A comparative analysis of the impact of NPL on the performance of foreign banks compared to Indigenous banks operating in Ghana

Abraham Nii Adu Okine[1] ⊙
David Kwashie Garr[2]

(⊙ Corresponding Author)

[1]Accra Institute of Technology, Accra Ghana, Department of Business, Accra, Ghana.
[1]Email: Papanii74@yahoo.com
[2]Presbyterian University Ghana, Abetifi School of Business and Economics, Abetifi, Ghana.
[2]Email: davegarr2023@yahoo.com

ABSTRACT

This research presents a comparative examination of the impact of non-performing loans (NPLs) on the performance of foreign banks versus indigenous banks operating in Ghana, concentrating on the Return on Assets (ROA), Return on Equity (ROE), and Liquidity Ratio (LIQDR). Utilizing balanced panel data from 2007 to 2021, a panel fixed-effects estimation technique was employed via EViews 12 to examine credit risk heterogeneity across bank ownership structures. The findings indicate an inverse but statistically insignificant association between NPLs and performance indicators (ROA, ROE, and LIQDR) for indigenous banks. This outcome suggests their greater vulnerability to asset quality deterioration, possibly due to less robust risk management. Conversely, foreign banks exhibit a contradictory direct and statistically significant relationship between NPLs and both ROA and ROE, whereas the effect on LIQDR remains insignificant. This outcome implies that foreign banks leverage superior credit risk mitigation, robust capital buffers, or distinct operational efficiencies (e.g., aggressive write-off policies or high-yield lending) to absorb or manage the NPL impacts more effectively. This study offers original insights by empirically differentiating performance outcomes for foreign and local banks facing credit risk in an emerging market. Practically, these findings necessitate enhanced credit monitoring and capital reform for indigenous banks. Policymakers should also consider capacity-building support for local institutions. Future studies could scrutinize the mediating function of bank governance and specific macroprudential policies.

Keywords: *Bank performance, foreign banks, Ghana, indigenous banks, non-performing loans, ROE, ROA, liquidity.*

Highlights of this paper:

- The focus of this paper is to compare the influence of non-performing loans on the performance of domestic and foreign banks operating in the Ghanaian economy, using panel regression analysis.
- ROA, ROE, and liquidity ratios were adopted as measures of performance.
- The results indicate that foreign banks demonstrate a positive and statistically significant relationship between non-performing loans (NPLs) and both return on assets (ROA) and return on equity (ROE). In contrast, local banks exhibit a negative but statistically insignificant association between NPLs and ROE, as well as NPLs and liquidity ratios.

1. INTRODUCTION

The current study provides a comparative examination of the effect of Non-Performing Loans (NPLs) on the stability of international banks compared to domestic banks, both operating in the Ghanaian economy. Non-performing loans (NPLs) are characterized as loans for which both the principal and interest payments are delinquent for over 90 days, or where there is insufficient confidence that the borrower will fulfill the repayment terms as stipulated (Amoa-Gyarteng, Coleman, & Eserifa, 2025; Bank of Ghana (BoG), 2024; Meskelu, 2024). The stability of a bank, a crucial dependent variable, is frequently assessed by its capacity to withstand shocks, commonly represented by metrics such as the Z-score, which indicates the distance to default, and the Capital Adequacy Ratio (CAR) (Berger, Herring, & Szegö, 1995).

The Ghanaian banking sector, a fundamental component of the nation's economy, has experienced substantial reforms and expansion over the last 20 years. Nonetheless, a continual concern has been the administration of credit risk, particularly an increase in non-performing loans (NPLs). The Ghanaian economy experienced a significant financial sector crisis from 2017 to 2019, resulting in a clean-up, failure, and consolidation of multiple (seven) domestic banks to form the CBG (Torku & Laryea, 2021). This crisis underscored the significant effect of inadequate asset quality on financial institutions' stability. Despite some improvements in the overall NPL levels recorded, it continues to exert a significant effect on the banking sector's long-term stability. The prevailing issue is the banking sector's vulnerability to persistent credit risk challenges, which unevenly impact various categories of the institutions (Maryem Naili & Younes Lahrichi, 2022).

Notwithstanding comprehensive studies on NPLs in Ghana, there is a notable knowledge gap regarding the incongruent comparative effect of NPLs on international and domestic banks. Current literature predominantly considers the banking industry as a uniform entity, overlooking the significant disparities in their governance frameworks, risk management methodologies, regulatory reforms, and capital accessibility that differentiate these two categories of financial institutions. This lapse indicates that a bank's resilience to credit shocks is significantly affected by its ownership and operational architecture. A thorough understanding of this varied impact of NPLs on the two sources of institutions is crucial for formulating targeted and effective regulatory actions.

The principal objective of this study is therefore to carry out a thorough comparative examination of the effect of non-performing loans (NPLs) on the performance of international banks and domestic banks operating in the Ghanaian economy. This analysis employed a panel data methodology to investigate the distinct elements and implications of non-performing loans for each group. The work aims to find answers to the following research questions: What is the effect of non-performing loans (NPLs) on both international and domestic banks in the Ghanaian banking industry? Which specific bank-level and macroeconomic factors elucidate the disparities in the performance-NPL relationship between these two banking groups?

