losses while maintaining functionality. Similarly, the World Bank (2021) posits that a stable financial system is one that can counteract imbalances arising either endogenously or due to exogenous economic shocks. Cobbinah, Zhongming, and Ntarmah (2020) define financial resilience as the ability of financial institutions to retain liquidity and operational efficiency amid varying economic conditions. According to Adaramola and Adejayan (2020), a financially resilient system is characterized by its capacity to generate informative signals for financial decision-making, sustain market incentives, and enable institutions and individuals to react effectively to market conditions.

Capital Adequacy Ratio (CAR): Capital Adequacy Ratio (CAR) is a critical measure that reflects a bank's capacity to absorb risk and potential losses. It represents the ratio of a bank's capital to its risk-weighted assets (Aigul, Xin, & Omaima, 2020; Onuorah & Nkwazema, 2016). Regulatory bodies such as the Central Bank of Nigeria (CBN) monitor CAR to ensure banks can withstand significant financial disruptions. Ozili (2024) and Ehiedu, et al. (2023) argues that while high capital ratios may signal stability, they could also result in reduced profitability as risk-averse banks may avoid lucrative but risky investment opportunities. In line with this, the CBN's 2024 recapitalization programme seeks to build more resilient banks capable of supporting Nigeria's aspiration for a $1 trillion economy by 2030 (CBN, 2024).

Asset Quality: Asset quality pertains to the health of a bank's loan portfolio. Effective asset allocation aims to balance profitability with liquidity while minimizing default risk (Onuorah, et al. 2019). Latief, Ashraf, and Nawaz (2019) assert that managing asset quality involves strategic planning to minimize bad loans and optimize bank performance.

Management Efficiency: Management efficiency, or the qualitative assessment of a bank's leadership and strategic decision-making, significantly influences bank performance (Bayem, et al, 2022). According to Lucky (2017), efficiency can be evaluated using indicators such as asset utilization ratio, expenditure-to-income ratio, and credit-to-deposit ratio. Effective management enhances resource allocation, operational planning, and profitability (Latief et al., 2019).

Bank Liquidity: Liquidity refers to a bank's ability to meet its financial obligations as they arise. Agbada (2013) defines liquidity as the capacity to fulfill cash and withdrawal demands while meeting loan obligations without compromising solvency. Liquidity is primarily supported through money market instruments like treasury bills and commercial papers, which are highly liquid and low-risk (Onuorah, et al, 2022).

Bank Z-Score: The Z-score is an aggregate measure of a bank's solvency risk. It considers return volatility and the buffer created by bank capital and returns (World Bank, 2024). A high Z-score implies a lower risk of insolvency. However, Ozili (2018) and Agbogun, et al (2022) noted that while a high Z-score indicates volatility, it also suggests reduced likelihood of a bank run when interpreted appropriately.

Economic Stability and Its Measurement

Economic stability is typically measured using real Gross Domestic Product (GDP) at constant prices. An upward trend in real GDP is interpreted as an indicator of positive economic health (World Bank, 2024; Onuorah, et al, 2020). A stable financial system facilitates economic growth by supporting transactions, reducing uncertainty, and allocating resources efficiently. According to Rizvi, et al (2019) and Onuorah et al (2020), financial system stability influences economic stability through four main channels: expansion relative to the real economy, financial deepening, increased cross-border banking, and technological advancement.

Theoretical Review

Several theoretical frameworks have been developed to explain the directional link between bank profitability and its influencing variables. This study is primarily grounded in the Theory of Bank Regulation (TBR), with supplementary insights drawn from the Bank Lending Channel Theory, Signaling Theory, Bankruptcy Cost Hypothesis, Risk-Return Hypothesis, and Agency Theory. Among these, the TBR, formulated by Acharya (2009), provides the main theoretical underpinning.

According to Acharya (2009) and Osiegbu, et al (2010), the role of banks as financial intermediaries exposes them to significant risks. One major concern is that if a bank collapses, depositors may face partial or total loss of their funds, especially when borrowers default on their obligations. The TBR emphasizes the importance of regulatory oversight, particularly regarding capital adequacy, as a mechanism to mitigate systemic risks and negative externalities associated with banking operations (Onuorah, 2018).

The application of this theory to the current study lies in its relevance to banking sector stability. A well-regulated banking system reduces transaction costs, enhances efficient fund allocation, and promotes customer trust. Conversely, instability within the sector not only diminishes profitability but also threatens overall macroeconomic stability (Nguyen, 2020).

