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Non-Performing Loans and Performance of Listed Deposit Money Banks in Nigeria

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ABSTRACT

The issue of Non-Performing Loan has become a matter of serious concern among listed deposit money banks in Nigeria, as loans granted by banks to their customers are often not being repaid according to the terms and conditions of the loan agreement. The effect of this on the financial performance of banks is the reduction in banks' profit and their intermediation capacity. Therefore, this study investigated the impact of non-performing loans (NPL) on the performance of listed deposit money banks in Nigeria; using Return on Asset as performance variable. The study employed" ex-post facto" research design because of the availability of published audited financial statements of listed deposit money banks as contained on the Nigerian Exchange Group Website and Fact Book 2022.The population of the study comprised all the 10 listed deposit money banks for the period of the study (2009-2022) ;while census sampling technique was employed to select all the 10 listed deposit money banks because they were not delisted, and their operations were not disrupted during the period. Descriptive statistics, correlation analysis and panel data estimation techniques were employed for data analysis. The findings revealed that Non-Performing Loan have statistically positive and significant impact on Return on Asset with p-value 0.01386. Therefore, the study recommended that banks should place a strong emphasis on enhancing their credit risk management practices maintain strong Capital employed to mitigate the potential negative impact of Non- Performing Loans. This includes implementing more rigorous credit assessment procedures, improving loan portfolio diversification, and closely monitoring the credit worthiness of borrowers.

Keywords: Non-Performing Loan; Return on Asset; Listed Deposit Money Banks and Nigeria

INTRODUCTION

The stability and performance of banking institutions are critical to the effective functioning of financial systems and the broader economy. Within this context, the quality of a bank's loan portfolio particularly the prevalence of non-performing loans (NPLs) has been identified as a central determinant of financial performance outcomes for deposit money banks (DMBs) globally and in Nigeria (Adeleke et al., 2023; Okafor et al., 2023). Non-performing loans are broadly defined as credit exposures on which interest or principal repayments are overdue beyond a specified period, typically 90 days or more, and no longer generate expected income for the lending institution (Adeleke et al., 2023). Elevated NPL levels constrain banks' ability to mobilize deposits, allocate credit efficiently, and sustain profitability, thereby posing systemic risks to financial intermediation and economic growth (Adeleke et al., 2023; Okafor et al., 2023).

In Nigeria, the management of credit risk and the control of non-performing loans have remained persistent challenges for listed DMBs, affecting key performance indicator such as return on assets (ROA). Empirical studies indicate that non-performing loan ratios negatively influence financial performance metrics, although the statistical significance and magnitude of these effects vary across measurement approaches and sample periods (Okafor et al., 2023). For instance, recent analysis of Nigerian listed banks reported that substandard and doubtful loans exerted differential effects on performance, with doubtful loans demonstrating significant adverse relationships with financial outcomes. Similarly, analyses spanning 2010–2021 found negative and statistically insignificant effects of non-performing loans measured through loan loss provisions and loan and advance ratios on returns on asset and equity (Adeleke et al., 2023).

The Nigerian regulatory environment, shaped by the Central Bank of Nigeria's prudential guidelines and risk management frameworks, underscores the imperative of maintaining asset quality and adequate provisioning against impaired loans. Despite regulatory efforts, the persistence of high NPL ratios has constrained the capacity of listed DMBs to expand credit responsibly and maintain robust profitability, prompting calls for strengthened credit appraisal, continuous portfolio monitoring, and enhanced risk mitigation strategies (Okafor et al., 2023; Adeleke et al., 2023). Given these dynamics, there remains a need for current empirical analysis that specifically examines the relationship between non-performing loans and the financial performance of listed deposit money banks in Nigeria, incorporating recent data and considering evolving market conditions.

This study investigates the effect of non-performing loans on the performance of listed deposit money banks in Nigeria by assessing key performance indicators such as profitability and asset utilization. Through rigorous quantitative analysis, the paper contributes to the literature by providing updated evidence on how NPLs influence bank performance and offers insights into risk management practices that could enhance financial stability within the Nigerian banking sector.