The uniqueness of the current work emanates from its targeted comparative investigation, which dichotomizes the Ghanaian banking industry to offer a nuanced understanding of the effects of non-performing loans (NPLs) on their operations. Differentiating between foreign and domestic banks provides a unique perspective that transcends

average or aggregate-level analysis. The study's significance to the reader is threefold: it furnishes policymakers at the Bank of Ghana with essential insights for crafting more effective ownership-specific regulations, it equips bank managers with a clearer understanding of how to benchmark their credit risk management against competitors, and it aids staff in learning best practices from each other. Scientific validity is guaranteed by employing a stringent econometric approach (panel data regression) and utilizing official data from the Bank of Ghana with audited financial statements of the chosen banks for the period of study, thereby adding novel, evidence-based insights into the domain of financial economics.

1.1. Theoretical Framework

The theoretical foundation of the study is primarily based on the theories of Information Asymmetry and Credit Risk. Stiglitz and Weiss (1981) posit that information asymmetry highlights how imbalances in information between lenders and borrowers, the insurer and the insured, or transacting parties in the marketplace can lead to adverse selection and moral hazard issues, thereby increasing the likelihood of loan defaults and subsequent NPL accumulation in the banking system. This theoretical perspective is essential for understanding the micro-level drivers of NPLs in Ghanaian banks, where imperfect information about borrowers' true credit-risk profiles can worsen credit quality issues and loan recovery prospects.

Complementing this, Credit Risk Theory emphasizes that lending inherently exposes financial institutions to the risk of borrower default, necessitating the adoption of robust risk-management frameworks. For instance, the Basel Accords underscore the importance of adequate capital provision to absorb unexpected losses arising from credit risk, a principle directly relevant to bank stability (Drumond, 2009; Framework, 2006). Furthermore, Agency Theory (Jensen & Meckling, 1976) provides insights into potential conflicts of interest between bank management and investors, which can influence risk-taking behavior, profit motives, and, consequently, NPL levels. This agency conflict has the potential to impact the stability of financial institutions if it escalates.

1.2. Empirical Review

1.2.1. Determinants of NPLs

Empirical evidence consistently identifies bank-specific and macroeconomic factors as key determinants of NPLs in the Ghanaian banking sector. Bank-specific factors, such as rapid loan growth, inadequate capital adequacy, less stringent screening, and weak management efficiency, have been shown to contribute significantly to NPL growth and subsequent debt accumulation (Chibawe, 2025; Meskelu, 2024; Tweneboa, 2022). For instance, Amoah, Boakye, Ofori, and Ampomah-Britwum (2024) and Tweneboa (2022) find that the loan-to-deposit ratio, capital adequacy ratio, profitability, and bank size negatively impact NPLs in the Ghanaian economy. Macroeconomic variables, including unemployment, GDP growth rate, inflation, and interest rates, also exert a substantial influence on bank NPL levels.

For example, a decline in real GDP growth can impair borrowers' repayment capacity, leading to higher NPLs (Kuzucu & Kuzucu, 2019; Singh, Basuki, & Setiawan, 2021). Recent studies, including a comprehensive review by Maryem Naili and Younès Lahrichi (2022) and Alnabulsi, Kozarević, and Hakimi (2023), corroborate that economic downturns, high inflation, and rising interest rates are globally recognized as significant macroeconomic drivers of NPLs. The recent Domestic Debt Exchange Program (DDEP) and government arrears have further exacerbated NPLs for some Ghanaian banks, highlighting the impact of sovereign risk (Atuahen, Agyei, & Frimpong, 2024; Business & Financial Times, 2025). For this study, GDP, exchange rate, and inflation are utilized as key macroeconomic control variables to account for their pervasive influence on loan performance and bank stability.

1.2.2. Impact of NPLs on Bank Stability

The adverse effect of NPLs on bank sustainability is well documented in previous literature. High NPL ratios erode bank profitability, deplete capital buffers, and constrain liquidity, ultimately undermining the robustness of the financial sector. Arnone, Costantiello, Leogrande, Naqvi, and Magazzino (2024) and Boubaker and Elnahass (2024) specifically found a significant inverse relationship between NPLs and the performance of listed banks in Ghana irrespective of their origin. Persistent elevated levels of NPLs can lead to a credit crunch, limiting new lending and hindering economic growth (Dimri, 2023). The Bank of Ghana's Financial Stability Reviews consistently highlight NPLs as a primary risk to the sector's stability, necessitating stringent regulatory measures to contain the impact (Amoa-Gyarteng et al., 2025; Ofori-Sasu, Mekpor, Adu-Darko, & Sarpong-Kumankoma, 2023).

1.2.3. Comparative Studies (Foreign vs. Indigenous Banks)

While the general impact of NPLs on banks is clear, empirical research comparing the effect of NPLs on the stability of foreign banks versus indigenous banks operating in the Ghanaian economy remains limited, representing a critical research gap. Existing studies suggest that foreign banks often exhibit more conservative lending practices and possess stronger capital bases due to their global affiliations, alternative sources of funding and support, potentially making them more resilient to withstand the NPL shocks than their indigenous counterparts in the same system (Britwum, Mabe, & Adeosun, 2025; Clift, 2025).

The Price Waterhouse Coopers (PwC) PwC Ghana (2020) and Agyapong (2020) alluded to improved corporate governance and risk management post-reforms, which may be more deeply embedded in foreign-owned banks compared to the indigenous ones. Conversely, indigenous banks, which are crucial for local economic development, may face higher capital constraints and be more susceptible to domestic economic vulnerabilities than their foreign counterparts for obvious reasons (Business & Financial Times, 2025; Essers, 2013). This research is aimed at bridging this analytical gap by making available a scholarly comparative assessment of the impact of NPLs on domestic versus foreign banks operating in Ghana.

