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MACROECONOMIC VOLATILITY AND BANK SOUNDNESS IN NIGERIA

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ABSTRACT

This study used annual time series data from 1994 to 2024 to investigate the effect of macroeconomic variables on bank soundness in Nigeria. The Z-score (LNZSCORE) served as a proxy for bank soundness, and economic growth (LNGDP), inflation (LNINF), exchange rate (LNEXR), and monetary policy rate (LNMPR) were the explanatory factors. The Autoregressive Distributed Lag (ARDL) method was used in the study to evaluate the relationship's long-term and short-term dynamics. A long-run equilibrium link between the variables was identified by the ARDL results. With a coefficient of 3.7416 ($p < 0.01$), economic growth had a long-term positive and statistically significant impact on bank soundness. This suggests that consistent increases in economic activity improve the stability of the banking sector by boosting bank profitability and borrowers' ability to repay loans.The long-term statistical insignificance of inflation, exchange rates, and monetary policy rates, however, indicates that their long-term impacts on bank soundness were limited during the study period. The short-run error correction model further demonstrated that while exchange rate variations have a delayed beneficial impact on bank stability, economic growth has a major impact on bank soundness across many lags. The results indicate that while macroeconomic shocks like exchange rate changes may primarily impact bank stability in the short term, steady economic growth is crucial to bolstering the resilience of the banking system.In order to improve the stability of Nigeria's banking system, the report suggests policies that support steady economic growth, careful monetary management, and efficient financial sector regulation..

Key words: *Bank Stability, Exchange Rates, Inflation, Monetary Policy Rates, ARDL Model*

INTRODUCTION

Especially in developing nations like Nigeria, the stability of the banking industry is essential to maintaining financial stability and fostering economic expansion. A strong banking system promotes investment, improves credit intermediation, and fortifies resistance to

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macroeconomic shocks. However, during the past few decades, Nigeria's banking sector stability has been seriously threatened by ongoing macroeconomic volatility, which is typified by inflationary pressures, exchange rate fluctuations, and interest rate instability (Enebeli-Uzor, 2024). Research indicates that metrics of bank soundness, such as the non-performing loan ratio, capital adequacy, and overall financial resilience, are highly correlated with macroeconomic conditions (Aliyu, 2023).

While strong economic growth tends to increase financial resilience, recent studies tailored to the Nigerian context show that exchange rate volatility and high interest rates have a negative impact on bank performance and stability (Mosaku & Adebisi, 2023; Mohammed, Bashir & Zubairu, 2024). For instance, Ogunlokun and Adebisi (2023) discovered that economic factors and lending rates have a substantial impact on bank performance throughout Nigeria's Fourth Republic period, demonstrating the complex relationship between macro-shocks and banking outcomes in long-run equilibrium. Despite this expanding body of research, the majority of studies either concentrate on short-term samples or a subset of macroeconomic variables, and they frequently end before significant structural changes like the depreciation of the Naira in 2016 and the post-COVID-19 economic rebound(Afolabi et al., 2025; Ademola et al., 2024; Mohammed et al., 2024; Enebeli-Uzor, 2024). Comprehensive long-term research on the dynamic interaction between macroeconomic factors and bank soundness over protracted periods reflecting structural reforms and significant economic events is still required. Therefore, from 1994 to 2024, this study examines the impact of important macroeconomic variables on Nigerian bank soundness, including real GDP growth, inflation, currency rates, and monetary policy rate (MPR). The study captures both short-run dynamics and long-run linkages using the Autoregressive Distributed Lag (ARDL) bounds testing approach, offering data that can guide financial sector regulation and macroprudential policy.