LITERATURE REVIEW

Empirical investigations into the relationship between non-performing loans and bank performance have consistently emphasized asset quality as a central determinant of banking sector stability and profitability. In the Nigerian context, early systematic evidence is provided by Okoh, Inim, and Idachaba (2019), who examined the effect of non-performing loans on the financial performance of commercial banks in Nigeria using time-series data from 1985 to 2016 and multiple regression techniques. Their study focused on how credit quality indicators influence return on assets and found that non-performing loan ratio exerted a statistically significant and negative effect on bank performance. They concluded that persistent accumulation of bad loans erodes profitability and recommended stricter credit appraisal and monitoring mechanisms. However, their study was limited by its failure to disaggregate banks by size or ownership structure and did not consider the role of macroeconomic shocks.

Similarly, Ughulu, Inobemhe, and Ughulu (2023) investigated the effect of non-performing loans on the financial performance of listed deposit money banks in Nigeria using panel data spanning 2001–2021 and employing fully modified ordinary least squares (FMOLS) techniques. Their focus was explicitly on profitability indicators such as return on assets and return on equity. The findings revealed that non-performing loans have a negative and statistically significant impact on both performance measures. The authors concluded that rising credit default weakens banks' intermediation capacity and recommended more aggressive loan loss provisioning and strengthened risk management frameworks. Nevertheless, the study did not explicitly account for the moderating role of macroeconomic variables such as inflation or GDP growth.

In a related study, Okafor, Ibeabuchi-Ani, and Ariwa (2023) examined the effect of non-performing loans on the financial performance of listed banks in Nigeria using an ex-post facto research design and multivariate regression techniques. Their study focused on multiple performance dimensions, including profitability, capital adequacy, and earnings per share. The findings showed that non-performing loans negatively and significantly affected profitability, while their effect on capital adequacy and earnings per share was statistically insignificant. The authors concluded that although Nigerian banks appear resilient in terms of capital buffers, profitability remains highly sensitive to asset quality deterioration. However, their work did not differentiate among categories of impaired loans such as substandard, doubtful, and lost loans.

More recent evidence from Dabo, Tarfa, and Bakari (2025) extended this line of inquiry by decomposing non-performing loans into substandard loans, doubtful loans, and loan losses in their examination of listed deposit money banks in Nigeria. Using time-series and panel regression techniques, the study found that doubtful loans had a particularly strong and statistically significant negative effect on financial performance, while other categories showed mixed effects. The authors concluded that not all non-performing loans exert uniform effects on bank performance and recommended differentiated risk management strategies. However, the study did not incorporate bank-specific governance or efficiency indicators into its model.

Adeleke et al. (2023) analyzed non-performing loans and the financial performance of listed deposit money banks in Nigeria over the period 2010–2021 using panel regression methods. Their focus was on the impact of loan loss provisions and non-performing loan ratios on return on assets and return on equity. The findings indicated a negative but statistically insignificant relationship, suggesting that while asset quality deterioration weakens performance, the effect may be partially absorbed by capital buffers and provisioning policies. They concluded that regulatory interventions by the Central Bank of Nigeria may have moderated the severity of NPL impacts. A key limitation of their study is the absence of dynamic modeling to capture lagged effects.

Beyond direct performance effects, some studies have examined the interaction between non-performing loans and other financial variables. For instance, Segun, Ogunleye, and Kosile (2024) investigated the joint effect of leverage and non-performing loans on the profitability of listed deposit money banks in Nigeria using panel regression techniques. Their findings showed that non-performing loans significantly worsened the negative effect of leverage on profitability. The authors concluded that excessive debt financing becomes particularly dangerous in the presence of poor asset quality and recommended conservative leverage policies. However, their study did not explore causality or feedback effects.

In a complementary vein, Tomomewo, Falayi, and Uhuaba (2023) focused on credit risk management as a determinant of non-performing loans in Nigerian deposit money banks rather than on performance directly. Using panel data methods, they found that capital adequacy and loan loss provisioning policies significantly influenced the level of non-performing loans. Although their study contributes to understanding the drivers of NPLs, it does not empirically link NPLs to profitability or efficiency outcomes, leaving a gap in performance transmission mechanisms.

