**Global Scientific and Academic Research Journal of Economics, Business and Management**
ISSN: 2583-5645 (Online)
Frequency: Monthly
Published By GSAR Publishers
Journal Homepage Link- https://gsarpublishers.com/journals-gsarjebm-home/

# Credit Risk Regulation and Profitability of Commercial Banks in Nigeria

**By**

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**Article History**

*Received: 15/07/2026*
*Accepted: 28/07/2026*
*Published: 30/07/2026*

**Vol –5 Issue – 7**

*PP: -40-49*

***Abstract***

*This study examined the effect of credit risk regulation on the profitability of commercial banks in Nigeria using quarterly industry-level data spanning 2009Q1 to 2024Q4. Specifically, the study investigated the influence of the Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPR), Statutory Liquidity Ratio (SLR), Cash Reserve Ratio (CRR), and Monetary Policy Rate (MPR) on bank profitability, measured by Return on Assets (ROA). The study adopted an ex post facto research design and relied on secondary data obtained from the Central Bank of Nigeria (CBN), Nigeria Deposit Insurance Corporation (NDIC), and related regulatory publications. The Autoregressive Distributed Lag (ARDL) modelling technique was employed to estimate the short-run and long-run relationships among the variables following confirmation of stationarity using the Augmented Dickey-Fuller (ADF) unit root test and cointegration through the ARDL bounds test. The results established a stable long-run relationship between credit risk regulation and commercial bank profitability. The findings further revealed that the Statutory Liquidity Ratio (SLR) and Monetary Policy Rate (MPR) exert significant negative effects on profitability, while the Cash Reserve Ratio (CRR) exhibited a negative effect that was significant at the 10 percent level. In contrast, the Capital Adequacy Ratio (CAR) and Non-Performing Loan Ratio (NPR) had negative but statistically insignificant effects on profitability. The error correction mechanism indicated that approximately 35.22 percent of short-run disequilibrium is corrected each quarter, confirming a stable adjustment towards long-run equilibrium. The study concludes that while credit risk regulation is essential for safeguarding banking sector stability, stringent liquidity and monetary policy measures may reduce banks' profitability by constraining lending activities and increasing funding costs. The study recommends that the Central Bank of Nigeria adopt a balanced and risk-sensitive regulatory framework that promotes financial stability without unduly impairing the profitability and intermediation capacity of commercial banks.*

***Keywords:*** *Credit Risk Regulation, Commercial Banks, Profitability, Return on Assets, Capital Adequacy Ratio, Cash Reserve Ratio, Statutory Liquidity Ratio, Monetary Policy Rate, Nigeria.*

## 1.0 INTRODUCTION

Profitability is the primary measure of the financial performance, efficiency, and sustainability of commercial banks because it determines their capacity to withstand financial shocks, extend credit, reward shareholders, and support economic growth through financial intermediation. Consequently, maintaining stable profitability remains one of the major objectives of banking regulation globally (Ali & Iqbal, 2021; Oyasor, 2025). In Nigeria, the banking sector has remained relatively profitable despite macroeconomic challenges, with the industry's average return on assets (ROA) increasing to 3.5% in 2024 from 2.0% in 2023, largely driven by improved earnings and regulatory reforms. However, sustaining this performance depends largely on banks' ability to effectively manage credit risk while complying with increasingly stringent regulatory requirements. The realization of sustainable profitability, however, depends largely on the

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effective management and regulation of credit risk. Credit risk, which arises from the possibility that borrowers may fail to meet their financial obligations, constitutes the most significant source of risk in commercial banking because lending activities represent banks' primary income-generating function (Iwedi & Onuegbu, 2014). According to Iwedi and Onuegbu (2014). Weak credit risk management often results in deteriorating asset quality, increased loan defaults, and declining earnings, thereby threatening the stability of individual banks and the financial system as a whole. To mitigate these risks, banking regulators have continuously strengthened credit risk regulation through prudential guidelines, capital adequacy requirements, loan-loss provisioning standards, and risk-based supervisory frameworks aimed at promoting prudent lending practices and enhancing the resilience of financial institutions (BCBS, 2024).

Credit risk is the largest and most significant risk confronting commercial banks because loans and advances constitute the largest proportion of banks' earning assets. A deterioration in credit quality increases non-performing loans (NPLs), weakens asset quality, reduces interest income, and ultimately impairs profitability (Ahmed et al., 2021; Adusei, 2022). Recognizing these threats, regulatory authorities have strengthened credit risk regulation through Basel III capital standards, loan-loss provisioning requirements, risk-based supervision, and stricter prudential guidelines aimed at enhancing banking sector resilience and financial stability. Recent evidence from Nigeria indicates that while stronger regulatory capital improves banking stability, some Basel III requirements may reduce profitability in the short run by limiting banks' lending and investment capacity (Abubakar et al., 2026; Arin et al., 2025).

