Determinants of Bank Non-Performing Loans in East African Countries: A Dynamic Panel Data Analysis

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Abstract

Non-Performing Loans (NPLs) challenge financial stability and economic growth, yet limited research explores their determinants in East Africa. This study investigates macroeconomic, institutional, and bank-specific factors influencing NPLs using an explanatory research design and a quantitative approach. The sample includes seven East African countries with complete data (2012–2023) from the World Bank and Central Bank sources. Data analysis uses the Arellano-Bond GMM estimator to address dynamic panel data, with robustness checks made using the Blundell-Bond estimator. Model validity was assessed through Sargan tests and Arellano-Bond tests, ensuring reliable and robust results. The analysis shows that the average NPLs in East African countries were 6.9%, with lending interest rates reaching up to 60.0%. During the 12 years considered, exchange rates remained stable with only 0.1% annual change, while trade openness (69.8%) and bank capital (10.7%) reflect moderate integration and stability, emphasizing unique regional challenges and opportunities. Prior-year NPL levels positively influence current NPL highlighting variable's' persistence. Variables like exchange rate appreciation, regulatory quality, and trade openness were found to be statistically significantly reducing NPLs. Bank-specific factors of controlled credit growth, higher capital, and increased liquidity, were also found to reduce NPL risks. However, GDP growth and inflation macroeconomic variables showed limited effect on NPL. This study emphasizes the need for institutional strength and cautious banking practices to duly address credit risks.

Keywords: Non-performing loan, Regulatory quality, Exchange rate, Trade openness, Capital, Credit growth, Liquidity.

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Introduction

Non-Performing Loans (NPLs) are crucial for the health of banking systems and the overall economy. Wide-ranging studies have discovered that the bank-specific and macroeconomic factors contribute to NPL. These studies produced diverse findings.

Studies show that GDP growth significantly affects NPLs (Mpofu & Nikolaidou, 2018; Islam & Nishiyama, 2019; Kuzucu & Kuzucu, 2019). However, the nature of this relationship varies across regions. Inflation also shows mixed effects on NPL (Fajar & Umanto, 2017). Interest rates are another significant factor determining NPL, but the findings remain inconsistent. Some studies connect higher interest rates to increased NPLs (Umar & Sun, 2018), while other studies found no significant impact (Fajar & Umanto, 2017). Exchange rate fluctuations play a decisive role in influencing NPLs. The currency depreciation increase NPLs by raising repayment costs (Beck *et al*, 2015).

Regulatory quality and trade openness were also found to have impact on NPL levels. Although the effect can be context-specific, stronger regulatory frameworks were found to be mitigating credit risks (Forson *et al.,* , 2023). Bank-specific variables such as capital adequacy, liquidity, and credit growth significantly influence NPLs. Healthy bank capitalization enhances financial resilience (Koju *et al.,* 2018), while excessive credit expansion in an economy increases default risks (Katuka *et al.,* 2024). Liquidity's impact depends on management practices, with balanced liquidity reducing risks and excessive liquidity potentially heightening them (Alaoui, 2022).

The existing literature confirms that research on NPL determinants in East African countries remains limited, leaving gaps in understanding the regional dynamics. Hence, this study addresses this gap by analyzing NPLs in East Africa focusing on macroeconomic, institutional, and bank-specific factors using a dynamic panel data approach.

The study's objectives are to identify the key determinants of NPLs in East Africa and assess their significance. By examining these relationships, the study aims to contribute to the growing literature on credit risk management and provide evidence-based recommendations for strengthening the East African banking sector.

Research questions of the study were:

1. How does GDP growth impact the level of NPLs in East African banks?
2. Is there a significant relationship between inflation rates and NPLs in East African countries?
3. What is the effect of lending interest rates on the proportion of NPLs in the banking sector?
4. Do fluctuations in exchange rates influence the levels of NPLs in the region?
5. How does regulatory quality affect the occurrence of NPLs in East African banks?

6. To what extent does trade openness correlate with NPLs in the banking sector?
7. What is the relationship between bank capital and NPLs?
8. Does credit growth contribute to changes in NPLs in East African banks?
9. How does bank liquidity influence the level of NPLs in the region?

The following were the hypothesis of the study

- H1: Higher GDP growth is associated with a decrease in NPLs, as improved economic conditions lead to better loan repayment capacity.
- H2: Rising inflation rates are positively correlated with NPLs, as inflation may reduce borrowers' purchasing power and repayment ability.
- H3: Higher lending interest rates lead to an increase in NPLs, as borrowers may struggle to meet repayment obligations.
- H4: Exchange rate volatility has a significant impact on NPLs, with depreciation potentially increasing loan defaults in foreign-denominated loans.
- H5: Stronger regulatory quality is associated with lower levels of NPLs, as effective regulations promote better risk management practices.
- H6: Greater trade openness reduces NPLs by fostering economic growth and increasing income levels.
- H7: Higher levels of bank capital are negatively associated with NPLs, as well-capitalized banks are better equipped to manage risks.
- H8: Rapid credit growth is positively correlated with NPLs, as aggressive lending practices may lead to higher default risks.
- H9: Increased bank liquidity negatively impacts NPLs, as banks with higher liquidity may manage loan defaults more effectively.