Objective

The study sought to ascertain if Macroeconomic Volatility has any significant effect on Bank Soundness in Nigeria

LITERATURE REVIEW

Macroeconomic Volatility

Macroeconomic volatility is the term used to describe changes or instability over time in important aggregate economic indicators including GDP, inflation, currency rates, interest

rates, and unemployment. It is frequently linked to business cycles, external shocks, inconsistent policies, and structural imbalances. It represents the level of uncertainty and variability in an economy's overall performance (Aizenman, Chinn, & Ito, 2023). Increased systemic risk, weakened financial intermediation, and distorted investment choices are all consequences of an unstable economic environment, which is indicated by high macroeconomic volatility. Variability in GDP growth, inflation, exchange rate fluctuations, and interest rate instability are frequently used as proxies for macroeconomic volatility in empirical literature (Bussière et al., 2022). Commodity price shocks, capital flow reversals, fiscal imbalances, and exchange rate pressures frequently increase volatility in emerging countries (Kose & Terrones, 2023). The real and financial sectors may experience uncertainty as a result of these swings. The banking system is significantly impacted by macroeconomic volatility. Exchange rate and inflation fluctuations can impair capital adequacy situations, raise credit risk, and decrease loan quality. In a similar vein, erratic GDP growth impacts borrowers' ability to repay loans, which raises non-performing loans (NPLs) and lowers bank profitability (Phan et al., 2023). Lending margins and liquidity risk are also impacted by interest rate volatility, especially in banking systems with significant exposure to interest-sensitive assets and liabilities.

The Financial Instability Hypothesis, which postulates that economic oscillations can spread financial fragility through leverage cycles and risk mispricing, is theoretically closely related to macroeconomic volatility. Financial institutions are especially susceptible to macroeconomic instability in developing countries like Nigeria, where volatility is often caused by changes in exchange rates, policy shocks, and reliance on oil prices. In general, macroeconomic volatility is a crucial factor in determining bank soundness and financial stability since it reflects the unpredictability of economic fundamentals.

Bank Soundness

According to Áramková and Szováková (2022), bank soundness is defined as a banking institution's overall financial health, resilience, and stability so that it can sustainably carry out its essential operations, including accepting deposits, extending credit, managing risks, and facilitating payments, without being unduly vulnerable to internal weaknesses or external shocks. A sound bank is one that complies with regulatory prudential standards, has enough capital buffers, limits risk exposure, maintains asset quality, and consistently produces profits. Accordingly, soundness is both a macro-prudential indicator that reflects systemic stability

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and a micro-prudential notion that focuses on the performance of individual banks (Beck, Damongo, & Schmukler, 2023).

The Z-score, Non-Performing Loan (NPL) ratio, Capital Adequacy Ratio (CAR), and Return on Assets (ROA) are examples of quantitative indicators that are frequently used in the literature to operationalize bank soundness. Together, these metrics evaluate a bank's capacity to withstand losses, keep sufficient capital in relation to risk, and preserve profitability (González & Quesada, 2024). For instance, larger NPL ratios indicate declining asset quality and decreased stability, whereas higher Z-scores suggest a lesser likelihood of insolvency, showing stronger soundness (Alhassan, Asamoah & Addai, 2023). The efficacy of risk management techniques is also reflected in soundness. In general, banks are more resistant to macroeconomic volatility when they have strong credit evaluation processes, diversified loan portfolios, and careful liquidity management (Khan & Zaki, 2023). Regulations like Basel III, which prioritize greater capital thresholds and liquidity coverage ratios to reduce systemic risk, also have an impact on bank soundness (Duygun & Kocoglu, 2024). Economically speaking, sound banks boost investor confidence, facilitate financial intermediation, and promote economic expansion. On the other hand, limited capital, high non-performing loans, or low profits make unsound banks more vulnerable to crises, which could have a cascading effect on the financial system and the economy as a whole (Beck et al., 2023).