In Nigeria, the Central Bank of Nigeria (CBN) has implemented a series of regulatory reforms to strengthen credit risk management and enhance the resilience of the banking sector. Following the banking consolidation programme in 2004–2005, which increased the minimum capital base of commercial banks from ₦2 billion to ₦25 billion, the CBN introduced the Risk-Based Supervision (RBS) Framework in 2008 to improve banks' risk governance and supervisory oversight. Subsequently, the adoption of the International Financial Reporting Standards (IFRS) in 2012 improved the transparency and recognition of credit losses, while the implementation of the Basel II framework in 2014 and the Basel III framework in 2021 strengthened capital adequacy requirements, liquidity standards, and credit risk management practices. In addition, the introduction of the Global Standing Instruction (GSI) policy in 2020 enhanced loan recovery mechanisms by enabling banks to recover overdue obligations across borrowers' accounts within the financial system. More recently, the 2024 banking recapitalization policy, which significantly increased the minimum capital requirements for commercial banks, was introduced to strengthen banks' loss-absorbing capacity, improve financial stability, and support sustainable credit expansion in line with Nigeria's long-term economic development objectives (CBN, 2024; IMF, 2025). Collectively, these reforms were designed to strengthen credit risk regulation by improving loan quality, reducing non-performing loans, enhancing capital buffers, and promoting prudent lending practices.

Despite these regulatory interventions, the extent to which credit risk regulation translates into improved profitability remains uncertain. The industry's non-performing loan ratio increased to 4.87% in 2024, approaching the Central Bank of Nigeria's prudential benchmark of 5%, suggesting that credit risk continues to pose a significant threat to sustainable bank profitability. Although stronger regulatory requirements are expected to reduce credit losses, improve asset quality, and enhance banking sector resilience, they may simultaneously increase regulatory compliance costs, tighten lending standards, reduce risk-taking opportunities, and constrain interest income. This trade-off presents a significant policy dilemma regarding how regulators can maintain financial stability without undermining the profitability and competitiveness of commercial banks. The persistent increase in Nigeria's non-performing loan ratio to 4.87% in 2024, despite sustained regulatory reforms, further suggests that credit risk remains a major challenge to bank performance. More importantly, empirical findings remain inconclusive. While studies such as Ali and Iqbal (2021), Oyasor (2025), and Bello et al. (2024) reported that effective credit risk regulation enhances profitability through improved asset quality and stronger capital buffers, other studies found that stricter regulatory requirements increase compliance costs, constrain lending activities, and reduce short-term profitability (Abubakar et al., 2026; Arin et al., 2025). These conflicting findings, together with the recent implementation of Basel III and the 2024 recapitalization reforms, underscore the need for renewed empirical investigation into the effect of credit risk regulation on the profitability of commercial banks in Nigeria.

## 2.0 LITERATURE REVIEW

### 2.1 Theoretical Foundation

The relationship between credit risk regulation and the profitability of commercial banks is anchored on four complementary theories: Credit Rationing Theory (Stiglitz & Weiss, 1981), Modern Portfolio Theory (Markowitz, 1952), Financial Intermediation Theory (Gurley & Shaw, 1960), and Moral Hazard Theory. Collectively, these theories explain how prudent credit risk management and regulatory oversight influence banks' lending decisions, risk exposure, and financial performance. Credit Rationing Theory posits that information asymmetry compels banks to adopt stringent credit screening and lending standards to minimize default risk and protect profitability. Modern Portfolio Theory emphasizes that diversification of loan portfolios and effective risk-return optimization reduce credit risk and enhance earnings stability. Financial Intermediation Theory views banks as institutions that efficiently allocate financial resources while managing risks, highlighting the importance of sound regulation in preserving asset quality and sustaining financial performance. Moral Hazard Theory argues that

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without adequate regulatory constraints, banks may engage in excessive risk-taking due to expectations of regulatory support, thereby necessitating prudential measures such as capital adequacy requirements, loan provisioning standards, and supervisory oversight. Together, these theories provide a robust theoretical framework for understanding how credit risk regulation promotes banking sector stability while influencing the profitability of commercial banks. Among them, Credit Rationing Theory provides the principal theoretical underpinning for this study because it directly explains the role of credit risk regulation in mitigating information asymmetry, improving credit quality, and enhancing bank profitability.

### 2.2 Empirical Review

The empirical relationship between credit risk regulation and the profitability of commercial banks has received increasing attention in Nigeria, although much of the earlier literature focused on credit risk management (CRM) rather than credit risk regulation. While CRM studies emphasize internal bank practices such as loan appraisal, monitoring, and provisioning, credit risk regulation concerns compliance with prudential requirements imposed by regulators, including capital adequacy standards, liquidity requirements, Basel Accords, and the Central Bank of Nigeria (CBN) prudential guidelines. This distinction is important because internal risk management reflects managerial discretion, whereas regulatory measures determine the external framework within which banks operate. Recent studies have increasingly shifted attention from management-oriented risk indicators to regulatory variables, reflecting the growing importance of prudential regulation in safeguarding banking sector stability.