Empirical Review

Edet (2024) analyzed the impact of banking sector stability on Nigeria's economic growth using a dynamic ARDL bounds testing approach over the period 2005–2022. Variables included in the model were the banking stability index, return on assets, financial depth, interest rate, and real GDP. The findings confirmed a long-run equilibrium relationship among the variables, revealing that improvements in bank stability, financial depth, and performance positively and significantly influence economic growth. The error correction term of -0.71 suggests that deviations from the long-term path are corrected by 71% in the subsequent quarter.

Ozili (2024) explored the influence of financial stability on Nigeria's economic growth between 1993 and 2017 using OLS estimation. His results indicated a positive association between financial stability and economic output, as reflected by the Z-Score. A lower insolvency risk and a reduction in non-performing loans (NPLs) were found to enhance economic performance. Interestingly, capital adequacy was found to have a negative impact on economic growth.

In a related study, Oyedokun and Orenuga (2023) evaluated the impact of financial stability on Nigeria's economic growth from 2002 to 2021. Using E-Views 9 for analysis, their findings revealed that ROA negatively and significantly influenced economic growth ($\beta = -0.051184$; $p = 0.0390$), while NPLs had an insignificant negative correlation ($\beta = -0.016001$; $p = 0.4983$). The study concluded that well-managed financial stability contributes to economic growth.

Stewart, et al (2021) assessed the relationship between bank stability and economic growth using a global panel dataset of over 100 countries (1995–2015). Employing the generalized method of moments (GMM), they found no evidence supporting a trade-off between regulatory capital and economic output. Rather, regulatory capital played a dual role in promoting both stability and output, especially when supported by strong institutional quality.

Erhijakpor et al. (2022) investigated macro-prudential determinants of Nigerian banks' stability from 1990 to 2020. Variables analyzed included RGDP growth, inflation, balance of payments, capital adequacy, liquidity ratio, and market risk sensitivity. Using the ARDL model, the study found that GDP growth significantly and positively affected financial stability in both short and long terms. Inflation, capital adequacy, and balance of payments negatively influenced stability in the short run, while liquidity had a significant positive effect, and market risk sensitivity had a short-term positive but long-term negative effect.

Alihodzic, et al (2020) analyzed the factors determining bank stability in the Balkan region and Turkey using multiple regression (ANOVA). Key findings indicated that GDP, net interest margin, the Lerner index, and cost-to-income ratios significantly influenced bank stability, while foreign bank asset shares and non-interest income had weaker impacts.

Koskei (2020) studied banking stability in Kenya from 2015 to 2019 using SPSS for multivariate analysis. The results showed that liquidity, inflation, and lending rates negatively and significantly affected banking stability. Meanwhile, loan growth and return on equity were positively and significantly associated with stability. Exchange rate effects were positive but insignificant, and both ROA and public debt had insignificant negative impacts.

In another study, Ozili (2019) used panel data from 2003 to 2016 to explore determinants of banking stability in Nigeria. Variables included inflation, NPLs, regulatory capital, financial depth, and banking concentration. The Z-Score served as the stability metric. Results highlighted that bank efficiency, NPLs, capital ratios, and financial depth are significant predictors of banking stability.

Sotiropoulou, et al (2019) evaluated the interplay between financial development, stability, and growth across 28 EU countries. Their panel regression showed that factors such as private sector credit, liquidity liabilities, bank assets, and market capitalization positively affected growth. However, financial instability—measured by the NPL ratio—negatively influenced growth.

Izhar (2018) compared the financial stability of banking systems in Pakistan and India from 1996 to 2010. The analysis found that capital adequacy, investments in both approved and unapproved securities, and ROE significantly affected bank stability. On the other hand, inflation, unemployment, and foreign direct investment had a statistically weaker impact.

Finally, Ngaira and Miroga (2018) conducted a descriptive survey on listed commercial banks in Kenya to determine what affects their financial stability. Their findings indicated that bank size and interest rate had a significant positive impact on the financial stability of these institutions.

Research Methodology

This section outlines the framework adopted for conducting the research, covering the research design, target population and sample size, data collection approach, model specification, and expected outcomes. It also includes the econometric techniques and diagnostic tests used in the data analysis process.

Research Design

This study employs an ex-post facto research design, which is appropriate for analyzing events that have already occurred. The justification for selecting this approach lies in its retrospective nature, allowing for the analysis of data without manipulating or influencing the variables under investigation. This type of design is ideal for studies relying on historical data to identify cause-effect relationships without experimental interference (Onuorah, 2015).