Theoretical Review

Financial Instability Hypothesis (FIH)

In order to explain how times of economic stability might paradoxically result in financial fragility, Minsky (1986) put forth the Financial Instability Hypothesis. Minsky (1986) asserts that when the economy is stable, banks and investors gain confidence, which promotes greater leverage and riskier lending practices. The banking system becomes more susceptible to shocks like inflation surges, currency devaluation, or abrupt economic downturns as a result of this excessive risk-taking. Kindleberger and Aliber (2011) further stress that these kinds of actions can lead to financial crises by lowering the quality of assets and raising the number of non-performing loans, which eventually compromises the stability of banks. This viewpoint is supported by empirical data; Phan et al. (2023) demonstrate that macroeconomic uncertainty considerably raises banks' risk exposure and lowers capital adequacy, particularly in emerging nations.Although the FIH offers a crucial behavioural framework for

comprehending banking crises, it is less accurate and more generic when it comes to operationalizing bank soundness through quantifiable measures.

Bank Capital Channel Theory

The structural importance of bank capital in transferring macroeconomic shocks to financial stability is highlighted by the Bank Capital Channel Theory, which was developed by Bernanke and Gertler (1995). Adverse macroeconomic conditions, such as slower GDP growth, rising inflation, or exchange rate changes, can reduce banks' capital through increased credit losses and deteriorating asset quality, claim Bernanke and Gertler (1995). Bank soundness is weakened by less capital because it makes it more difficult for banks to meet regulatory requirements, offer credit, and absorb additional losses. This view is supported by recent research: Beck et al. (2023) show that capital adequacy mediates the effect of macroeconomic volatility on bank stability, and González and Quesada (2024) show that metrics like the capital adequacy ratio and Z-score accurately reflect banks' ability to withstand economic shocks.The Bank Capital Channel Theory serves as the theoretical foundation for this investigation. There are two reasons why the adoption is appropriate. First, in line with the study's dependent variables, such as Z-score, non-performing loan ratio, and capital adequacy ratio, the theory offers a precise and measurable mechanism connecting macroeconomic indicators, such as GDP growth, inflation rate, exchange rate, and monetary policy rate, to bank soundness (Bernanke & Gertler, 1995; Beck et al., 2023). Second, it enables thorough empirical testing with econometric models that capture both long-term and short-term dynamics, like the ARDL framework. The Bank Capital Channel Theory is more accurate and appropriate for operationalizing macroeconomic influences on bank soundness in the Nigerian setting, even though the Financial Instability Hypothesis (Minsky, 1986; Kindleberger & Aliber, 2011) provides insightful behavioural insights into systemic risk.

Theoretical Framework

The Bank Capital Channel Theory (Bernanke & Gertler, 1995), which describes how macroeconomic shocks impact bank soundness through changes in bank capital, serves as the foundation for this investigation. Banks' capacity to absorb losses, provide credit, and maintain stability might be diminished by unfavourable changes in GDP growth, inflation, currency rates, or monetary policy rates (Beck et al., 2023). This paradigm enables the study to empirically connect important macroeconomic indices to metrics of bank soundness in

Nigeria between 1994 and 2024, including the Z-score, capital adequacy ratio, and non-performing loan ratio. The Bank Capital Channel Theory is used because of its accuracy and adaptability for quantitative research, even if the Financial Instability Hypothesis (Minsky, 1986; Kindleberger & Aliber, 2011) offers behavioural context for systemic risk.

Empirical Review

Afolabi et al. (2025) used an ARDL bounds testing method to investigate monetary policy and stability of the Nigerian banking industry in the post-COVID-19 era. The study discovered that the nominal exchange rate and monetary policy rate had a major impact on bank soundness, suggesting that Nigerian banks are extremely vulnerable to macroeconomic shocks. Using panel regression, Donfack et al. (2025) examined sustainable banking and bank stability in Nigeria using empirical data from deposit money banks spanning 2012–2022. According to the study, macroeconomic stability and sustainable banking practices improve bank soundness by lowering non-performing loans and increasing capital adequacy.

Mohammed et al. (2024) used panel ARDL methodologies to examine how macroeconomic factors affected Nigerian commercial banks' financial performance from 2000 to 2022. Their research showed that while high inflation and exchange rate volatility have a negative impact on profitability as determined by return on assets, GDP growth has a favourable impact on bank financial performance. A study titled "Empirical analysis of the macroeconomic drivers of banking industry stability in Nigeria covering 1991–2023 using ARDL analysis" was carried out by Enebeli Uzor (2024). According to the study, while high interest rates and unstable exchange rates undermine bank soundness, economic expansion and moderate inflation improve bank stability.