Early Nigerian studies consistently established that poor credit quality adversely affects bank profitability. Kargi (2011) found that non-performing loans significantly reduced the profitability of Nigerian banks, concluding that effective credit risk management was essential for sustaining financial performance. Similarly, Kolapo et al. (2012) reported that rising non-performing loans depressed return on assets, whereas increased lending activities enhanced profitability. Ogboi and Unuafe (2013) extended the literature by incorporating the Capital Adequacy Ratio (CAR), reporting that adequate capitalization significantly improved profitability, while loan loss provisions reduced financial performance. Likewise, Iwedi and Onuegbu (2014) found that increasing non-performing loans adversely affected bank efficiency and profitability, emphasizing the importance of sound credit administration.

Subsequent studies increasingly integrated regulatory variables into profitability models. Onyeiwu et al. (2020) reported that capital adequacy positively influenced profitability, whereas non-performing loans exerted a negative effect. Ndubuisi (2021) similarly found that capital adequacy significantly enhanced profitability, although the effect of non-performing loans was insignificant. Jegede et al. (2021) demonstrated that financial risk management variables, particularly capital strength and loan loss provisioning, significantly influenced bank performance, suggesting that regulatory capital had become a critical determinant of profitability beyond internal risk management. Recent evidence further highlights the growing relevance of prudential regulation. Hambolu et al. (2022) found that non-performing loans significantly reduced profitability, while Danmulki et al. (2022) reported that capital adequacy positively affected financial performance whereas liquidity requirements negatively influenced profitability. Their findings suggest that although stronger regulatory capital enhances bank resilience, stringent liquidity requirements may constrain earnings by limiting lending activities.

More recent studies have focused explicitly on regulatory compliance. Arin et al. (2024) employed a Regression Discontinuity Design to evaluate Basel III liquidity requirements and found that compliance with liquidity coverage thresholds improved banks' return on assets, emphasizing the role of effective regulatory design. Similarly, Oyasor (2025) reported that capital adequacy significantly enhanced profitability while non-performing loans reduced performance, concluding that effective implementation of credit risk regulations remains essential for banking sector stability. In a related study, Oyasor (2025) found that stronger regulatory enforcement and improved risk governance enhanced profitability, whereas weak enforcement undermined the effectiveness of prudential regulation. Ogundele and Nzama (2025) further demonstrated that credit risk and inadequate risk disclosure reduced profitability, highlighting the importance of transparency in regulatory compliance. Likewise, Oje et al. (2025) established that maintaining regulation-compliant capital adequacy significantly improved financial performance, while Omoregbee et al. (2025) showed that governance mechanisms supporting prudential indicators such as capital adequacy and liquidity contributed to improved banking performance.

Despite these contributions, important gaps remain. First, most Nigerian studies continue to examine credit risk management rather than credit risk regulation, with limited emphasis on the combined effects of regulatory instruments such as the Capital Adequacy Ratio, Cash Reserve Ratio, Statutory Liquidity Ratio, Monetary Policy Rate, and Non-Performing Loan Ratio within a unified empirical framework. Second, many studies rely on annual panel data, which may not adequately capture the dynamic adjustments associated with regulatory policy changes. Third, relatively few studies employ the Autoregressive Distributed Lag (ARDL) technique to distinguish between short-run and long-run effects of credit risk regulation on profitability. Finally, the implementation of recent regulatory reforms, including Basel III adoption and the aggressive monetary tightening by the Central Bank of Nigeria between 2022 and 2024, has received limited empirical attention. This study addresses these gaps by employing quarterly industry-level data covering 2009Q1–2024Q4 and estimating the short-run and long-run effects of key credit risk regulatory variables on the profitability of commercial banks in Nigeria using the ARDL framework. The study therefore extends the existing literature by providing more recent evidence on how prudential regulation

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influences banking sector profitability under evolving regulatory and macroeconomic conditions.

## 3.0 Methodology

This study departs from the bank-level panel designs dominant in the reviewed literature (Section 2) and adopts an aggregate, industry-level time-series design. Rather than pooling individual bank observations, the study treats the Nigerian commercial banking industry as a single unit of analysis and models how sector-wide regulatory variables capital adequacy, cash reserve, liquidity, and prudential provisioning requirements relate to industry-aggregate profitability over time. This choice follows directly from the study's regulatory focus: prudential rules such as the Capital Adequacy Ratio floor, the Cash Reserve Ratio, and the Monetary Policy Rate are set uniformly by the Central Bank of Nigeria (CBN) for the industry as a whole rather than varying meaningfully bank-by-bank, so an industry-aggregate time series is the natural unit for capturing their effect. Because the resulting series mix variables that are stationary at level, I(0), with others that are stationary only after first-differencing, I(1), the Autoregressive Distributed Lag (ARDL) Bounds Testing approach of Pesaran et al. (2001) is adopted, as it accommodates this mixed order of integration, performs well in relatively small samples, and jointly estimates short-run dynamics and long-run equilibrium relationships within a single equation.