Population and Sample Size

The target population for this study includes the entire Nigerian banking industry as of December 31, 2022. Accordingly, the sample size is equivalent to the population size, as the analysis relies on industry-level aggregate data rather than data drawn from individual financial institutions (Onuorah Aet al, 2011). This choice is due to the fact that data were obtained from comprehensive national sources such as the Central Bank of Nigeria (CBN) rather than from the financial statements of individual banks.

Data Collection Method

Data for this study were sourced entirely from secondary sources. This approach was selected due to its reliability, affordability, and accessibility, particularly when analyzing macroeconomic and

financial sector indicators. The specific sources of data include the CBN Statistical Bulletin (2022), CBN Financial Stability Report (2022), and the World Bank database (2022). These data sources provide credible and consistent information relevant to the variables under study.

Data Analysis Technique

The study utilizes the Autoregressive Distributed Lag (ARDL) estimation technique to evaluate both short-term and long-term relationships between predictors of banking resilience and economic stability. The ARDL model is suitable for a mixture of stationary [I(0)] and first-difference stationary [I(1)] variables, enabling robust co-integration analysis even in the presence of small sample sizes. Before implementing the ARDL model, a unit root test was conducted to examine the stationarity of the time series data. Following this, the ARDL bounds test for co-integration was applied to determine whether a long-run equilibrium relationship exists among the variables. If co-integration is confirmed, the ARDL long-run form and error correction model (ECM) is then estimated to assess how quickly variables adjust back to equilibrium following a disturbance. To ensure model robustness, several diagnostic and specification tests were performed, including:

Normality Test: To verify the distribution of residuals.

Variance Inflation Factor (VIF) and Tolerance Test: To assess the presence and severity of multicollinearity among independent variables.

Heteroskedasticity Test: To determine whether the variance of errors is constant across observations.

Ramsey RESET Test: For model specification adequacy.

CUSUM and CUSUM of Squares Tests: To evaluate the stability of the model over time.

All statistical analyses were conducted using E-Views version 9.0, selected for its capability to handle time series data efficiently and its ability to produce comprehensive econometric results.

Model Specification

The model for the study borrowed leaf from the empirical study of Lucky (2017) with little modification. Our model is represented thus:

$$RGDP = \beta_0 + \beta_1 CAR + \beta_2 ASQ + \beta_3 MGE + \beta_4 BLR + \beta_5 BZS + \varepsilon it. \quad (1)$$

RGDP= Real Gross Domestic Product

CAR = Capital Adequacy Ratio

ASQ = Asset Quality

MGE = Management Efficiency

BLR = Bank Liquidity ratio

BZS = Bank Z-score

β_0 = Constant Value

β_1-β_5 = Parameter Estimates

Model Specification (ARDL Form)

Econometrically, the model earlier introduced in its general form can be restated in the **Autoregressive Distributed Lag (ARDL)** format as follows:

$$\Delta\log(RGDPt)=\alpha0+\alpha1\Delta\log(RGDPt-1)+i=0\sum m\delta1\Delta CARt-i+j=0\sum n\delta2\Delta\log(ASQt-j)+j=0\sum o\delta3\Delta\log(MGEt-j)+k=0\sum p\delta4\Delta\log(BLRt-k)+l=0\sum q\delta5\Delta\log(BZSt-l)+\mu t$$

Where:

Δ denotes the first difference operator, used to transform non-stationary series into stationary ones.

og(RGDPt): Natural logarithm of Real Gross Domestic Product at time *t*.

CARt: Capital Adequacy Ratio.

ASQt: Asset Quality.

MGEt: Management Efficiency.

BLRt: Bank Lending Rate.

BZSt: Banking Sector Stability Index.

α0: Intercept term.

δ1,δ2,δ3,δ4,δ5: Short-run dynamic coefficients of the respective variables.

μt: Stochastic error term, assumed to satisfy standard classical linear regression assumptions (i.e., zero mean, constant variance, and no autocorrelation).

The model structure permits both short-run dynamics and long-run equilibrium relationships among the variables. While the differenced terms capture short-run adjustments, long-run relationships are investigated through the lagged level values in the error correction representation of the ARDL model (presented in the next section if applicable).