Ademola et al. (2024) used panel regression techniques to analyze changes in macroeconomic variables and the financial performance of Nigerian deposit money banks between 2010 and 2021. According to their findings, banks' financial outcomes, such as asset quality and profitability, are influenced by GDP growth, inflation, currency rates, and interest rates.

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MATERIALS AND METHODS

Using a quantitative, time-series research design, this study looked at how important macroeconomic factors such as real GDP growth, inflation, currency rates, and monetary policy rate (MPR) affect bank soundness in Nigeria between 1994 and 2024. The Z-score, which combines capital adequacy, profitability, and return volatility to represent a bank's bankruptcy risk, is used to quantify bank soundness, the dependent variable (Beck, Damongo, & Schmukler, 2023). Reputable organizations provided the secondary data. The CBN Banking Supervision Reports and the annual reports of a few deposit money banks are used to create the Z-score. The World Bank's World Development Indicators (WDI) and the CBN statistical bulletin provided real GDP growth, inflation, and exchange rate data, while the CBN database provided the MPR.

The study examined both short-term and long-term effects using an Autoregressive Distributed Lag (ARDL) model. The following is the model's specification:

$$Z_{score_t} = \alpha_0 + \sum_{i=1}^{p} \beta_i \, Z_{score_{t-i}} + \sum_{j=0}^{q} \delta_j \, GDP_{t-j} + \sum_{k=0}^{r} \theta_k \, INF_{t-k} + \sum_{l=0}^{s} \phi_l \, EXR_{t-l} + \sum_{m=0}^{u} \gamma_m \, MPR_{t-m} + \epsilon_t \ldots\ldots\ldots\ldots\ldots \text{Eqn 1}$$

Where:

- Z_score_t= bank soundness measure at time t
- GDP= real GDP growth
- INF= inflation rate
- EXR= exchange rate
- MPR= monetary policy rate
- ϵ_t= error term

To stabilize variance and interpret coefficients as elasticities, all variables are converted to natural logarithms. In order to ensure that variables are either I(0) or I(1), which is appropriate for ARDL bounds testing, stationarity is tested using the Augmented Dickey-Fuller (ADF) test.To ensure that none of the variables are integrated of order two, I(2), the estimating process starts with the Augmented Dickey-Fuller (ADF) test to ascertain the order of integration of the Z-score, GDP growth, inflation rate, exchange rate, and monetary policy rate. The presence of a long-term correlation between bank soundness and the chosen macroeconomic indicators is next investigated using the ARDL bounds testing method.The

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ARDL error correction model (ECM), in which the error correction term represents the rate of adjustment to long-run equilibrium following short-run shocks, is used to estimate both short-run and long-run coefficients if cointegration is verified.The Breusch-Godfrey LM test for serial correlation, the Breusch-Pagan-Godfrey test for heteroscedasticity are the diagnostic tests used to validate the model. Since the Z-score is a thorough indicator of bank soundness, frequently published, and readily available for Nigerian banks during the study period, its adoption as the sole dependent variable is justifiable. The ARDL approach is robust for empirical examination of macroeconomic factors on bank stability because it can capture both short-term fluctuations and long-term associations (Pesaran et al., 2001; Beck et al., 2023).

RESULTS AND DISCUSSION

The study's empirical results are presented in this section. Descriptive statistics and correlation analysis are the first steps in the investigation. Unit root tests are then used to evaluate stationarity. After determining whether there is a long-term relationship between the variables using the ARDL Bounds test, the long-term and short-term dynamics are estimated. Lastly, post-estimation diagnostic tests are carried out to verify the model's dependability, such as the Breusch-Godfrey Serial Correlation LM test and the Breusch-Pagan-Godfrey Heteroskedasticity test.