Wuyep and Eze (2023) also examined bank-specific determinants of non-performing loans in Nigeria using panel regression techniques and found that loan-to-asset ratio, profitability, and operational efficiency significantly influenced NPL levels. Their study concluded that poor management quality and aggressive lending strategies tend to worsen asset quality. However, like many determinant-focused studies, it did not extend the analysis to examine how these NPLs translate into performance outcomes.

At a broader macro-financial level, Atoi (2018), in a Central Bank of Nigeria working paper, examined the effect of non-performing loans on banking system stability using dynamic GMM techniques. The study found that high NPL ratios significantly undermine banking sector stability and increase the likelihood of systemic distress. The author concluded that macroprudential regulation and countercyclical provisioning are essential tools for controlling credit risk. However, the study focused more on systemic stability than on bank-level profitability or efficiency.

Several other Nigerian studies, including Nwosu et al. (2020), Okoli, Ifurueze, and Nweze (2020), and Salihu, Abdullahi, and Adefiranye (2023), consistently report a negative relationship between non-performing loans and bank performance using various panel and time-series techniques. While their methodologies differ ranging from ordinary least squares to ARDL and fixed-effects models their conclusions converge on the view that poor asset quality erodes profitability, constrains lending, and weakens shareholder value. Nonetheless, many of these studies rely on relatively short sample periods or fail to control adequately for macroeconomic volatility.

Outside Nigeria, evidence from Sub-Saharan Africa and other emerging markets reinforces these findings. Studies such as those by Collaku and Aliu (2021) on Kosovo banks and other cross-country African banking studies show that non-performing loans significantly and negatively affect return on assets and return on equity. These studies generally employ panel regression and dynamic estimation techniques and conclude that credit risk is one of the most important determinants of bank performance in developing economies. However, their applicability to Nigeria is limited by institutional and regulatory differences.

Recent global reviews, such as Ozili (2025), argue that while the negative impact of non-performing loans on bank performance is well established, emerging issues such as digital lending, fintech credit scoring, and post-COVID-19 restructuring of loan portfolios have not been sufficiently integrated into empirical models, especially in African contexts. This observation highlights a critical gap in contemporary Nigerian banking research.

Overall, the empirical literature spanning more than four decades of data and over forty studies provide overwhelming evidence that non-performing loans are detrimental to bank performance, whether measured by profitability, efficiency, or stability indicators. Most studies conclude with policy recommendations centered on stricter credit appraisal, enhanced monitoring, improved provisioning, and stronger regulatory oversight. However, several important gaps remain evident. First, many Nigerian studies rely on static models and fail to capture the dynamic and lagged effects of non-performing loans on performance. Second, there is limited disaggregation of non-performing loans into their components despite evidence that different categories have different performance implications. Third, the interaction between macroeconomic shocks, regulatory changes, and bank-specific characteristics is still insufficiently explored. Finally, there is a paucity of studies using very recent post-pandemic data, despite clear evidence that COVID-19 and recent economic shocks have reshaped credit risk dynamics in the Nigerian banking sector.

It is within these gaps that the present study is situated, as it seeks to provide updated, bank-level empirical evidence on the effect of non-performing loans on the performance of listed deposit money banks in Nigeria using more recent data and more robust econometric techniques.

METHODOLOGY

This study adopts an ex-post facto research design and relies on quantitative panel data in order to examine the effect of non-performing loans on the performance of listed deposit money banks in Nigeria. The choice of this design is justified by the fact that the study makes use of historical financial data that are not subject to manipulation by the researcher. By combining both cross-sectional and time-series dimensions of the data, the panel approach enhances the robustness of the analysis and allows for better control of unobserved bank-specific heterogeneity.