### 3.1 Data and Estimation

The study uses secondary, industry-aggregate quarterly time-series data covering the period 2009Q1 to 2024Q4, a window chosen to span the post-2009 banking sector reforms, the phased adoption of Basel II/III capital standards, the 2019 transition to IFRS 9 expected-credit-loss provisioning, and the 2024 recapitalization directive, while yielding sufficient observations (n ≈ 64) for reliable ARDL estimation. Data are sourced from the CBN Statistical Bulletin and Financial Stability Reports, the NDIC Annual Report, and the World Bank's World Development Indicators for macroeconomic controls. Prior to estimation, all series are tested for stationarity using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to confirm that none is integrated of order two, I(2), a condition that would invalidate the bounds-testing procedure. An ARDL model is then estimated with lag lengths selected via the Akaike Information Criterion (AIC), followed by the Pesaran et al. (2001) F-bounds test to establish whether a long-run cointegrating relationship exists among the variables. Where cointegration is confirmed, long-run coefficients and a parsimonious Error Correction Model (ECM) are estimated to recover short-run adjustment dynamics, and the model is subjected to standard diagnostic checks the Breusch-Godfrey test for serial correlation, the Breusch-Pagan-Godfrey test for heteroskedasticity, the Jarque-Bera test for normality of residuals, and CUSUM/CUSUMSQ tests for parameter stability.

### 3.2 Model Specification

The baseline functional relationship expresses industry-aggregate bank profitability as a function of the credit-risk-regulation variables:

$$\mathrm{ROAt} = \mathrm{f(CARt, NPRt, SLRt, CRRt, MPRt,)}$$

where ROA is industry-aggregate return on assets, the study's profitability proxy; CAR is the industry capital adequacy ratio, representing the CBN's minimum regulatory capital requirement; NPLR is the industry non-performing loan ratio, reflecting the prudential loan-classification and provisioning regime; SLR is the statutory liquidity ratio; CRR is the Cash Reserve Ratio, a direct monetary-regulatory instrument; MPR is the Monetary Policy Rate. This relationship is expressed in unrestricted ARDL (p, q1, q2, q3, q4, q5, q6) form as follows:

$$\begin{aligned}\Delta ROA_t = \alpha_0 &+ \sum_{i=1}^{\rho} \beta_{1i}\Delta ROA_{t-i} + \sum_{i=0}^{q_1} \beta_{2i}\Delta CAR_{t-i} \\ &+ \sum_{i=0}^{q_2} \beta_{3i}\Delta NPR_{t-i} + \sum_{i=0}^{q_3} \beta_{4i}\Delta SLR_{t-i} \\ &+ \sum_{i=0}^{q_4} \beta_{5i}\Delta CRR_{t-i} + + \sum_{i=0}^{q_5} \beta_{6i}\Delta MPR_{t-i} \\ &+ \lambda_1 ROA_{t-i} + \lambda_2 CAR_{t-i} + \lambda_3 NPR_{t-i} \\ &+ \lambda_4 SLR_{t-1} + \lambda_5 CCR_{t-1} + \lambda_6 MPR_{t-1} \\ &+ \varepsilon_t\end{aligned}$$

where Δ is the first-difference operator, β terms capture short-run dynamics, λ terms are the long-run level coefficients whose joint significance is assessed via the F-bounds test, and εt is the white-noise error term. Where the bounds test confirms cointegration, the corresponding ECM is estimated as:

$$\begin{aligned}\Delta ROA_t = \alpha_0 &+ \sum_{i=1}^{\rho} \beta_{1i}\Delta ROA_{t-i} + \sum_{i=0}^{q_1} \beta_{2i}\Delta CAR_{t-i} \\ &+ \sum_{i=0}^{q_2} \beta_{3i}\Delta NPR_{t-i} + \sum_{i=0}^{q_3} \beta_{4i}\Delta SLR_{t-i} \\ &+ \sum_{i=0}^{q_4} \beta_{5i}\Delta CRR_{t-i} + + \sum_{i=0}^{q_5} \beta_{6i}\Delta MPR_{t-i} \\ &+ \emptyset ECT_{t-1} + \varepsilon_t\end{aligned}$$

where $ECT_{t-1}$ is the one-period-lagged error correction term derived from the long-run relationship, and φ is its coefficient, expected to be negative and statistically significant, indicating the speed at which industry profitability adjusts back toward long-run equilibrium following a short-run deviation caused by a shift in credit risk regulation.

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## 4.0 RESULTS AND DISCUSSIONS

### 4.1 Trend Analysis

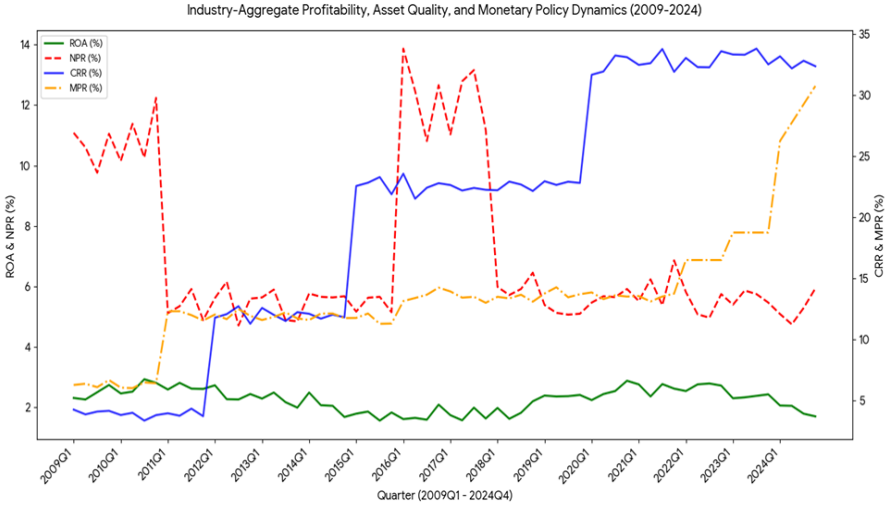


**Figure 1: Quarterly Trends of Banking Sector Profitability, Credit Risk, and Monetary Policy Instruments in Nigeria (2009Q1 – 2024Q4)**