Table3.1: Analysis of Study Variable's Aprioiri (Economic) Expectations:

Denotation	Study Variable	Description	Nature of Variable	Aprioiri Expectation
RGDP	Real Gross Domestic Product	Percentage Change in RGDP	Regressed	Nil
Bank-Specific Determinants of Banks' Financial Stability				
CAR	Capital Adequacy Ratio	Regulatory Capital to Risk-Weighted Assets ratio	Regressor	+
ASQ	Asset Quality	Ratio of DMBs'loans to its Asset	Regressor	+
MGE	Management Efficiency	Operating income to interest expense ratio	Regressor	+
BLR	Bank Liquidity Ratio	Aggregate bank liquidity Ratio	Regressor	+
BSC	Bank Z-score	ROA+(equity/assets))/sd(ROA)	Regressor	+

Source: Researcher's Compilation (2024)

Results and Discussion

This section presents and interprets the data utilized in the study, including the outcomes of various statistical analyses conducted. The analytical process encompasses descriptive statistics,

correlation matrix, and regression estimates for the variables under investigation. Additionally, the model was subjected to robustness tests to ensure the reliability and validity of the findings. The analysis was based on a set of explanatory variables—referred to as indicators of banking resilience—which include the capital adequacy ratio, asset quality, management efficiency, bank liquidity, and the Z-score, with real gross domestic product (RGDP) serving as the dependent variable. The time frame covered by the study extends from 1993 to 2022.

Descriptive Statistics

This section contains the description of the properties of the variables ranging from the mean of each variable, minimum, maximum and standard deviation. The summary of the descriptive statistics is presented in table4.1:

Table 4.1: Summary of Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Std.Dev.	Observations
RGDP	10.45235	11.36470	13.28010	10.90000	4.813046	30
CAR	16.84806	17.66000	22.60000	1.800000	4.816677	30
ASQ	25.59839	25.60000	61.05000	0.300000	13.30346	30
MGE	5.832258	6.450000	13.28000	-13.9000	5.386871	30
BLR	47.79677	46.23000	81.42000	26.39000	12.55578	30
BSC	12.71207	13.37200	20.06930	5.054230	4.895272	30

Source: EconometricViewsVersion9.0Output (2021)

Table 4.1 provides a summary of the descriptive statistics for the variables under consideration, covering a 30-year span from 1993 to 2022. The real gross domestic product growth rate (RGDP) has a mean value of 10.45235, indicating the average economic growth over the study period. With a standard deviation of 4.813046, the dispersion around the mean is relatively low, signifying that the RGDP data are tightly clustered. The minimum and maximum RGDP values are 10.90000 and 13.28010, respectively, suggesting a relatively stable and normally distributed dataset. The capital adequacy ratio (CAR), representing the regulatory capital to risk-weighted assets, recorded a mean of 16.84806. The standard deviation of 4.816677 implies minimal variability around the mean, indicating that most values are closely distributed. The CAR values ranged from 1.80000 to 22.60000 over the period, reflecting fluctuations in the regulatory capital strength of banks. Asset quality (ASQ), proxied by the ratio of deposit money banks' (DMBs) loans to total assets, exhibited an average value of 25.59839 and a standard deviation of 13.30346. These figures suggest moderate variability in asset quality. The ASQ recorded a minimum of 0.300000 and a maximum of 61.05000, implying diverse performance levels among banks during the observed years. Management efficiency, represented by the ratio of operating income to interest expense (MGTQ), had a mean of 5.832258 and a standard deviation of 5.386871, indicating that management performance varied moderately. The range spanned from -13.90000 to 13.28000, reflecting significant differences in managerial cost control across the banking sector. Bank liquidity (BLR), measured by the aggregate liquidity ratio, showed a mean of 47.79677 and a standard deviation of 12.55578. These values imply relatively stable liquidity conditions. BLR fluctuated between a low of 26.39000 and a high of 81.42000 over the study period. Finally, bank stability, as indicated by the Z-score, reported a mean value of 12.71207 and a standard deviation of 4.895272, reflecting consistent levels of financial soundness. The Z-score ranged from 5.054230 to 20.06930

throughout the study duration, pointing to varying degrees of risk exposure among banks. To ensure consistency and eliminate issues related to variable scaling, all data series were transformed using logarithmic functions before conducting the regression analysis.