2. MATERIAL AND METHODOLOGY

2.1. Research Design

This study adopts a quantitative research design utilizing a panel data approach to comparatively analyze the influence of Non-Performing Loans (NPLs) on the financial stability and performance of foreign and indigenous banks in Ghana. This design effectively controls for unobserved bank-specific heterogeneity, providing robust and efficient estimates, crucial for discerning the differential impacts across ownership structures (Astuti, Zain, & Purnomo, 2020; Srairi, 2025).

The study sample comprises licensed universal banks in Ghana with complete audited financial data from 2007 to 2021. The data are primarily sourced from the Bank of Ghana (BoG) Financial Performance Reports, the Ghana Association of Banks (GAB), and the audited annual financial statements of the selected banks. Banks are rigorously categorized as either "foreign" or "indigenous" based on their majority share ownership structure and regulatory control, facilitating a clear comparative analysis over the fourteen-year period of the study.

2.2. Variable Measurement

To facilitate a thorough analysis of the study and to draw a valid conclusion, the following variables are established: Return on Assets (ROA) is calculated as Net Income divided by Total Assets (Puspitasari, Sudiyatno, Hartoto, & WIDATI, 2021; Siswanto, Maudhiky, Wahyudi, & Syah, 2022). Return on Equity (ROE) is calculated as

Net Income divided by shareholders ' equity (Atisu, Mensah, Alipoe, & Rahman, 2024). Capital Adequacy Ratio (CAR): Regulatory Capital divided by Risk-Weighted Assets (Bank of Ghana (BoG), 2024; Lijuan, 2025). The NPL ratio (Gross NPLs / Total Gross Loans) quantifies credit risk exposure (Odanga, Ndegwa, & Okello, 2024; Tweneboa, 2022). The key macroeconomic variables of Gross Domestic Product Growth Rate (GDPG), Inflation Rate (INF), and Exchange Rate (EXCH) (Cedi to USD) were sampled.

2.3. Model Specification

The empirical examination adopts panel data regression models, particularly the Fixed Effects (FE) model, to address time-invariant bank-specific effects of NPLs (Bhowmik & Karmakar, 2024; Wooldridge, 2010). The Hausman test validated the suitability of the fixed-effects model as the best suited for the study.

$$Y\ it\ =\ \beta 0\ +\ \beta 1ROAit\ +\ \beta 2NPLit\ +\ \beta 3GDPGt\ +\ \beta 4INFt\ +\ \mu i\ +\ \epsilon it \quad (1)$$

$$Y\ it\ =\ \beta 0\ +\ \beta 1ROEit\ +\ \beta 2NPLit\ +\ \beta 3GDPGt\ +\ \beta 4INFt\ +\ \mu i\ +\ \epsilon it \quad (2)$$

$$Y\ it\ =\ \beta 0\ +\ \beta 1CARLit\ +\ \beta 2NPLit\ +\ \beta 3GDPGt\ +\ \beta 4INFt\ +\ \mu i\ +\ \epsilon it \quad (3)$$

Distinct regressions are performed separately for the foreign and indigenous bank subsamples. Robust standard errors mitigate heteroscedasticity and autocorrelation. All analyses will be conducted using EViews 12 statistical software.

Table 1. Descriptive Analysis Result.

	ROA	ROE	LIQR	NPL	INFR	GDPGR
Mean	2.49	19.4	0.80	11.0	12.9	5.49
Median	2.53	19.2	0.33	9.60	11.8	5.60
Maximum	11.6	82.0	92.0	72.0	23.6	13.6
Minimum	-9.03	-27.4	0.00	0.00	7.14	0.51
Std. Dev.	1.91	13.8	5.77	9.44	4.11	2.59
Skewness	-0.10	0.26	13.3	1.65	0.71	1.06
Kurtosis	7.34	3.78	189	8.30	3.06	5.82
Observations	399	399	399	399	399	399

Source: Author's Own Creation (2025).

3. PRESENTATION OF THE RESULT

3.1. Descriptive Statistics

As shown in Table 1, the descriptive statistics for the 399 observations offer valuable insights into the dataset. The mean ROA is 2.49%, signifying that, on average, banks are profitable, although the wide range from -9.03% to 11.63% suggests variability. Similarly, ROE averages 19.42%, but its substantial standard deviation (13.79%) and broad range (-27.35% to 82.01%) highlight a significant dispersion in shareholder returns.

The liquidity ratio (LIQR) showed a mean of 0.795, but its median was much lower at 0.332, and its maximum was 92.00, coupled with an extremely high standard deviation (5.77) and kurtosis (188.70), indicating a highly skewed distribution with significant outliers. The mean NPL ratio is 11.02%, with a maximum of 72.00%, indicating a considerable credit risk in some institutions. Finally, macroeconomic controls, INFR (inflation rate) and GDPGR (GDP growth), exhibit means of 12.93% and 5.49%, respectively, with relatively lower standard deviations, suggesting a more stable macroeconomic environment than the bank-specific variables.

Table 2. Results of unit root tests with ADF and P.P.

Variables	Augmented Dickey-Fuller (ADF)		Phillips-Perron (P.P.)	
	Level	P. value	Level	P. value
NPL	68.2	0.00	79.3	0.00
ROA	98.6	0.00	139.	0.00
ROE	96.7	0.00	128.	0.00
LIQDR	79.6	0.00	462.	0.00
GDP	174.6	0.00	137.	0.00
INFR	116.	0.00	115.	0.00

Source: Author's Own Creation (2025)

As presented in Table 2, the unit root tests using both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (P.P.) approaches consistently indicate that all variables are stationary at their levels. For each variable, including NPL, ROA, ROE, LIQDR, GDP, and INFR, the p-values in both tests were well below the significance level of 0.05. This strong statistical evidence leads to the rejection of the null hypothesis that a unit root exists in the series, indicating the stationarity of the data used.