**Source:** Author's Compilation using Generated Dataset (2026).

**Note:** The primary vertical axis measures Return on Assets (ROA) and the Non-Performing Loan Ratio (NPR) in percentages (%). The secondary vertical axis tracks the Monetary Policy Rate (MPR) and the Cash Reserve Ratio (CRR) in percentages (%), capturing the structural shifts across various Central Bank of Nigeria (CBN) monetary policy regimes.

Figure 1 presents the quarterly trends in commercial banks' profitability (ROA), non-performing loan ratio (NPR), cash reserve ratio (CRR), and monetary policy rate (MPR) in Nigeria from 2009Q1 to 2024Q4, providing preliminary evidence on the relationship between credit risk regulation and bank profitability. ROA remained relatively stable, fluctuating between 1.5% and 3.0%, but declined during the 2015–2017 period when the NPR exceeded 13%, indicating that deteriorating asset quality adversely affected bank profitability through higher loan loss provisions and reduced interest income. From 2018 onwards, the NPR declined and stabilized around 5–6%, reflecting improvements in credit risk management and regulatory oversight. The reduction in non-performing loans coincided with a gradual recovery in profitability, suggesting that stronger credit risk regulation contributed to improved bank performance by enhancing asset quality.

The CRR exhibited a sustained upward trend, increasing from about 4% in 2009 to over 32% by 2020 and remaining elevated thereafter. This reflects the Central Bank of Nigeria's tighter liquidity management policies aimed at maintaining financial system stability. However, higher reserve requirements likely constrained banks' lending capacity and profitability. Likewise, the MPR remained fairly stable until 2021 before rising sharply from 16.5% in 2022 to 30.75% in 2024, reflecting an aggressive monetary tightening stance. Overall, the figure suggests that while effective credit risk regulation, evidenced by declining NPR, supports profitability through improved asset quality, tighter regulatory and monetary policy measures, particularly higher CRR and MPR, may exert short-run downward pressure on commercial banks' profitability by increasing funding costs and restricting loanable funds. These trends provide descriptive support for the subsequent ARDL analysis.

### 4.2 Data Analysis

**Table 1: Descriptive Statistics of Credit Risk Regulation Variables and Profitability of Commercial Banks in Nigeria (2009Q1–2024Q4)**

| | ROA | CRR | MPR | NPR | SLR | CAR |
|---|---|---|---|---|---|---|
| Mean | 2.249531 | 20.28125 | 13.56672 | 7.026719 | 38.61016 | 18.23516 |
| Median | 2.310000 | 22.49000 | 13.22000 | 5.690000 | 39.07500 | 18.29000 |
| Maximum | 2.920000 | 33.81000 | 30.75000 | 13.87000 | 44.98000 | 19.37000 |

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| | | | | | | |
|---|---|---|---|---|---|---|
| Minimum | 1.550000 | 3.350000 | 6.010000 | 4.700000 | 32.87000 | 17.12000 |
| Std. Dev. | 0.390289 | 10.75045 | 4.927845 | 2.712367 | 3.081205 | 0.495545 |
| Skewness | -0.268610 | -0.256469 | 1.509495 | 1.246861 | -0.187107 | -0.385573 |
| Kurtosis | 1.984289 | 1.707293 | 6.560253 | 2.913072 | 1.927762 | 2.819615 |
| Jarque-Bera | 3.520735 | 5.157860 | 58.10586 | 16.60322 | 3.439283 | 1.672546 |
| Probability | 0.171982 | 0.075855 | 0.000000 | 0.000248 | 0.179130 | 0.433323 |
| Sum | 143.9700 | 1298.000 | 868.2700 | 449.7100 | 2471.050 | 1167.050 |
| Sum Sq. Dev. | 9.596486 | 7281.052 | 1529.871 | 463.4870 | 598.1109 | 15.47060 |
| Observations | 64 | 64 | 64 | 64 | 64 | 64 |

**Source:** *Author's computation using E-views 13*

The descriptive statistics indicate that commercial banks recorded an average ROA of 2.25%, while the mean CRR (20.28%) and MPR (13.57%) reflect relatively tight regulatory and monetary policy conditions during the study period. The average NPR of 7.03% suggests moderate credit risk, whereas banks maintained strong capital adequacy (CAR = 18.24%) and liquidity (SLR = 38.61%), both above regulatory benchmarks. The Jarque-Bera test indicates that ROA, CRR, SLR, and CAR are normally distributed ($p > 0.05$), whereas MPR and NPR deviate from normality ($p < 0.05$) due to positive skewness and higher kurtosis.