Correlation Analysis

This sub-section is meant to explain the level of relationship that exists ordinarily among the variables under investigation. It helps to reveal high relationship among variables which is surmountable to multi-collinearity as presented in the Diagnostic tests. The result is presented intable4.2 below:

Table 4.2: Summary of Correlation Statistics

	ZSCORE	RGDP	INFR	BOP	CAP	LIQ
CAR	0.790136	1.000000				
ASQ	0.040157	-0.242053	1.000000			
MGE	0.601516	-0.159711	0.108815	1.000000		
BLR	-0.559711	0.127140	-0.030414	-0.016100	1.000000	
BSC	0.656100	0.269437	-0.241849	-0.197738	0.167355	1.000000

Source: Econometric Views Version 9.0 (2024)

The results presented in Table 4.2 indicate that capital adequacy ratio (CAR), asset quality (ASQ), management efficiency (MGTQ), and bank liquidity ratio (BLR) all exhibit positive associations with the real gross domestic product (RGDP) growth rate. These relationships range from moderate to strong, suggesting that improvements in these indicators tend to correspond with higher levels of economic growth. Conversely, the bank Z-score, which serves as a proxy for financial stability, shows a negative correlation with RGDP, implying that greater bank stability, as measured by lower risk exposure, may not necessarily align with economic expansion in the short term. Moreover, the correlation coefficients show that the independent variables do not exhibit strong interrelationships among themselves. This finding reduces the likelihood of multicollinearity concerns within the regression model. To validate this assumption, a series of diagnostic tests were conducted, including variance inflation factors (VIF) and tolerance values. The outcomes of these multicollinearity tests are summarized in Table 4.3.

Table4.3: Multi-collinearity Tests

Variables	VIF	TOV=1/VIF	Decision
CAR	1.2875	0.7767	No multi-collinearity Problem
ASQ	2.1709	0.4606	No multi-collinearity Problem
MGE	1.1695	0.8551	No multi-collinearity Problem
BLR	3.2119	0.3113	No multi-collinearity Problem
BSC	3.9898	0.2506	No multi-collinearity Problem
Average	**2.3659**	**0.5309**	**No multi-collinearity Problem**

NOTE: VIF-Variance Inflation Factors; TOV=Tolerance Value
Source: E-Views Version 9.0 (2024)

Table 4.3 presents the results of the multicollinearity test, which shows that the Variance Inflation Factor (VIF) values for the explanatory variables—capital adequacy ratio, asset quality, management efficiency, bank liquidity ratio, and bank Z-score—are 1.2875, 2.1709, 1.1695,

3.2119, and 3.9898, respectively. These values fall well below the conventional threshold of 10, indicating the absence of serious multicollinearity concerns among the regressors. On average, the model's VIF is calculated at 2.3659, which further supports the robustness of the variable selection. In addition, the tolerance values for all predictors exceed the minimum acceptable benchmark of 0.10, which reinforces the finding that multicollinearity is not a problem in this model. Thus, the model is considered statistically sound for regression analysis.

Unit Root Test

Considering the fact that, the study variables under investigation is time series, the model was subjected to unit root test. The null hypothesis of the PP test is that, accept that the data series exhibit unit root (non-stationarity) if the ADF Test Statistics is less than ADF test Critical @ 5%Level otherwise accept the alternative if the ADF Test Statistics is greater than ADF test Critical@ 5% Level. Meanwhile, the null hypothesis of the ADF test is that, accept that the data series exhibit unit root (non-stationarity) if the ADF Test Statistics is less than ADF test Critical @ 5%Level otherwise accept the alternative if the ADF Test Statistics is greater than ADF test Critical@5%Level. Thus, the Unit root test is therefore presented in table 4.4:

Table4.4: Summary of ADF Test

Parameter	ADF test statistic	Test critical value @ 5%	Prob.*	Order of Integration	Decision
RGDP	-8.154405	-3.574244	0.0000	1(1)	Stationary
Z-Score	-5.133256	-3.574244	0.0014	1(1)	Stationary
CAR	-3.185670	-2.967767	0.0309	1(0)	Stationary
ASQ	-3.465898	-2.967767	0.0163	1(0)	Stationary
BLR	-2.783620	-2.967767	0.0072	1(0)	Stationary
BSC	-3.539468	-2.967767	0.0001	1(0)	Stationary

Source: Econometric Views Version 9.0(2024)

Table 4.4 presents the stationarity results for all the variables employed in the analysis, based on the Augmented Dickey-Fuller (ADF) test. The results indicate that capital adequacy ratio, asset quality, management efficiency, and bank liquidity ratio are stationary at level. Conversely, both the bank Z-score and real gross domestic product (RGDP) became stationary only after first differencing. This mixed order of integration—where some variables are integrated at level I(0) and others at first difference I(1)—provides a strong justification for employing the Auto-Regressive Distributed Lag (ARDL) model, as it is capable of handling variables with different orders of integration without requiring all series to be at the same level of stationarity.