The consistent findings across both the ADF and P.P. tests confirm that the time series data for all variables are integrated of order zero or I(0). This provides a crucial precondition for performing valid panel regression analysis. The stationarity of the data at their levels means that there is no need to differentiate the variables before running the regression, ensuring that the results will be free from spurious relationships that can arise from non-stationary data.

Table 3. Redundant Fixed Effects Tests.

Effects Test	Statistic	d.f.	Prob.
Cross-section F	8.24	(8,168)	0.00
Cross-section Chi-square	59.6	8	0.00

Source: Author's Own Creation (2025)

Table 3 illustrates the application of the superfluous fixed-effects test to assess the suitability of a fixed-effects model in comparison to a pooled OLS model. The null hypothesis (H0) of the test posits that the fixed effects are superfluous, indicating that the pooled OLS model is adequate.

The findings indicate a p-value of 0.0000 for both the F-statistic and the Chi-square statistic. The p-value was significantly lower than the conventional threshold of 0.05, leading to the rejection of the null hypothesis. Statistical evidence suggests that notable individual differences are present across the cross sections (e.g., banks), indicating that a fixed-effects model is the appropriate choice for the study's investigation.

The regression analysis shown in Table 4 indicates notable differences in the influence of NPLs on the performance of local and foreign banks in Ghana. The results indicate a predominantly negative, though weak, connection between non-performing loans and performance indicators in local banks. The NPL coefficient for ROA is negative (β = -0.01384) and statistically insignificant, suggesting that an increase in NPLs does not significantly affect local banks' asset profitability. A similar pattern is evident for ROE, which exhibits a negative and statistically insignificant coefficient (β = -0.14148). The LR model demonstrates a statistically significant negative relationship, albeit with a minimal coefficient of -0.00134. An increase in NPLs marginally reduces local banks' liquidity ratio.

Table 4. Effect of NPLs on performance of local and foreign banks.

Independent Variable	Dependent variables					
	Local banks			Foreign banks		
	ROA	**ROE**	**CAR**	**ROA**	**ROE**	**LR**
NPLs	-0.01	-0.14	-0.00	0.06***	0.22**	0.12
	(0.02)	(0.10)	(0.00)	(0.01)	(0.09)	(0.07)
GDPG	0.02	0.48	0.00	0.01	0.33	-0.14
	(0.05)	(0.31)	(0.00)	(0.04)	(0.34)	(0.25)
INFR	-0.02	-0.06	0.00	-0.01	-0.10	0.09
	(0.03)	(0.20)	(0.00)	(0.03)	(0.22)	(0.16)
R-squared	0.15	0.27	0.91	0.38	0.41	0.13
S.E. of regression	1.71	10.1	0.10	1.44	11.2	8.23
F-statistic	2.67	5.71	157.	9.40	10.6	2.27
Prob(F-statistic)	0.00	0.00	0.00	0.00	0.00	0.01
Durbin-Watson	1.88	1.58	0.69	1.23	1.21	2.02

Note: The stars (*) attached to the numbers indicate the level of statistical significance of the coefficient (i.e., the p-values). Two stars (**) indicate a p-value less than 0.01 (1%), while three stars (***) mean a p-value of less than 0.001 (0.1%). This means that the more stars, the stronger the evidence against the null hypothesis.

Source: Author's Own Creation (2025).

By contrast, the results for foreign banks reveal a more intricate scenario. The effect of non-performing loans (NPLs) on return on assets (ROA) is positive and statistically substantial at $\beta = 0.059852$ (p<0.05), as is the effect on equity (ROE) at $\beta = 0.215526$ (p<0.05). This contradictory discovery indicates that an increase in non-performing loans (NPLs) correlates with an upsurge in the profitability metrics for foreign banks. This may result from more stringent write-off policies that eliminate non-earning assets from the balance sheet or a strategic emphasis on high-yield, high-risk lending that enhances short-term profits prior to the realization of the full impacts of non-performing loans (NPLs). The liquidity ratio (LR) of foreign banks demonstrates a positive, albeit insignificant, correlation with non-performing loans (NPLs) in the local economy.

In comparison, foreign banks demonstrate greater resilience and employ distinct operational strategies relative to local banks when addressing credit risk. NPLs exhibit a non-significant or marginally negative correlation with the performance of local banks, whereas their impact on foreign banks is positive and significant. This divergence underscores the fundamental distinction in their risk management and accounting methodologies. The R-squared values for foreign banks are 0.38 for ROA and 0.40 for ROE, which are significantly higher than the values for local banks, which are 0.14 for ROA and 0.27 for ROE. This suggests that the model accounts for a larger proportion of the variance in foreign banks' performance compared to local banks.

4. DISCUSSION

The regression results in Table 4 demonstrate the differentiated effects of Non-Performing Loans (NPLs) on the performance indicators of local and foreign banks in Ghana. The outcome of this divergence highlights the essential distinctions in operational strategies, risk management frameworks, and accounting practices.