Descriptive Statistics

Table 1: Descriptive Statistics of the Variables

	LNZSCORE	LNGDP	LNINF	LNEXR	LNMPR
Mean	2.695370	0.045353	2.642318	4.913361	2.633267
Median	2.688528	0.041909	2.557227	5.003141	2.639057
Maximum	3.093502	0.136278	4.287716	6.542467	2.952243
Minimum	2.394252	-0.019387	1.686399	3.085573	1.791759
Std. Dev.	0.167629	0.035412	0.581955	0.966399	0.220870
Skewness	0.281716	0.423106	1.038247	-0.638936	-1.563838
Kurtosis	2.633529	3.063628	4.165022	2.912225	7.852372
Jarque-Bera	0.583518	0.930160	7.322595	2.119191	43.04851
Probability	0.746949	0.628085	0.025699	0.346596	0.000000
Sum	83.55647	1.405945	81.91186	152.3142	81.63127
Sum Sq. Dev.	0.842989	0.037620	10.16015	28.01780	1.463502
Observations	31	31	31	31	31

Source: Author's computation (2026) using Eviews 13.0

According to the descriptive data, Nigerian bank soundness (LNZSCORE) was relatively stable between 1994 and 2024, averaging 2.70 with minimal variance (Std. Dev. = 0.168) and a roughly normal distribution. While inflation (LNINF) averaged 14.0% and showed greater

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fluctuation (Std. Dev. = 0.582) with sporadic spikes, real GDP growth (LNGDP) was moderate at an average of 4.5% with low volatility (Std. Dev. = 0.035). The monetary policy rate (LNMPR) averaged 13.9% but was strongly skewed (Skewness = -1.56) with extreme values, showing episodic policy shifts, while the exchange rate (LNEXR) had significant variations (Std. Dev. = 0.966) with a mean log value of 4.91. Overall, these numbers indicate that while fluctuations in inflation, exchange rates, and MPR could jeopardize financial stability, steady GDP growth might promote bank soundness.

Correlation Analysis

Table 2: Correlation Matrix

	LNZSCORE	**LNGDP**	**LNINF**	**LNEXR**	**LNMPR**
LNZSCORE	1				
LNGDP	0.2698	1			
LNINF	-0.4679	-0.2050	1		
LNEXR	0.4078	-0.0267	-0.1508	1	
LNMPR	-0.0016	-0.0912	0.0812	0.2423	1

Source: Author's computation (2026) using Eviews 13.0

The correlation matrix displays the connections between important macroeconomic variables and bank soundness (LNZSCORE). Stronger economic growth and a weaker Naira may be linked to higher bank soundness, as indicated by the positive correlations between LNZSCORE and GDP growth (0.27) and exchange rate (0.41). On the other hand, it has a negative correlation (-0.47) with inflation, suggesting that higher inflation compromises bank stability. There is basically no connection (-0.002) with the monetary policy rate (LNMPR), suggesting minimal direct linear link. Overall, these relationships imply that while inflation constitutes a serious threat to soundness, GDP growth and changes in exchange rates may strengthen banks' resilience.

Unit Root Tests

Table 3: Unit Roots Test for Variables at Levels

VAR	**ADF TEST STA**	**ADF CR VAL @ 5%**	**REMARK**
LNZCORE	3.231	-3.535	NON STATIONARY
LNGDP	-3.141	-3.522	NON-STATIONARY
LNINF	-2.636	-3.526	NON-STATIONARY
LNEXR	-3.701	-3.691	STATIONARY
LNMPR	-2.543	-3.623	NON-STATIONARY

Source: Author's computation (2026) using Eviews 13.0

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Unit Root Test at First Difference

Table 4: Unit Roots Test for Variables at First Difference

VAR	ADF TEST STA	ADF CR VAL @ 95%	STATUS	ORDER OF INTEGRATION
LNZCORE	-7.322	-2.043	STATIONARY	I(1)
LNGDP	-6.333	-2.642	STATIONARY	I(1)
LNINF	-7.212	-3.221	STATIONARY	I(1)
LNEXR	-9.431	-2.442	STATIONARY	I(1)
LNMPR	-4.514	-3.244	STATIONARY	I(1)

Source: Author's computation (2026) using Eviews 13.0

With the exception of the exchange rate (LNEXR), which is stationary at level, the unit root tests show that other variables are non-stationary at levels. All variables, including LNZSCORE, GDP growth, inflation, exchange rate, and MPR, become stationary during initial differencing, indicating that they are integrated of order one, I(1). Because it can handle a combination of I(0) and I(1) variables while guaranteeing accurate long-run and short-run estimation, the ARDL bounds testing approach is justified.