ARDL Bounds Cointegration Test

In a bid to evaluate the absence of a long-run equilibrium relationship between the regressed and regressor, the ARDL approach was used. The ARDL bounds cointegration test is presented below:

Table4.5: ARDL Bounds Test

Date:01/04/24Time: 01:49		
Sample: 1993-2022		
Includedobservations:30		
Test Statistic	Value	K
F-statistic	5.217128	5
Critical Value Bounds		
Significance	I0Bound	I1Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: Econometric Views Version 9.0(2024)

Table 4.5 presents the results of the ARDL bounds testing procedure for cointegration. The computed F-statistic is 5.217128, which exceeds the upper critical bounds at the 10%, 5%, and 2.5% significance levels (2.43, 2.86, and 3.25, respectively). This outcome confirms the existence of a long-run equilibrium relationship between the indicators of bank financial resilience and economic stability in Nigeria. To further validate the adequacy of the model, the Model Selection Criteria Table was employed, and its results are displayed in Table 4.6.

Table4.6: Model Selection Criteria Table

Dependent Variable: PSA
Date:04/20/24Time: 11:38
Sample:131
Includedobservations:30

Model	LogL	AIC*	BIC	HQ	Adj.R-sq	Specification
1	-74.613032	5.440869	5.767815	5.545462	0.610071	ARDL(1,0,0,0, 0, 0)

Source: EconometricViewsVersion9.0(2024)

The Model Selection Criteria Table as reported in table 4.6 evidenced that, the model follows ARDL (1, 0, 0, 0, 0, 0). This suggests that, the model follows the ARDL(1, 0, 0, 0, 0, 0) approach.

Other Diagnostic Tests

To further ensure that, the regression estimate is robust, the following diagnostic tests were conducted:

Table4.7: Other Diagnostic Tests

Heteroskedasticity Test	F-statistic	0.686932	Prob.F(5,24)	0.6380
Ramsey RESET Test	F-statistic	0.012851	(1,24)	0.9112

Source: EconometricViewsVersion9.0(2024)

From table 4.7, it was deduced that the null-hypothesis of homoscedasticity was not rejected because the probability value of the chi-square was more than 5% significance level. Thus, the null hypothesis that states that the residuals have no constant variance and zero mean is rejected. This implies that the residual of the model was homoscedastic.

Regression Result

The ARDL short and long run estimate is presented in 4.8:

Table4.8: ARDL Cointegrating and Long Run Form

Dependent Variable: RGDP				
Selected Model: ARDL (1,0, 0,0,0,0)				
Sample:1993 2022				
Includedobservations:30				
Cointegrating Form				
Variable	**Coefficient**	**Std.Error**	**t-Statistic**	**Prob.**
D(CAR)	0.535730	0.117782	4.548503	0.0000
D(ASQ)	-0.427887	0.168474	-2.539779	0.0127
D(MGE)	0.537139	0.089812	5.980717	0.0000
D(BLR)	0.109101	0.043980	2.480691	0.0217
D(BSC)	-0.430040	0.180991	-2.376031	0.0258
CointEq(-1)	-0.618428	0.182906	-3.381123	0.0025
Long Run Coefficients				
Variable	**Coefficient**	**Std.Error**	**t-Statistic**	**Prob.**
CAR	0.528860	0.127013	4.163828	0.0001
ASQ	-0.457201	0.177782	-2.571689	0.0117
MGE	0.582306	0.179534	3.243430	0.0036
BLR	0.143807	0.054303	2.648222	0.0150
BSC	-0.574022	0.185489	-3.094648	0.0051
C	1.266207	0.208272	6.079586	0.0000
R-squared	0.889005		F-statistic	29.36790
Adjusted R-squared	0.858734		Prob(F-statistic)	0.000000
Durbin-Watsonstat				2.184282

Source: EconometricViewsVersion9.0(2024)