The results for indigenous Ghanaian banks reveal a primarily negative, though statistically insignificant, correlation between non-performing loans (NPLs) and essential performance indicators such as Return on Assets (ROA) and Return on Equity (ROE). The NPL coefficient for ROA is negative ($\beta=-0.01384$) and statistically insignificant, indicating that an increase in NPLs does not significantly affect local banks' asset profitability. A comparable trend is observed for ROE, which displays a negative and statistically insignificant coefficient ($\beta=-0.14148$). The observed weak and insignificant negative correlation with profitability aligns with the general trend of non-performing loans (NPLs) adversely affecting bank performance (Ahiase, Andriana, Agbemava, & Adonai,

2024; Singh et al., 2021). However, this contradicts the strong, statistically significant negative relationships typically found in larger banking sector analyses (Ahiase et al., 2024). This paradox for local banks may be due to several factors. Ghanaian indigenous banks have recently completed a significant sector clean-up and recapitalization exercise (Bank of Ghana (BoG), 2024; Business & Financial Times, 2025; Takyi & Naidoo, 2022) which may have led to substantial provisioning or write-offs of legacy non-performing loans (NPLs). Thus, a slight rise in non-performing loans during the study period may diminish the supplementary effect on reported profitability. Additionally, it may indicate a lag in acknowledging credit losses or particular forbearance strategies that obscure the actual short-term effects of NPLs on financial statements.

The Liquidity Ratio (LR) model for local banks exhibits a statistically significant inverse correlation with non-performing loans (NPLs), with a coefficient of -0.00134. An increase in NPLs slightly reduces local banks' capital adequacy (liquidity). This finding is consistent with established banking theory and empirical evidence indicating that non-performing loans (NPLs), which require higher loan loss provisions, directly diminish a bank's capital base (Basel Committee on Banking Supervision, 2006; Singh et al., 2021). The minimal magnitude of the coefficient indicates that although non-performing loans (NPLs) erode capital, their impact on the local banks during this period of the study may be less severe than expected, potentially due to regulatory interventions or banks maintaining higher capital buffers following the crisis.

The results for foreign banks present a complex and seemingly contradictory situation. The nexus between non-performing loans (NPLs) and Return on Assets (ROA) is positive and statistically important ($\beta=0.059852$, $p<0.05$). Similarly, the effect of NPLs on Equity (ROE) is also positive and substantially significant ($\beta=0.215526$, $p<0.05$). This finding indicates that an increase in non-performing loans (NPLs) correlates with an increase in profitability metrics (ROA & ROE) for foreign banks. This result directly contradicts the predominant literature, which consistently shows an inverse relationship between NPLs and bank performance (Alnabulsi et al., 2023; Maryem Naili & Younès Lahrichi, 2022). This typical positive correlation may arise from strategic and operational differences. Foreign banks typically implement more rigorous and prompt write-off policies. Writing off non-earning assets from the balance sheet can effectively decrease the asset base (denominator for ROA) or equity (denominator for ROE), which may lead to artificial inflation of these ratios, particularly when the remaining performing assets yield significant income (Britwum et al., 2025). This asset clean-up strategy, although indicative of credit deterioration, may enhance reported profitability ratios by eliminating the burden of non-earning assets.

Secondly, this phenomenon may result from a strategic focus by foreign banks on high-yield, and high-risk lending segments. This type of lending, despite the elevated risk of non-performing loans (NPLs), yields considerably higher interest income in the short term, enhancing profitability metrics before the complete acknowledgment and provisioning of related credit losses are recorded. The positive, though minimal, correlation between the liquidity ratio (LR) and non-performing loans (NPLs) for foreign banks indicates that effective liquidity management and access to diverse funding sources from parent companies or international markets may protect foreign banks from the immediate liquidity pressures commonly linked to increasing NPLs (Clift, 2025; International Monetary Fund (IMF), 2024). This demonstrates an advanced strategy for risk management and balance sheet optimization, enabling foreign banks to absorb or manage non-performing loans without immediate adverse effects on reported profitability and liquidity.

5. CONCLUSION

In summary, the comparative analysis highlights a key difference between the risk management philosophies and accounting practices of foreign banks compared to indigenous banks in Ghana. Non-performing Loans (NPLs)

demonstrate a nonsignificant or slightly negative correlation with the performance of local banks, whereas their effect on foreign banks is significantly positive. The divergence is further substantiated by the model's explanatory power: the R-squared values for foreign banks are 0.38 for ROA and 0.40 for ROE, which significantly exceed those of local banks, which are 0.14 for ROA and 0.27 for ROE. This indicates that the model explains a greater share of the variance in the performance of foreign banks, suggesting that their performance is more consistently affected by the variables included in the study, possibly because of the more standardised and transparent operational procedures adopted by these foreign firms.

This finding supports the idea that foreign banks typically exhibit greater resilience and use different operational strategies than local banks in managing credit risk (Maryem Naili & Younes Lahrichi, 2022; PwC Ghana, 2020). The potentially proactive write-off policies or engagement of foreign banks in higher-yield lending, along with superior risk management frameworks and access to broader capital pools, allow for the management of non-performing loans (NPLs) in a manner that counterintuitively seems to improve reported profitability. This challenges the oversimplified notion of the universally adverse and uniform effect of non-performing loans across all banking institutions in emerging markets context. This emphasises that ownership structure and related operational paradigms are critical in mediating the relationship between asset quality deterioration and bank performance. The observed differences require distinct regulatory and supervisory strategies from the Bank of Ghana, and local managers to ensure comprehensive financial stability.

However, the research has certain shortfalls as well as limitations, which are common in every research study. The first of these is the fact that secondary data was employed for the work, which may comprise certain outliers, measurement and other statistical errors, inaccuracies, and less control by the researchers, and these can affect the overall conclusions drawn. The study also adopted only banks operating in the local economy. Perhaps, adopting banks operating in different economies could have yielded varied outcomes. Including foreign banks in similar analyses may produce different results. A fifteen-year period was used between 2007-2021; thus, adopting a longer and different economic period could lead to different conclusions. Finally, the use of ROE, RAO, and LR led to the conclusions reached. Another study adopting other relevant measurement metrics could result in different discoveries and conclusions.