ARDL Bounds Test

Table 5: ARDL Bounds Test for Cointegration

Test Sta	F-Sta	5% Lower Bound I(0)	5% Upper Bound I(1)	Decision
Value	6.055	3.058	4.223	Cointegration Exists

Source: Author's computation (2026) using Eviews 13.0

The F-statistic of 6.055 in the ARDL limits test findings is higher than the 5% upper bound critical value of 4.223. This suggests that the chosen macroeconomic variables (GDP growth, inflation, exchange rate, and MPR) and bank soundness (LNZSCORE) have a long-term cointegrating connection. In other words, these variables move together over time despite short-term variations, supporting the use of the ARDL model to estimate both long-run and short-run dynamics.

Long-Run Results

Table 6: ARDL Long-Run Coefficients

Variable *	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP(-1)	3.741629	0.924579	4.046847	0.0005
LNINF	0.078288	0.090937	0.860907	0.3986
LNEXR(-1)	-0.000943	0.044117	-0.021372	0.9831
LNMPR(-1)	0.219538	0.135845	1.616086	0.1203
C	1.775798	0.386258	4.597444	0.0001

Source: Author's computation (2026) using Eviews 13.0

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In line with findings by Mohammed, Bashir & Zubairu (2024) and Enebeli-Uzor (2024), who also indicated that stronger economic growth boosts financial stability in Nigeria, the long-run results show that GDP growth considerably improves bank soundness. Contrary to studies like Afolabi et al. (2025) and Ademola et al. (2024), which found that these variables affected bank stability, inflation, exchange rates, and monetary policy rates are not statistically significant. In terms of the economy, this means that measures that encourage sustainable GDP growth, such infrastructure spending, economic diversification, and assistance for productive industries, can improve bank resilience, increase loan availability, and lower systemic risk. In the meantime, the low long-term effects of inflation, currency rates, and MPR imply that Nigerian banks' cautious risk management and regulatory changes may have lessened the negative consequences of macroeconomic volatility, acting as a buffer against financial instability.

Short-Run Error Correction Model

Table 7: Short-Run Error Correction Model (ECM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COINTEQ*	-0.810172	0.111450	-7.269399	0.0000
D(LNZSCORE(-1))	-0.502706	0.094418	-5.324275	0.0001
D(LNGDP)	-2.260645	0.611618	-3.696169	0.0020
D(LNGDP(-1))	-3.927364	0.620151	-6.332919	0.0000
D(LNGDP(-2))	-4.353943	0.697330	-6.243731	0.0000
D(LNGDP(-3))	-1.800433	0.627801	-2.867838	0.0112
D(LNEXR)	-0.019306	0.039232	-0.492093	0.6293
D(LNEXR(-1))	-0.004212	0.042992	-0.097982	0.9232
D(LNEXR(-2))	-0.055481	0.045380	-1.222595	0.2392
D(LNEXR(-3))	0.208187	0.050861	4.093278	0.0008
D(LNMPR)	-0.094784	0.054558	-1.737310	0.1015
R-sq	0.878757			
Adj. R-sq	0.802980			
F-statistic	11.59665			
Prob(F-sta)	0.000015			
DW	2.347554			

Source: Author’s computation (2026) using Eviews 13.0

The association between macroeconomic variables and bank soundness in Nigeria is strongly supported by both short-run dynamics and long-run equilibrium adjustment, according to the ARDL error-correction results. Cointegration between the variables is confirmed by the

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negative and highly significant coefficient of the error correction term (COINTEQ* = –0.810, p = 0.0000). The size suggests a quick rate of adjustment toward long-run stability, with about 81% of short-run disequilibrium being addressed in a single time. This result is in line with earlier empirical research that reports robust adjustment mechanisms in banking stability models, including Demirguc-Kunt and Detragiache (1998), who highlight the importance of macroeconomic fundamentals in determining the resilience of the banking sector, and Athanasoglou et al. (2008), who describe dynamic adjustments in bank performance models.