The performance of the banks is proxied by Return on Assets in line with the approaches adopted by Peter, Salvio, and Raphael (2018) and Rejaul, Mustaqim, Farjana, and Mahmud (2022). The explanatory variables are selected to capture different dimensions of credit risk and loan portfolio quality. The loan loss provision ratio is measured as loan loss provision divided by total loans multiplied by 100, consistent with Appietu (2020) and Peter et al. (2018). The impaired loan ratio is computed as impaired loans divided by total loans multiplied by 100, following Appietu (2020) and Osei-Tutu (2021). Credit growth rate is measured as the change in total credit from the previous period to the current period divided by the previous period's total credit, in line with Peter et al. (2018) and Rejaul et al. (2022). Firm size is introduced as a control variable and is measured as the natural logarithm of total assets, following Peter et al. (2018) and Rejaul et al. (2022), in order to account for scale effects and structural differences among the banks.

In operational terms, the econometric model is estimated using panel regression techniques with an error term that captures other influences on bank performance not explicitly included in the model. The analysis begins with descriptive statistics, including the mean, standard deviation, minimum, and maximum values, in order to summarize the distributional properties of the variables and provide preliminary insights into their behavior. Correlation analysis is subsequently conducted to examine the degree of association among the variables and to check for the possible presence of multicollinearity. To estimate the impact of non-performing loan indicators on bank performance, three panel estimation techniques are applied, namely pooled Ordinary Least Squares, fixed effects, and random effects models. The pooled Ordinary Least Squares estimator serves as a baseline, while the fixed and random effects models account for unobserved heterogeneity across banks.

To determine the most appropriate estimator between the fixed effects and random effects models, the Hausman specification test is conducted. The use of these panel techniques is justified by their ability to exploit both the cross-sectional and time-series properties of the data, increase the number of observations and degrees of freedom, reduce the risk of collinearity among regressors, and improve the efficiency and consistency of the estimated parameters. In addition, post-estimation diagnostic tests are carried out to ensure the reliability of the results, including tests for heteroskedasticity and serial correlation.

All statistical analyses and estimations are performed using the EViews 8 statistical software package.

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FINDINGS AND DISCUSSIONS

This section presents and discusses the empirical results on the effect of non-performing loan indicators on the performance of listed deposit money banks in Nigeria, based on the descriptive statistics, correlation analysis, diagnostic tests, and panel regression estimates reported in Tables 1 to 6 (As stated in appendix).

The descriptive statistics reported in Table 1 provide initial insights into the behavior of the study variables over the period under review. The mean return on assets (ROA) of approximately 2.5% indicates that, on average, Nigerian listed banks were modestly profitable during the study period. However, the wide range between the minimum and maximum values, with ROA ranging from about –36% to 45%, reveals substantial volatility in bank performance. This level of dispersion suggests that profitability in the Nigerian banking sector is highly sensitive to fluctuations in asset quality and macroeconomic conditions. Similar patterns of high profitability volatility have been documented in recent Nigerian studies by Adeleke et al. (2023) and Ughulu et al. (2023), who attribute such instability to persistent credit risk and periodic economic shocks.

The average loan loss provision ratio (LLPR) of about 18% indicates a relatively high level of provisioning, reflecting sustained concerns about loan quality in the banking system. This supports the argument by Atoi (2018) and Segun et al. (2024) that Nigerian banks continue to operate in a high-risk credit environment that necessitates substantial provisions against potential loan losses. The impaired loan ratio (ILR) also shows a high mean value, further confirming that asset quality remains a major structural challenge in the sector. The credit growth rate (CGR) exhibits considerable variability, indicating periods of aggressive credit expansion as well as contraction, a pattern consistent with the procyclical nature of bank lending documented in emerging markets (Ozili, 2025). Firm size displays extreme skewness and kurtosis, reflecting the dominance of a few very large banks in the Nigerian banking industry, which supports the concentration argument advanced by Okafor et al. (2023).

The Jarque–Bera statistics indicate that most variables are not normally distributed, reflecting the presence of extreme values and volatility clustering. This is typical of financial and banking data in emerging economies and further justifies the use of panel econometric techniques, as also noted by Ughulu et al. (2023) and Salihu et al. (2023).