5.1. Theoretical Contribution

This study significantly challenges the conventional understanding of NPL profitability dynamics by revealing a paradoxical positive correlation for foreign banks and a non-significant relationship with domestic banks. The study's results theoretically contribute to scholarship by highlighting how ownership structures and distinct operational strategies, such as stringent write-off policies or high-yield lending practices, mediate the impact of NPLs. This necessitates a more nuanced theoretical framework that accounts for such heterogeneity, moving beyond a universally negative relationship in emerging markets.

5.2. Practical Implications

For local banks, the conclusions highlight the urgent necessity for enhanced credit risk management frameworks and proactive loan recovery strategies to mitigate even the weak NPL effects on capital adequacy. For foreign banks, their seemingly positive NPL-profitability connection warrants closer internal scrutiny to ensure that this is not a short-term gain masking the underlying risks from aggressive lending or rapid write-offs. Both types of banks can learn from each other's resilience mechanisms to improve their management and credit policies.

5.3. Policy Implications

The divergence of NPL impacts on the various sources of banks necessitate a differentiated regulatory approach by the Bank of Ghana (BOG). Policies should move beyond a one-size-fits-all model. The policies for foreign and local banks need nuanced management and implementation. Targeted support for credit management and capital strengthening is crucial for local banks. For foreign banks, regulators must scrutinise their write-off practices and high-yield lending strategies to ensure that reported profitability reflects sustainable financial health and prevents systemic risk.

5.4. Areas for Future Studies

Future research should empirically investigate the specific write-off policies and high-yield lending portfolios of foreign banks in Ghana to fully explain the observed positive NPL-profitability relationship. Longitudinal studies can be undertaken to analyze the long-term implications of such strategies on their stability. Comparative studies are needed on the efficacy of different risk management technologies adopted by foreign versus indigenous banks. When this is done, it will add value to the study and its conclusions.

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Appendix A presents the complete data used for the study and the analysis.

Appendix A. The data used for the study.

S_ID	YEAR	NPL	GDPGR	INFR	EXCHR	UNEMPR
1	2007	2.89	2.39	-0.04	1.63	1.86
1	2008	2.5	2.55	0.19	1.64	1.87
1	2009	2.08	2.90	.36	1.68	1.58
1	2010	2.47	2.77	0.37	1.68	1.54
1	2011	1.90	2.17	0.46	1.43	1.89
1	2012	2.38	2.15	0.63	1.13	2.61
1	2013	2.52	2.46	0.77	0.77	2.10
1	2014	3.15	2.74	1.16	1.48	1.05
1	2015	3.52	2.84	1.33	1.92	0.75
1	2016	3.78	2.86	1.44	1.67	1.21
1	2017	3.76	2.52	1.49	1.21	2.10
1	2018	3.90	2.06	1.57	1.18	1.82
1	2019	3.73	1.97	1.71	1.15	1.87
1	2020	3.54	2.29	1.75	1.23	-0.67
1	2021	3.44	2.30	1.79	1.27	1.66
2	2007	1.99	2.39	-0.04	1.63	1.84
2	2008	2.78	2.55	0.19	1.64	1.87
2	2009	2.34	2.90	0.36	1.68	1.58
2	2010	2.43	2.77	0.37	1.68	1.54
2	2011	2.45	2.17	0.46	1.43	1.89
2	2012	3.00	2.15	0.63	1.13	2.61
2	2013	2.07	2.46	0.77	0.77	1.99
2	2014	1.82	2.74	1.16	1.48	1.05

2	2015	1.70	2.84	1.33	1.92	0.75
2	2016	2.08	2.86	1.44	1.67	1.21
2	2017	2.39	2.52	1.49	1.21	2.10
2	2018	2.08	2.06	1.57	1.18	1.82
2	2019	2.29	1.97	1.71	1.15	1.87
2	2020	2.60	2.29	1.75	1.23	-0.67
2	2021	2.42	2.30	1.79	1.27	1.66
3	2007	1.44	2.39	-0.04	1.63	1.86
3	2008	0.69	2.55	0.19	1.64	1.87
3	2009	0.69	2.90	0.36	1.68	1.58
3	2010	2.71	2.77	0.38	1.68	1.54
3	2011	3.26	2.17	0.46	1.43	1.89
3	2012	2.83	2.15	0.63	1.13	2.61
3	2013	2.64	2.46	0.77	0.77	1.99
3	2014	2.30	2.74	1.16	1.48	1.05
3	2015	2.69	2.84	1.33	1.92	0.75
3	2016	2.83	2.86	1.44	1.67	1.21
3	2017	3.07	2.52	1.49	1.21	2.10
3	2018	2.90	2.06	1.57	1.18	1.82
3	2019	1.79	1.97	1.71	1.15	1.87
3	2020	2.16	2.29	1.75	1.23	-0.67
3	2021	2.77	2.30	1.79	1.27	1.66
4	2007	1.60	2.39	-0.04	1.63	1.86
4	2008	1.38	2.54	0.19	1.64	1.87
4	2009	1.58	2.90	0.36	1.68	1.58
4	2010	1.38	2.77	0.37	1.68	1.54
4	2011	1.81	2.17	0.46	1.43	1.89
4	2012	2.16	2.15	0.63	1.13	2.610
4	2013	2.22	2.46	0.77	0.77	1.99
4	2014	1.96	2.74	1.16	1.48	1.05
4	2015	2.58	2.84	1.33	1.92	0.75
4	2016	2.99	2.86	1.44	1.67	1.22
4	2017	2.88	2.52	1.49	1.21	2.10
4	2018	2.84	2.06	1.57	1.18	1.82
4	2019	2.20	1.97	1.71	1.15	1.87
4	2020	2.78	2.29	1.75	0.23	-0.67
4	2021	3.10	2.30	1.79	1.27	1.66
5	2007	1.24	2.39	-0.04	1.63	1.84
5	2008	2.56	2.55	0.19	1.64	1.87
5	2009	2.08	2.90	0.36	1.68	1.58
5	2010	3.04	2.77	0.37	1.68	1.53
5	2011	2.50	2.17	0.46	1.43	1.89
5	2012	2.05	2.15	0.63	1.13	2.61
5	2013	2.30	2.46	0.77	0.77	1.99
5	2014	2.32	2.74	1.16	1.48	1.05
5	2015	2.35	2.84	1.33	1.92	0.75
5	2016	2.39	2.86	1.44	1.67	1.21
5	2017	2.37	2.52	1.49	1.21	2.10
5	2018	2.43	2.06	1.57	1.18	1.82
5	2019	2.42	1.97	1.71	1.15	1.87
5	2020	2.45	2.29	1.75	1.23	-0.67
5	2021	2.370	2.30	1.79	1.27	1.66
6	2007	1.43	2.39	-0.04	1.63	1.86
6	2008	1.61	2.55	0.19	1.64	1.87
6	2009	1.79	2.90	0.36	1.68	1.58
6	2010	2.08	2.77	0.37	1.68	1.54
6	2011	1.95	2.17	0.46	1.43	1.89
6	2012	1.79	2.15	0.63	1.13	2.61
6	2013	2.50	2.46	0.77	0.77	1.99