The lag dependent variable, D(LNZSCORE (-1)) (β = –0.503, p = 0.0001), shows persistence in bank soundness adjustments and is statistically significant. This implies that previous financial stability shocks still have an impact on present performance, supporting the dynamic character of banking sector reactions. In both contemporaneous and lagged eras, economic growth (LNGDP) shows statistically significant negative short-run coefficients ($p < 0.05$). Long-lasting macroeconomic transmission effects are indicated by the persistence of significance up to the third lag. Short-run negative coefficients may indicate cyclical vulnerabilities or credit expansion concerns during growth periods, despite the theoretical expectation that growth will improve financial stability through increased asset quality and profitability.

This is consistent with research by Beck et al. (2006), who contend that quick loan expansion during expansionary times may momentarily erode financial stability. The dynamics of the exchange rate (LNEXR) show conflicting outcomes. The third lag is positive and substantial (β = 0.208, p = 0.0008), indicating delayed exchange rate pass-through to bank soundness, even though the immediate effects are statistically small. This bolsters the claim made by Ranciere et al. (2008) that, especially in emerging economies with foreign exchange exposures, exchange rate volatility might have an indirect impact on banking systems over time through balance sheet impacts. The short-run effect of the monetary policy rate (LNMPR) is negative but statistically modest (p = 0.1015), suggesting that there is little immediate impact on bank stability.This could imply that longer-term channels, as opposed to contemporaneous adjustments, have a greater impact on monetary policy impacts. The Akaike Information Criterion chose an ideal ARDL (2,4,0,4,1) specification, giving inflation zero lag even though inflation (LNINF) was one of the regressors. This implies that during the study period, inflation did not have a substantial short-run dynamic impact on bank soundness. As a result, the parsimonious short-run error correction representation did not

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include inflation. The F-statistic (11.597, p = 0.000015) confirms the combined importance of regressors, and the entire model exhibits excellent explanatory power (R^2 = 0.879; Adjusted R^2 = 0.803). The robustness of the estimates is confirmed by the Durbin–Watson statistic (2.35), which indicates the absence of serial correlation.

Diagnostic Tests

Table 8: Breusch-Godfrey Serial Correlation LM Test

F-statistic	**0.529316**	**Prob. F(2,9)**	**0.6063**
Obs*R-squared	2.841646	Prob. Chi-Square(2)	0.2415

Source: Author's computation (2026) using Eviews 13.0

Both the F-statistic (0.529, p = 0.6063) and the Obs*R-squared (2.842, p = 0.2415) are not statistically significant, according to the Breusch-Godfrey Serial Correlation LM test results. This implies that the ARDL model's residuals show no signs of serial correlation, indicating that the error components in the model are independent over time. Economically speaking, this suggests that the model's projections of current bank stability are not consistently skewed by previous shocks to the banking industry, and that the predicted short-run and long-run correlations between bank soundness and macroeconomic variables are trustworthy.

Heteroskedasticity Test

Table 9: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.458575	Prob. F(15,11)	0.9195
Obs*R-squared	10.38799	Prob. Chi-Square(15)	0.7947
Scaled explained SS	0.988071	Prob. Chi-Square(15)	1.0000

Source: Author's computation (2026) using Eviews 13.0

The findings of the Breusch-Pagan-Godfrey heteroskedasticity test indicate that the Scaled explained SS (0.988, p = 1.000), Obs*R-squared (10.388, p = 0.795), and F-statistic (0.459, p = 0.9195) are not statistically significant. This suggests that the ARDL model's residuals are homoscedastic, which means that the errors' variance remains constant throughout time. In terms of the economy, this implies that the estimated correlations between macroeconomic variables and bank soundness are stable and that fluctuating volatility does not skew the model's predictions, supporting the validity of both the short-run and long-run coefficients.