Table 2 presents the Pearson correlation matrix. The correlation between ROA and LLPR is negative, suggesting that higher provisioning is associated with lower profitability, although the relationship is weak. This direction is consistent with the findings of Adeleke et al. (2023) and Okoh et al. (2019), who argue that provisioning represents either realized or expected losses that reduce current earnings. Similarly, the correlation between ROA and ILR is negative, indicating that higher levels of impaired loans tend to coincide with poorer performance. This is in line with the dominant empirical consensus that asset quality deterioration undermines bank profitability (Okafor et al., 2023; Ughulu et al., 2023).

Credit growth shows a weak positive correlation with ROA, implying that moderate loan expansion may support profitability. However, the literature cautions that such benefits are often short-lived in weak institutional environments, as aggressive credit growth typically leads to future asset quality problems (Atoi, 2018; Ozili, 2025). Firm size exhibits a positive and statistically significant correlation with ROA, suggesting that larger banks tend to be more profitable, possibly due to economies of scale, diversification advantages, and stronger market power. This finding is consistent with Segun et al. (2024) and Salihu et al. (2023), who report that large Nigerian banks are better able to absorb shocks and stabilize earnings.

Importantly, the correlations among the explanatory variables are generally low, indicating that multicollinearity is unlikely to be a serious concern. This is confirmed by the Variance Inflation Factor results reported in Table 3, where all VIF values are close to unity. This suggests that LLPR, ILR, and CGR capture distinct dimensions of credit risk and lending behavior, thereby ensuring the stability and reliability of the regression estimates. This diagnostic outcome is consistent with best practice in recent banking panel studies (Ughulu et al., 2023; Segun et al., 2024).

The unit root test results in Table 4 show that all variables are stationary at level. This implies that the series do not exhibit stochastic trends and that the estimated relationships are unlikely to be spurious. The stationarity of bank performance and credit risk ratios is consistent with the argument that regulatory intervention and prudential guidelines impose mean-reverting behavior on key financial indicators in the Nigerian banking system (Atoi, 2018; Okafor et al., 2023). This result justifies the use of static panel estimation techniques rather than cointegration or error-correction models.

Table 5 reports the Hausman specification test, which indicates that the random effects model is more appropriate than the fixed effects model. This suggests that the unobserved bank-specific effects are not systematically correlated with the explanatory variables. The adoption of the random effects estimator is consistent with several recent Nigerian banking studies using balanced panels of listed banks (Adeleke et al., 2023; Segun et al., 2024).

The core regression results are presented in Table 6. The model explains approximately 63% of the variations in ROA, indicating strong explanatory power for a banking sector panel model. The F-statistic is statistically significant, confirming that the model is jointly meaningful.

The coefficient of the loan loss provision ratio (LLPR) is negative but statistically insignificant. This suggests that although higher provisioning tends to reduce profitability, its marginal short-run effect is not strong enough to be statistically decisive in this sample. This result is consistent with the findings of Adeleke et al. (2023), who argue that provisioning is often forward-looking and subject to income-smoothing practices, thereby weakening its immediate impact on reported profitability.

The impaired loan ratio (ILR) exhibits a positive and statistically significant coefficient, which is counterintuitive from a purely theoretical perspective. However, similar results have been reported in some recent Nigerian studies, which explain that banks with higher impaired loans may also charge higher risk premiums, engage in aggressive income recognition, or benefit from regulatory forbearance, thereby temporarily masking the adverse effect of poor asset quality on profitability (Okafor et al., 2023; Salihu et al., 2023). This finding suggests that accounting and regulatory practices may blur the short-run relationship between asset quality and performance, even though the long-run effect is expected to be negative.

The credit growth rate (CGR) has a negative and statistically significant effect on ROA, indicating that rapid credit expansion reduces bank profitability. This strongly supports the “bad growth” or “credit boom bust” hypothesis widely documented in the banking literature, which posits that aggressive loan growth in weak institutional environments leads to poor screening, higher default rates, and subsequent performance deterioration (Atoi, 2018; Ozili, 2025; Segun et al., 2024). This result is particularly relevant for Nigeria, where episodes of rapid credit expansion have historically been followed by spikes in non-performing loans.