The ARDL cointegration output reveals that the error correction term is both negative and statistically significant, indicating a return to long-run equilibrium following a short-run disturbance. Specifically, approximately 61.84% of the prior period's deviation from equilibrium is corrected in the current period, signifying a relatively high speed of adjustment. Furthermore, the adjusted R-squared statistic—accounting for degrees of freedom—shows a value of 0.8587. This suggests that 85.87% of the total variation in the dependent variable, real gross domestic product (RGDP), can be explained by the independent variables representing banking sector resilience (such as capital adequacy, asset quality, management efficiency, liquidity, and Z-score). The remaining 14.13% of variation is attributable to other unobserved factors captured by the model's error term. The F-statistical probability value, which is effectively zero, confirms the overall significance of the regression model. This leads to the rejection of the null hypothesis that

all explanatory variables have zero coefficients. In practical terms, it means that at least one predictor variable significantly influences the dependent variable, although this result does not indicate which specific one. Additionally, the Durbin-Watson (DW) statistic, used to assess the presence of serial correlation among residuals, is reported as 2.184282. Since this fall within the acceptable range (between 2 and 4), it implies that the model does not suffer from autocorrelation, affirming its reliability—provided further diagnostic tests do not suggest otherwise.

=Table4.9: Test of Research Hypotheses-Cointegrating and Long Run Coefficients

ARDL Cointegrating Form			
Variable	**Coefficient**	**Prob.**	**Decision**
HO_1:D(CAR)G$RGDP$	0.535730	0.0000	Reject$H0_1$
HO_2:D(ASQ)G$RGDP$	-0.427887	0.0127	Reject$H0_2$
HO_3:D(MGE)G$RGDP$	0.537139	0.0000	Reject$H0_3$
HO_4:D(BLR)G$RGDP$	0.109101	0.0217	Reject$H0_4$
HO_5:D(BSC)G$RGDP$	-0.430040	0.0258	Reject$H0_5$
ARDL Long Run Form			
Variable	**Coefficient**	**Prob.**	**Decision**
HO_1:CARG$RGDP$	0.528860	0.0001	Reject$H0_1$
HO_2:ASQG$RGDP$	-0.457201	0.0117	Reject$H0_2$
HO_3:MGEG$RGDP$	0.582306	0.0036	Reject$H0_3$
HO_4:BLRG$RGDP$	0.143807	0.0150	Reject$H0_4$
HO_5:BSCG$RGDP$	-0.574022	0.0051	Reject$H0_5$

Note: Gdenotes has no significant effect
Source: EconometricViewsVersion9.0(2024)

Discussion of Findings

The empirical results of the study are discussed in line with the objectives and the a priori expectations. Each independent variable's relationship with economic stability is elaborated below:

Capital Adequacy Ratio (CAR) and Economic Stability

The results from the ARDL cointegration and long-run analysis reveal that capital adequacy (CAR) maintains a positive and statistically significant influence on economic stability in both the short and long run. Coefficients of 0.535730 (short-run) and 0.528860 (long-run) indicate that higher levels of capital adequacy enhance macroeconomic stability, supporting the theoretical assumption that a well-capitalized banking sector contributes positively to financial system robustness.

This outcome is consistent with previous empirical research which argues that strong capital buffers protect banks from economic shocks and reduce systemic risk (Edet, 2024; Erhijakpor et al., 2022; Alihodzic et al., 2020; Koskei, 2020; Sotiropoulou et al., 2019; Ozili, 2019; Onuorah, 2009; Onuorah, 2019; Osiegbu & Onuorah, 2011). However, the finding diverges from those of Ozili (2024), Oyedokun and Orenuga (2023), and Stewart, Chowdhury, and Arjoon (2021), who suggest a neutral or even adverse relationship between CAR and economic performance. The statistically significant p-values (0.0000 and 0.0001, respectively) affirm that capital adequacy is a strong determinant of economic stability, aligning with current policy initiatives such as the bank recapitalization effort launched by the Nigerian government on March 28, 2024.

Asset Quality (ASQ) and Economic Stability

Asset quality also demonstrated a positive and statistically significant relationship with economic stability. With coefficients of 0.427887 (short-run) and 0.457201 (long-run), the findings suggest that improved asset quality—reflected in a lower proportion of non-performing loans—enhances the resilience of the banking sector and by extension, the economy. This conforms with theoretical expectations that better-performing assets strengthen financial intermediation and foster economic growth. The result is reinforced by findings from Edet (2024), Erhijakpor et al. (2022), Alihodzic et al. (2020); Onuorah (2019), and others. Nevertheless, contrary evidence from Ozili (2024), Oyedokun and Orenuga (2023); Onuorah, et al (2022); Oboro & Onuorah (2022); Ehiedu, et al (2022) and Stewart et al. (2021) point to contextual or methodological differences that warrant further investigation.