**Table 2: Augmented Dickey-Fuller (ADF) Unit Root Test Results**

| Variable | ADF Test Statistic | 5% Critical Value | Probability | Order of Integration |
|---|---|---|---|---|
| ROA | -11.4055 | -2.9092 | 0.0000 | I(1) |
| CAR | -9.0572 | -2.9092 | 0.0000 | I(1) |
| CRR | -8.7974 | -2.9092 | 0.0000 | I(1) |
| SLR | -8.7711 | -2.9100 | 0.0000 | I(1) |
| MPR | -7.4250 | -2.9092 | 0.0000 | I(1) |
| NPR | -9.5545 | -2.9092 | 0.0000 | I(1) |

**Source:** Author's computation using E-views 13.

The Augmented Dickey-Fuller (ADF) unit root test results reveal that all the variables became stationary after first differencing, as their ADF test statistics are more negative than the 5% critical values and the associated probability values are less than 0.05. Thus, the null hypothesis of a unit root is rejected for all variables, indicating that ROA, CAR, CRR, SLR, MPR, and NPR are integrated of order one, I(1). These findings justify the application of the ARDL bounds testing approach, which accommodates variables integrated at I(0) and I(1) but not I(2).

**Table 3: ARDL Bounds Test and Long-Run Estimation Results**

| Variable | Long-Run Coefficient | t-Statistic | Probability |
|---|---|---|---|
| CAR | -0.3249 | -1.1254 | 0.2656 |
| NPR | -0.0318 | -0.9783 | 0.3325 |
| SLR | -0.1596 | -3.8991 | 0.0003 |
| CRR | -0.0255 | -1.7500 | 0.0860 |
| MPR | -0.0664 | -2.4638 | 0.0171 |
| Constant | 16.0059 | 2.6620 | 0.0103 |
| ARDL Bounds Test for Cointegration | | | |
| Test Statistic | Value | 5% Lower Bound I(0) | 5% Upper Bound I(1) |
| F-Statistic | 4.1000 | 2.596 | 3.677 |

**Source:** Author's computation using E-views 13.

The ARDL bounds test produced an F-statistic of 4.1000, which exceeds the 5% upper bound critical value of 3.677, indicating the existence of a long-run cointegrating relationship between credit risk regulation variables and the profitability of commercial banks in Nigeria. Consequently, the null hypothesis of no long-run relationship is rejected. The long-run estimates reveal that Statutory Liquidity Ratio (SLR) has a negative and statistically significant effect on profitability ($\beta = -0.1596$, $p = 0.0003$), while the Monetary Policy Rate (MPR) also exerts a significant negative influence on ROA ($\beta = -0.0664$, $p = 0.0171$). Similarly, the Cash Reserve Ratio (CRR) has a negative effect that is weakly significant at the 10% level ($\beta = -0.0255$, $p = 0.0860$). In contrast, the Capital Adequacy Ratio (CAR) and Non-Performing Loan Ratio (NPR) have negative but statistically insignificant long-run effects on profitability. Overall, the findings suggest that tighter liquidity and monetary regulations reduce commercial banks' long-run profitability, while the effects of capital adequacy and credit quality are not statistically significant over the study period.

**Table 4: Autoregressive Distributed Lag (ARDL) Short-Run Estimation Results for the Effect of Credit Risk Regulation on the Profitability of Commercial Banks in Nigeria**

| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
|---|---|---|---|---|
| ROA(-1) | 0.336575 | 0.118789 | 2.833396 | 0.0065 |

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| | | | | |
|---|---|---|---|---|
| ROA(-2) | 0.311214 | 0.135272 | 2.300663 | 0.0255 |
| CAR | -0.114435 | 0.076182 | -1.502134 | 0.1391 |
| NPR | -0.011191 | 0.013475 | -0.830533 | 0.4100 |
| SLR | -0.014522 | 0.025051 | -0.579707 | 0.5646 |
| SLR(-1) | 0.016691 | 0.024630 | 0.677679 | 0.5010 |
| SLR(-2) | -0.058370 | 0.024969 | -2.337710 | 0.0233 |
| CRR | -0.008991 | 0.005198 | -1.729858 | 0.0896 |
| MPR | -0.023397 | 0.010344 | -2.261883 | 0.0279 |
| C | 5.637438 | 1.386954 | 4.064617 | 0.0002 |
| R-squared | 0.776548 | Mean dependent var | | 2.248710 |
| Adjusted R-squared | 0.737873 | S.D. dependent var | | 0.396582 |
| S.E. of regression | 0.203043 | Akaike info criterion | | -0.204107 |
| Sum squared resid | 2.143778 | Schwarz criterion | | 0.138979 |
| Log likelihood | 16.32732 | Hannan-Quinn criter. | | -0.069403 |
| F-statistic | 20.07910 | Durbin-Watson stat | | 2.216432 |
| Prob(F-statistic) | 0.000000 | | | |

**Source:** Author's computation using E-views 13.

The ARDL estimation results indicate that the selected ARDL(2,0,0,2,0,0) model provides a good fit for explaining the profitability of commercial banks in Nigeria. The model is jointly significant (F-statistic = 20.0791, p = 0.0000), while the R-squared (0.7765) and Adjusted R-squared (0.7379) imply that approximately 77.65% and 73.79%, respectively, of the variations in Return on Assets (ROA) are explained by the included credit risk regulatory variables. The Durbin-Watson statistic of 2.2164 suggests the absence of first-order serial correlation in the residuals. The lagged values of Return on Assets, ROA(-1) (β = 0.3366, p = 0.0065) and ROA(-2) (β = 0.3112, p = 0.0255), are positive and statistically significant, indicating persistence in bank profitability, where previous profitability positively influences current performance.