Overall, the results provide strong evidence that asset quality and lending behavior are central determinants of bank performance in Nigeria. While not all non-performing loan proxies exert uniform effects, the general pattern is consistent with the dominant empirical literature: poor credit quality and imprudent credit expansion undermine bank profitability, while size provides some degree of insulation against shocks (Adeleke et al., 2023; Ughulu et al., 2023; Segun et al., 2024).

In summary, the findings reinforce the view that non-performing loans remain a major structural constraint on the performance of listed deposit money banks in Nigeria. They also highlight the importance of not only controlling credit risk but also managing the pace and quality of credit expansion, especially in an environment characterized by macroeconomic volatility and institutional weaknesses.

CONCLUSION AND RECOMMENDATIONS

(a) Conclusion

This study examined the effect of non-performing loans on the performance of listed deposit money banks in Nigeria over the period 2009–2022, using return on assets as the key measure of performance. Drawing on panel data techniques and robust diagnostic tests, the study provides updated empirical evidence on how asset quality and lending behavior shape bank profitability in the Nigerian banking sector.

The findings reveal that non-performing loan indicators exert significant influence on bank performance, although the direction and magnitude of the effects vary across proxies. While loan loss provision ratio shows a negative but statistically insignificant relationship with return on assets, the impaired loan ratio demonstrates a positive and statistically significant effect, suggesting that short-run profitability may sometimes be sustained despite rising impaired loans. This counterintuitive result reflects the possible influence of risk-based pricing, accounting practices, regulatory forbearance, and income-smoothing behavior, which may temporarily obscure the underlying adverse effects of deteriorating asset quality. In contrast, credit growth rate exerts a negative and statistically significant impact on return on assets, confirming that aggressive credit expansion undermines bank performance in environments characterized by weak screening mechanisms and macroeconomic volatility.

Overall, the study concludes that non-performing loans remain a critical structural challenge confronting listed deposit money banks in Nigeria. Although some banks may appear profitable in the short run despite rising impaired loans, such performance is unlikely to be sustainable in the long run, as persistent asset quality deterioration ultimately weakens intermediation capacity, erodes capital buffers, and heightens systemic risk. The results reinforce the argument that prudent credit risk management and disciplined lending growth are essential for sustaining profitability and financial stability in the Nigerian banking sector.

Recommendations

Based on the findings of the study, the following recommendations are proposed:

First, deposit money banks should strengthen their credit risk management frameworks by adopting more rigorous credit appraisal and borrower screening procedures. This includes improved assessment of borrowers' cash flow capacity, sectoral risk exposure, and sensitivity to macroeconomic shocks, in order to reduce the incidence of impaired and non-performing loans.

Second, banks should place greater emphasis on proactive loan monitoring and early warning systems. Continuous monitoring of loan portfolios, timely identification of distressed credits, and prompt restructuring or recovery actions will help prevent loans from deteriorating further and reduce the long-term negative impact of non-performing loans on profitability.

Third, bank management should pursue a more cautious and sustainable credit growth strategy. The negative effect of credit growth on return on assets underscores the need to balance loan expansion with asset quality considerations. Regulatory authorities and bank boards should discourage aggressive lending driven solely by short-term profit motives and instead promote risk-adjusted performance targets.

Fourth, banks should maintain strong capital buffers and adequate loan loss provisioning policies. Although provisioning may not show an immediate significant effect on profitability, robust capital and provisioning frameworks enhance resilience and enable banks to absorb future loan losses without threatening solvency or operational stability.

Fifth, regulators, particularly the Central Bank of Nigeria, should continue to strengthen supervisory oversight and enforcement of prudential guidelines related to asset quality, credit concentration, and provisioning standards. Enhanced disclosure requirements and stress testing exercises can further improve transparency and discipline within the banking system.

Finally, future research is encouraged to extend this study by incorporating dynamic panel models to capture lagged effects of non-performing loans, disaggregating impaired loans into substandard, doubtful, and lost categories, and integrating macroeconomic variables such as inflation, interest rates, and GDP growth. Such extensions would provide deeper insights into the transmission mechanisms through which non-performing loans affect bank performance over time.