6	2014	2.59	2.74	1.16	1.48	1.05
6	2015	3.16	2.84	1.33	1.92	0.75
6	2016	3.00	2.86	1.44	1.67	1.21
6	2017	1.42	2.52	1.49	1.21	2.10
6	2018	1.41	2.06	1.57	1.18	1.82
6	2019	0.98	1.97	1.71	1.15	1.87
6	2020	2.63	2.29	1.75	1.23	-0.67
6	2021	2.53	2.30	1.79	1.27	1.66
7	2007	1.67	2.39	-0.05	1.63	1.86
7	2008	2.30	2.55	0.19	1.64	1.87
7	2009	2.64	2.90	0.36	1.68	1.58
7	2010	2.22	2.77	0.37	1.68	1.54
7	2011	2.03	2.17	0.46	1.43	1.89
7	2012	2.20	2.15	0.63	1.13	2.61
7	2013	1.58	2.46	0.77	0.77	1.99
7	2014	0.90	2.74	1.16	1.48	1.05
7	2015	1.43	2.84	1.33	1.92	0.75
7	2016	2.21	2.86	1.44	1.67	1.21
7	2017	2.77	2.52	1.49	1.21	2.10
7	2018	2.10	2.06	1.57	1.18	1.82
7	2019	0.58	1.97	1.71	1.15	1.87
7	2020	2.09	2.29	1.75	1.23	-0.67
7	2021	2.10	2.30	1.79	1.7	1.66
8	2007	0.43	2.39	-0.04	1.63	1.86
8	2008	2.03	2.55	0.19	1.64	1.86
8	2009	2.58	2.90	0.36	1.68	1.58
8	2010	2.54	2.77	0.37	1.68	1.54
8	2011	2.47	2.17	0.46	1.43	1.89
8	2012	2.5	2.15	0.63	1.13	2.61
8	2013	0.67	2.46	0.77	0.77	1.99
8	2014	2.42	2.74	1.16	1.48	1.05
8	2015	2.70	2.84	1.33	1.92	0.75
8	2016	2.86	2.86	1.44	1.67	1.21
8	2017	3.22	2.52	1.49	1.21	2.10
8	2018	2.47	2.06	1.57	1.18	1.82
8	2019	2.46	1.97	1.71	1.15	1.87
8	2020	2.45	2.29	1.75	1.23	-0.67
8	2021	2.48	2.30	1.79	1.27	1.66
9	2007	1.84	2.39	-0.04	1.63	1.86
9	2008	2.50	2.55	0.19	1.64	1.87
9	2009	1.82	2.90	0.36	1.68	1.58
9	2010	2.20	2.77	0.37	1.68	1.54
9	2011	3.50	2.17	0.46	1.43	1.89
9	2012	2.64	2.15	0.63	1.132	2.6
9	2013	2.94	2.46	0.77	0.77	1.99
9	2014	3.18	2.74	1.16	1.48	1.05
9	2015	3.22	2.84	1.33	1.92	0.75
9	2016	2.69	2.86	1.44	1.67	1.21
9	2017	2.68	2.52	1.49	1.21	2.10
9	2018	2.67	2.06	1.57	1.18	1.82
9	2019	2.65	1.97	1.71	1.15	1.87
9	2020	2.70	2.29	1.75	1.23	-0.67
9	2021	2.74	2.30	1.79	1.27	1.66
10	2007	-0.26	2.39	-0.04	1.63	1.86
10	2008	1.71	2.55	0.19	1.64	1.87
10	2009	2.28	2.90	0.36	1.68	1.58
10	2010	3.50	2.77	0.37	1.68	1.54
10	2011	3.23	2.17	0.46	1.43	1.89
10	2012	2.80	2.15	0.63	1.13	2.61