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The correlation between macroeconomic conditions and bank soundness in Nigeria is demonstrated by the ARDL long-run and short-run estimations. Long-term bank soundness is positively and statistically significantly impacted by economic growth (LNGDP) ($\beta = 3.7416$, $t = 4.0468$, $p = 0.0005$). This implies that long-term economic growth improves borrowers' ability to repay loans, lowers the number of non-performing loans, and boosts bank profitability and capital adequacy, all of which contribute to financial stability. The results are in line with those of Athanasoglou et al. (2008) and Beck et al. (2006), who claim that macroeconomic expansion enhances the stability of the banking industry. On the other hand, with coefficients of 0.0783 ($p = 0.3986$), –0.0009 ($p = 0.9831$), and 0.2195 ($p = 0.1203$), respectively, inflation (LNINF), exchange rate (LNEXR), and monetary policy rate (LNMPR) are statistically insignificant over the long term.This suggests that while macroeconomic volatility may have short-term effects on the financial system, its long-term effects on bank soundness over the research period seem to be minimal. This result somewhat disagrees with Demirgüç-Kunt and Detragiache (1998), who believe that macroeconomic volatility can exacerbate banking fragility in developing economies. A consistent long-term association is confirmed by the short-run error correction model. About 81% of short-run disequilibrium is rectified in a single period, according to the error correction term (ECM = –0.8102, $t = -7.2694$, $p = 0.0000$), which is negative and highly significant. This indicates that the banking sector adjusts to equilibrium rather quickly following macroeconomic shocks.

Economic growth (LNGDP) is statistically significant in the short term over a number of lags, such as the contemporaneous coefficient –2.2606 ($p = 0.0020$) and the lagged coefficients –3.9274 ($p = 0.0000$), –4.3539 ($p = 0.0000$), and –1.8004 ($p = 0.0112$). Despite being detrimental in the short run, this indicates that changes in economic growth have a substantial impact on the dynamics of the banking sector, perhaps as a result of greater risk exposure and credit expansion during times of strong growth (Beck et al., 2006). Changes in exchange rates exhibit delayed short-term impacts. The third lag is positive and substantial (0.2082, $p = 0.0008$), suggesting that exchange rate volatility influences bank soundness with a time lag through balance sheet and foreign exposure channels, even though the immediate change is negligible (-0.0193, $p = 0.6293$) (Rancière et al., 2008).A limited immediate transmission of monetary policy shocks to bank stability is indicated by the monetary policy rate (LNMPR), which exhibits a negative but negligible short-run effect (-0.0948, $p = 0.1015$). With $R^2 = 0.8788$, Adjusted $R^2 = 0.8030$, and a significant F-statistic = 11.5967 ($p = 0.000015$), the model has excellent explanatory power overall, suggesting that the macroeconomic factors

collectively account for a considerable percentage of differences in bank soundness in Nigeria.

CONCLUSION AND RECOMMENDATIONS

The results show that macroeconomic factors significantly influence Nigerian banks' soundness. In particular, while inflation, exchange rates, and monetary policy rates have no discernible long-term effects, economic development considerably improves bank stability. However, the substantial and negative error correction term confirms a quick adjustment toward long-run equilibrium, while the short-run dynamics show that changes in economic growth and currency rates might momentarily affect banking stability. Overall, the findings imply that maintaining a good banking system requires a stable macroeconomic environment. It is advised that policymakers give priority to measures that support steady economic growth, bolster macroeconomic stability, and uphold efficient financial regulation in light of these findings.To keep short-term macroeconomic shocks from jeopardizing the stability of the banking system, the monetary authorities should also keep an eye on loan expansion and exchange rate volatility.

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