In conclusion, effective management of non-performing loans remains central to improving the performance and stability of listed deposit money banks in Nigeria. Sustained profitability in the sector will depend not only on controlling credit risk but also on ensuring prudent lending practices, strong governance, and a supportive regulatory environment.

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APPENDIX

Table 1: Descriptive Statistics

	ROA	LLPR	ILR	CGR	FZ
Mean	0.025310	0.182768	29.176161	85.91591	8.19E+08
Median	0.023252	0.192000	28.24505	91.82951	4804782.
Maximum	0.449391	0.390000	30.12532	95.28277	1.50E+10
Minimum	-0.360460	-0.160000	5.321172	72.209451	0.000000
Std. Dev.	0.052403	0.085871	0.654231	4.219047	1.98E+09
Skewness	0.776261	-1.350493	-0.213622	-0.213622	4.174503
Kurtosis	44.38327	6.308204	1.770233	15.44428	24.41838
Jarque-Bera	12004.90	127.6768	1186.405	1164.508	3699.171
Probability	0.000000	0.000000	0.002653	0.000000	0.000000
Sum	4.252016	30.70510	1.44E+10	1162.160	1.38E+11
Sum Sq. Dev.	0.458586	1.231425	2.97E+17	2829.017	6.56E+20
Observation	168	168	168	168	168

Source: Researcher’s compilation (2023).

Table 2: Pearson Correlation Matrix

		ROA	LLPR	ILR	CGR	FZ
ROA	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	168				
	Sig. (2-tailed)	.332				
	N	168				
LLPR	Pearson Correlation	-.013	1			
	Sig. (2-tailed)	.001				
	N	168	168			
ILR	Pearson Correlation	-.041	.127	1		
	Sig. (2-tailed)	.001	.101			

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	N	168	168	168		
CGR	Pearson Correlation	.081	.117	.075	1	
	Sig. (2-tailed)	.002	.130	.331		
	N	168	168	168	168	
FZ	Pearson Correlation	.223**	-.139	-.017	.097	1
	Sig. (2-tailed)	.004	.072	.829	.211	
	N	168	168	168	168	168

Source: Researcher's compilation (2023)

Table 3 Variance Inflation Factor Test of Variables

Variable	**Tolerance**	**VIF**
LLPR	.994	1.006
ILR	.985	1.016
CGR	.990	1.010

Source: Researcher's computation (2023)

Table 4: Unit Root Test {ADF Test with Intercept Only}

Variable	T-Statistics	P-Value	Order of Integration	Decision
ROA	104.744	0.0000	I(0)	Stationary
LLPR	67.4766	0.0000	I(0)	Stationary
ILR	65.6016	0.0000	I(0)	Stationary
CGR	133.459	0.0000	I(2)	Stationary
FZ	77.6025	0.0000	I(0)	Stationary

Source: Author's computation (2023)

Table 5: Hausman Test

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.223770	3	0.1012

Source: Authors computation (2023)

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Regression Analysis

Table 6: The effect of nonperforming loan on return on asset of listed banks in Nigeria

Dependent Variable: ROA				
Method: Panel EGLS (Cross-section random effects)				
Date: 11/04/23 Time: 16:20				
Sample: 2009 2022				
Periods included: 14				
Cross-sections included: 12				
Total panel (balanced) observations: 168				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.050097	0.011305	4.431549	0.0000
LLPR	-7.29E-11	9.32E-11	-0.781850	0.4354
ILR	2.84E-12	2.05E-12	3.386115	0.0076
CGR	-0.003014	0.000969	-3.110343	0.0022
	Effects Specification			
			S.D.	Rho
Cross-section random			0.004751	0.0088
Idiosyncratic random			0.050435	0.9912
	Weighted Statistics			
R-squared	0.62617	Mean dependent var		0.023870
Adjusted R-squared	0.45470	S.D. dependent var		0.052127
S.E. of regression	0.50928	Sum squared resid		0.425368
F-statistic	3.651721	Durbin-Watson stat		1.742991
Prob(F-statistic)	0.013861			

Source: Authors computation (2023)