Management Quality (MGTQ) and Economic Stability

Management efficiency was also found to significantly influence economic stability. Both the short-run and long-run coefficients—0.537139 and 0.582306, respectively—imply that enhanced managerial effectiveness in banks leads to improved performance and greater macroeconomic steadiness. The result substantiates the view that prudent management leads to optimal resource allocation and risk mitigation within financial institutions (Alihodzic, Ibrahim, & Dogan, 2020). Conversely, studies such as Seyedi and Abdoli (2020) have found management quality to be a more critical factor in determining bank-specific performance than general economic stability.

Bank Liquidity Ratio (BLR) and Economic Stability

Findings show that bank liquidity has a significant and positive impact on economic stability, with coefficients of 0.109101 and 0.143807 in the short and long run, respectively. The results suggest that liquidity sufficiency enables banks to meet short-term obligations and absorb shocks, thereby stabilizing the wider economy. This is in line with conventional theory and is supported by studies such as Edet (2024), Erhijakpor et al. (2022), and Koskei (2020). Nonetheless, contrasting opinions from Ozili (2024), Oyedokun and Orenuga (2023); Onuorah & Osuji (2014); Onuorah, & Ebimobowei (2012) and Stewart et al. (2021) highlight the need for more context-specific research, particularly in emerging markets like Nigeria.

Bank Stability (Z-Score) and Economic Stability

Interestingly, the Z-score—a proxy for overall bank stability—reported a negative relationship with economic stability, with coefficients of -0.430040 and -0.574022 for the short and long run, respectively. This counterintuitive outcome may indicate that higher bank stability (as indicated by Z-score) does not immediately translate into macroeconomic gains, perhaps due to underlying structural inefficiencies or market distortions. Despite the negative coefficients, the relationship is statistically significant (p-values of 0.0025 and 0.0000), suggesting that bank risk exposure, captured by Z-score, remains a relevant factor in determining economic resilience. These findings resonate with Edet (2024); Onuorah (2019) and Alihodzic et al. (2020), though they stand in contrast to the conclusions of Ozili (2024) and Stewart et al. (2021), who report a direct positive correlation.

Summary of Findings

The key findings of this study are as follows:

1. Capital Adequacy Ratio (CAR) has a significant positive effect on economic stability in Nigeria, both in the short and long run.
2. Asset Quality (ASQ) has a significant negative effect on economic stability in Nigeria, both in the short and long run.
3. Management Quality (MGTQ) has a significant positive effect on economic stability in Nigeria, both in the short and long run.
4. Bank Liquidity (BLR) has a significant positive effect on economic stability in Nigeria, both in the short and long run.
5. Bank Z-Score (Z-Score) has a significant negative effect on economic stability in Nigeria, both in the short and long run.

Conclusion

This study aimed to explore the impact of banks' financial resilience predictors on economic stability in Nigeria, using the Autoregressive Distributed Lag (ARDL) approach. Data was sourced from all quoted commercial banks in Nigeria, covering the period from 1993 to 2022. The findings of this study suggest that capital adequacy ratio, management quality, and bank liquidity are significant positive predictors of economic stability, while asset quality and bank z-score demonstrate a negative relationship with stability. Based on these results, the study concludes that strengthening these key resilience predictors is vital for improving the stability of the Nigerian banking sector and the broader economy.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Regulatory Compliance: The Central Bank of Nigeria (CBN) should enforce strict compliance with the capital adequacy ratio across all commercial banks. Ensuring banks maintain adequate capital buffers would enhance the sector's performance and contribute to overall economic stability.
2. Credit Culture and Governance: There is a need for a sound credit culture, robust credit policies, and effective corporate governance to reduce the incidence of non-performing loans, which can undermine the financial health of banks and the broader economy.
3. Training and Capacity Building: Bank owners should prioritize ongoing training and re-training programs for their staff to enhance their competence in managing financial risks. Furthermore, fostering good corporate governance practices within the Nigerian banking sector should be encouraged to improve management quality.
4. Liquidity Management: Regulators must ensure that commercial banks maintain adequate liquidity levels. This is crucial, as liquidity is a key determinant of financial stability in Nigeria. The CBN should introduce periodic assessments to monitor banks' liquidity positions.
5. Monitoring Lending Practices: The regulatory authorities should continuously monitor the lending behaviors of banks to prevent the incurrence of excessive risk. Overexposure to high-risk lending can jeopardize the solvency of individual banks and create systemic risk within the financial system.

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