Among the explanatory variables, the Capital Adequacy Ratio (CAR) and the Non-Performing Loan Ratio (NPR) have negative but statistically insignificant effects on profitability, suggesting that their short-run impacts on Return on Assets are weak during the study period. The contemporaneous and first lag of the Statutory Liquidity Ratio (SLR) are also statistically insignificant. However, the second lag of the Statutory Liquidity Ratio [SLR (-2)] exerts a negative and statistically significant effect (β = -0.0584, p = 0.0233), implying that liquidity regulatory measures reduce profitability after a two-quarter lag. Furthermore, the Cash Reserve Ratio (CRR) has a negative effect that is marginally significant at the 10% level (β = -0.0090, p = 0.0896), while the Monetary Policy Rate (MPR) has a negative and statistically significant effect on profitability (β = -0.0234, p = 0.0279). These findings suggest that tighter monetary and liquidity regulations reduce the profitability of commercial banks by increasing the cost of funds and restricting the availability of loanable resources. Overall, the results indicate that monetary and liquidity regulatory measures exert stronger short-run effects on bank profitability than capital adequacy and non-performing loans.

**Table 5: Error Correction Model (ECM) Results for the Effect of Credit Risk Regulation on the Profitability of Commercial Banks in Nigeria**

| Variable | Coefficient | t-Statistic | Probability | Decision |
|---|---|---|---|---|
| ECT(-1) (ROA(-1)) | -0.3522 | -2.8037 | 0.0071 | Significant |
| CAR | -0.1144 | -1.5021 | 0.1391 | Not Significant |
| NPR | -0.0112 | -0.8305 | 0.4100 | Not Significant |
| SLR(-1) | -0.0562 | -2.8571 | 0.0061 | Significant |
| CRR | -0.0090 | -1.7299 | 0.0896 | Significant at 10% |
| MPR | -0.0234 | -2.2619 | 0.0279 | Significant |

Source: Author's computation using E-views 13.

The Error Correction Model (ECM) results confirm the existence of a stable long-run relationship between credit risk regulation and the profitability of commercial banks in Nigeria. The error correction term [ECT (-1)] is negative and statistically significant (β = -0.3522, p = 0.0071), indicating that approximately 35.22% of any short-run disequilibrium in bank profitability is corrected each quarter towards the long-run equilibrium. Among the regulatory variables, the Statutory Liquidity Ratio (SLR) has a significant negative

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effect on profitability, implying that stricter liquidity requirements reduce banks' earnings. Similarly, the Monetary Policy Rate (MPR) exerts a negative and significant influence on profitability, suggesting that tighter monetary policy increases funding costs and weakens bank performance. The Cash Reserve Ratio (CRR) also has a negative effect, significant at the 10% level, indicating that higher reserve requirements reduce the availability of loanable funds and consequently bank profitability. Conversely, the Capital Adequacy Ratio (CAR) and Non-Performing Loan Ratio (NPR) exhibit negative but statistically insignificant effects, suggesting that their short-run influence on commercial bank profitability is limited over the study period. Overall, the findings indicate that liquidity and monetary regulatory measures constitute the major channels through which credit risk regulation affects the profitability of commercial banks in Nigeria.

### 4.3 Discussion of Findings

This study examined the effect of credit risk regulation on the profitability of commercial banks in Nigeria using the ARDL approach. The unit root results established that all the variables were integrated of order one, I(1), justifying the application of the ARDL bounds testing technique. The bounds test further confirmed the existence of a long-run relationship between credit risk regulation and bank profitability, indicating that regulatory measures and profitability move together over time. The findings revealed that the Capital Adequacy Ratio (CAR) has a negative but statistically insignificant effect on profitability in both the short run and long run. This suggests that although maintaining higher capital buffers may temporarily reduce returns due to increased capital holding costs, the effect is not sufficiently strong to significantly influence banks' profitability. This finding agrees with the studies of Berger (1995) and Athanasoglou et al. (2008), who found that the impact of capital adequacy on profitability is often weak and depends on the operating environment. However, it contradicts Olarewaju and Akande (2016), who reported a positive and significant relationship between capital adequacy and the profitability of Nigerian deposit money banks.