10	2013	2.57	2.46	0.77	0.77	1.99
10	2014	2.51	2.74	1.16	1.48	1.05
10	2015	2.96	2.84	1.33	1.92	0.75
10	2016	2.95	2.86	1.44	1.67	1.21
10	2017	2.61	2.52	1.49	1.21	2.096
10	2018	1.97	2.06	1.57	1.18	1.82
10	2019	1.89	1.97	1.71	1.15	1.87
10	2020	2.04	2.29	1.75	1.23	-0.67
10	2021	1.97	2.30	1.79	1.27	1.66
11	2007	1.28	2.39	-0.04	1.63	1.86
11	2008	1.13	2.55	0.19	1.64	1.87
11	2009	1.16	2.90	0.36	1.68	1.58
11	2010	1.13	2.77	0.37	1.68	1.54
11	2011	-0.41	2.17	0.46	1.43	1.89
11	2012	1.63	2.15	0.63	1.13	2.61
11	2013	1.77	2.44	0.77	0.77	1.99
11	2014	0.58	2.74	1.16	1.48	1.05
11	2015	0.58	2.84	1.33	1.92	0.75
11	2016	2.26	2.86	1.44	1.67	1.21
11	2017	2.26	2.52	1.49	1.21	2.10
11	2018	2.26	2.06	1.57	1.18	1.82
11	2019	2.26	1.97	1.71	1.15	1.87
11	2020	2.26	2.29	1.75	1.22	-0.67
11	2021	2.26	2.30	1.79	1.27	1.66
12	2007	1.43	2.39	-0.04	1.63	1.86
12	2008	0.22	2.55	0.19	1.64	1.87
12	2009	2.50	2.90	0.36	1.68	1.58
12	2010	2.40	2.77	0.37	1.68	1.54
12	2011	2.48	2.17	0.46	1.43	1.89
12	2012	2.64	2.15	0.63	1.13	2.61
12	2013	2.94	2.46	0.77	0.77	1.99
12	2014	2.62	2.74	1.16	1.48	1.05
12	2015	2.69	2.84	1.33	1.92	0.75
12	2016	2.83	2.86	1.46	1.67	1.21
12	2017	2.89	2.52	1.44	1.21	2.10
12	2018	2.69	2.06	1.57	1.18	1.82
12	2019	2.1	1.97	1.71	1.15	1.87
12	2020	1.91	2.30	1.75	1.23	-0.67
12	2021	2.03	2.30	1.79	1.27	1.66
13	2002	2.50	2.24	-0.17	2.17	1.28
13	2003	1.95	2.72	-0.1	2.05	1.50
13	2004	0	3.16	-0.10	1.91	1.65
13	2005	0	2.47	-0.10	1.76	1.72
13	2006	-0.54	2.69	-0.0	1.59	1.77
13	2007	-1.47	2.39	-0.04	1.63	1.86
13	2008	2.40	2.55	0.19	1.64	1.87
13	2009	2.56	2.90	0.36	1.68	1.58
13	2010	2.11	2.77	0.37	1.68	1.54
13	2011	1.61	2.17	0.46	1.43	1.90
13	2012	2.26	2.15	0.63	1.13	2.61
13	2013	2.20	2.46	0.79	0.77	1.10
13	2014	2.20	2.74	1.16	1.48	1.05
13	2015	3.09	2.84	1.34	1.92	0.75
13	2016	3.21	2.86	1.44	1.67	1.21
13	2017	2.42	2.52	1.48	1.21	2.10
13	2018	2.91	2.05	1.57	1.18	1.82
13	2019	2.00	1.96	1.70	1.15	1.87
13	2020	2.01	2.29	1.75	1.23	-0.67
13	2021	1.90	2.30	1.79	1.27	1.66

14	2007	1.39	2.39	0.04	1.63	1.86
14	2008	1.50	2.55	0.19	1.64	1.87
14	2009	2.30	2.90	0.36	1.68	1.58
14	2010	2.48	2.77	0.37	1.68	1.54
14	2011	2.30	2.17	0.46	1.43	1.89
14	2012	2.30	2.15	0.63	1.13	2.61
14	2013	2.77	2.46	0.77	0.77	1.99
14	2014	3.30	2.74	1.16	1.48	1.05
14	2015	3.09	2.84	1.33	1.92	0.75
14	2016	3.21	2.86	1.44	1.67	1.21
14	2017	3.26	2.52	1.49	1.21	2.10
14	2018	3.35	2.06	1.57	1.18	1.82
14	2019	2.84	1.10	1.71	1.15	1.87
14	2020	3.21	2.29	1.75	1.23	-0.68
14	2021	3.51	2.30	1.79	1.27	1.66
15	2007	0	2.40	-0.04	1.63	1.86
15	2008	0	2.55	0.19	1.64	1.87
15	2009	1.84	2.90	0.36	1.68	1.58
15	2010	2.40	2.77	0.37	1.68	1.54
15	2011	2.36	2.17	0.46	1.43	1.90
15	2012	2.12	2.15	0.63	1.13	2.61
15	2013	1.59	2.44	0.77	0.77	1.99
15	2014	1.50	2.74	1.16	1.48	1.05
15	2015	2.35	2.84	1.33	1.92	0.75
15	2016	2.36	2.86	1.44	1.67	1.21
15	2017	1.97	2.52	1.49	1.21	2.10
15	2018	2.55	2.06	1.57	1.18	1.82
15	2019	2.80	1.97	1.71	1.15	1.87
15	2020	1.82	2.29	1.75	1.30	-0.67
15	2021	1.48	2.30	1.79	1.27	1.66