Similarly, the Non-Performing Loan Ratio (NPR) exhibited a negative but insignificant effect on profitability. Although the negative coefficient is consistent with economic theory that deteriorating asset quality reduces earnings through higher loan loss provisions, the lack of statistical significance suggests that Nigerian commercial banks may have strengthened their credit risk management practices during the study period. This result supports Kolapo et al. (2012) and Richard et al. (2013), who found that poor credit quality adversely affects profitability, although the magnitude may vary across banking systems. The study further found that the Statutory Liquidity Ratio (SLR) has a significant negative effect on profitability. This implies that maintaining higher statutory liquidity reduces the amount of funds available for lending and other income-generating activities, thereby lowering bank profitability. This finding is consistent with Bourke (1989) and Dietrich and Wanzenried (2011), who argued that excessive liquidity holdings reduce banks' earnings due to the opportunity cost of idle funds.

The Cash Reserve Ratio (CRR) also exhibited a negative effect on profitability, with weak statistical significance. This finding suggests that higher reserve requirements imposed by the Central Bank of Nigeria reduce banks' lending capacity and interest income. The result corroborates the findings of Onoh (2017) and Atoi (2018), who reported that tighter reserve requirements constrain banks' financial performance through reduced liquidity available for credit creation. Furthermore, the Monetary Policy Rate (MPR) was found to have a significant negative effect on profitability. This indicates that increases in the policy rate raise banks' cost of funds and dampen credit demand, thereby reducing profitability. The result agrees with Demirgüç-Kunt and Huizinga (1999) and Flamini et al (2009), who found that restrictive monetary policy negatively affects bank performance, particularly in developing economies. Finally, the Error Correction Model (ECM) revealed a negative and statistically significant error correction coefficient, indicating that approximately 35.22% of short-run disequilibrium is corrected each quarter. This confirms the existence of a stable long-run equilibrium relationship between credit risk regulation and commercial bank profitability in Nigeria. Overall, the findings suggest that while capital adequacy and non-performing loans exert limited direct influence on profitability, liquidity and monetary regulatory measures, particularly the Statutory Liquidity Ratio, Cash Reserve Ratio, and Monetary Policy Rate, significantly shape the profitability of commercial banks in Nigeria.

## 5.0 CONCLUSION AND RECOMMENDATIONS

This study examined the effect of credit risk regulation on the profitability of commercial banks in Nigeria using quarterly data covering the period 2009Q1 to 2024Q4. The study employed the Autoregressive Distributed Lag (ARDL) approach to estimate both the short-run and long-run relationships between profitability, measured by Return on Assets (ROA), and selected credit risk regulatory indicators, namely Capital Adequacy Ratio (CAR), Non-Performing Loan Ratio (NPR), Statutory Liquidity Ratio (SLR), Cash Reserve Ratio (CRR), and Monetary Policy Rate (MPR). The empirical results established the existence of a long-run equilibrium relationship between credit risk regulation and the profitability of commercial banks in Nigeria. The findings further revealed that liquidity and monetary policy regulations constitute the major regulatory channels influencing bank profitability. Specifically, the Statutory Liquidity Ratio (SLR) and Monetary Policy Rate (MPR) exerted significant negative effects on profitability, while the Cash Reserve Ratio (CRR) also exhibited a negative influence, though significant only at the 10 percent level. Conversely, the Capital Adequacy Ratio (CAR) and Non-Performing Loan Ratio (NPR) had negative but statistically insignificant effects on profitability. The Error Correction Model confirmed that short-run deviations from long-run equilibrium are corrected at a speed of approximately 35.22 percent per quarter, indicating a stable

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adjustment process within the Nigerian banking industry. The study concludes that although prudential regulations are essential for maintaining financial system stability and strengthening banks' resilience against credit risk, excessively restrictive liquidity and monetary policy measures can reduce banks' profitability by limiting lending activities and increasing the cost of funds. Therefore, regulators should seek an appropriate balance between financial stability objectives and the profitability of commercial banks to promote sustainable banking sector growth. Based on the findings of this study, the following recommendations are made:

i. The Central Bank of Nigeria should adopt a balanced approach to liquidity regulation by ensuring that adjustments in the Statutory Liquidity Ratio and Cash Reserve Ratio do not excessively constrain banks' capacity to create credit and generate sustainable profits.
ii. Monetary policy tightening should be implemented cautiously, particularly during periods of economic slowdown, since persistent increases in the Monetary Policy Rate reduce bank profitability through higher funding costs and weaker credit expansion.
iii. Commercial banks should strengthen credit risk assessment and loan monitoring systems to sustain the decline in non-performing loans and improve asset quality, even though the empirical results show that the effect of the Non-Performing Loan Ratio on profitability is statistically weak.
iv. Banks should maintain adequate capital buffers while improving capital efficiency. Rather than merely satisfying regulatory capital requirements, banks should deploy capital more efficiently into productive and low-risk assets capable of enhancing profitability.
v. The Central Bank of Nigeria should periodically review prudential regulatory thresholds to ensure that regulatory policies achieve financial system stability without imposing excessive compliance costs that could adversely affect banks' financial performance.
vi. Commercial banks should diversify their income sources by expanding non-interest income activities, digital financial services, and fee-based products to reduce the adverse effects of restrictive credit risk regulations on profitability.

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