Literature Review

This literature review focuses on macroeconomic, institutional, and bank-specific factors determining the NPL. Studies on the effect of GDP growth on NPLs have mixed findings. Nor *et al.,*(2021) concluded GDP growth decreases NPLs by enhancing borrowers' repayment capacity. On the other hand, Artenisa & Hyrije (2023) found that GDP growth can increase NPLs by encouraging riskier lending practices. In certain other contexts, Chun & Ardaaragchaa (2024) concluded that GDP growth shows no significant impact on NPLs. Authors such as Islam & Nishiyama, (2019) and Kuzucu & Kuzucu (2019) concluded that regional economic situations influence the relationship between gdp growth and NPL.

As far as the relationship between inflation on NPLs is concerned, the findings are diverse. The study of Islam and Nishiyama (2019) and Umar and Sun (2018) showed direct relationship. Conversely, the study of Fajar and Umanto (2017) revealed a negative relationship.

Considering the effect of lending interest rate on NPLs, there are diverse findings. The study of Fajar and Umanto (2017) found no significant impact of the lending interest rate on NPLs. However, Umar and Sun (2018) and Aliamutu and Msomi (2024) identified lending interest rate has significant impact.

Likewise, research on exchange rates reveals different outcomes. Beck *et al.,* (2015) and Milenković *et al.,* (2024) suggest that currency depreciation increases NPLs, especially in countries with significant foreign currency loan. On the other hand, Melecký *et al.,* (2015); Kuzucu and Kuzucu (2019); and Jalali *et al*., (2023) concluded that exchange rate appreciation improves borrower financial performance and reduced NPLs.

Regulatory quality's impact on NPLs varies by context. Nor, Ismail, and Abd Rahman (2021) found that regulatory quality increased NPLs in Asian countries, as opposed to various theories. In contrast, Ahiase *et al. ,* (2024) and Forson *et al.,* (2023) identified a negative relationship in which stronger oversight mitigated credit risk.

Trade openness also yields mixed effects on NPLs. Canh *et al.,* (2021) argued that trade openness can elevate credit risk; while Rahman *et al.,* (2023) and Mpofu and Nikolaidou (2018) showed that greater openness leads to lesser NPL and enhanced bank performance.

The effect of bank capital on NPLs also remains contested. Various researchers (Msomi, 2022; Jabbouri & Naili, 2019) argue that higher capital encourages risk-taking and raise NPLs. To the contrary, other researcher (Koju *et al*., 2018) suggests that strong capital enable banks to absorb losses and reduce credit risk. These divergences reflect the multifaceted nature of bank capitalization and its impact on credit risk.

Many studies showed that rapid credit growth tend to increase credit risks. Festić *et al.,* (2011) and Vithessonthi (2016) emphasized that uncontrolled credit expansion can lead to a hike in NPLs. Furthermore, Katuka *et al.,* 2024) underscored the necessity of controlled and cautious lending practices to mitigate NPL risk.

Bank liquidity influences NPLs in many ways. A study by Alaoui Mdaghri (2022) found that higher liquidity in banks can reduce NPLs. In contrast, Boussaada *et al.,* (2022) concluded that excessive liquidity results in a greater NPLs. Msomi (2022) reaffirmed the significant influence of liquidity on NPLs. All these evidence emphasize the need for balanced liquidity management as a critical factor in minimizing credit risk.

Methods

The study uses a quantitative approach to explore factors influencing NPLs. The only criteria used for selecting countries as a sample was availability of data. Out of 11 east African countries, 7 (or 64% of the east African countries) countries were found to have full data (2012–2023) available on their respective Central Bank websites and in the World Bank database. Hence, the countries considered for this study were: Madagascar, Uganda, Kenya, Seychelles, Zambia, Rwanda, and Ethiopia.

Relevant variables were selected after a thorough literature review; they are defined as follows. *GDP Growth:* GDP growth measures the annual increase in a country's economic output. It reflects the overall economic health, influencing borrowers' ability to repay loans. A higher GDP growth typically reduces NPLs, as it strengthens financial stability and repayment capacity.

Inflation Rate: Inflation is the rise in price level of goods and services. High inflation can erode purchasing power, increasing loan defaults and NPLs. It is measured as the annual percentage change in the Consumer Price Index (CPI).

Lending Interest Rate: Higher lending interest rates increase borrowing costs, making repayment of loans harder, and consequently raise NPLs.

Exchange Rates: A depreciating local currency increases the cost of debt in foreign currency, raising the probability of loan defaults and NPLs.

Regulatory Quality: Regulatory quality refers to the effectiveness of institutions in enforcing sound bank related policies and regulations. Stronger regulatory qualities prevent excessive credit risk and reduce NPLs. Regulatory quality variable is measured by the World Bank.

Trade Openness: Trade openness measures a given country's level of involvement in international trade. Increased openness can improve economic performance, borrower profitability and reduce NPLs, while trade disruptions can elevate risks. It is measured by the ratio of a country's import export trade to its GDP.

Bank Capital: Bank capital is the financial cushion that banks maintain to absorb losses. Higher capital reduces the risk of defaults and helps manage NPLs. It is measured as the ratio of a bank's capital to its total assets.

Credit Growth: Credit growth refers to the increase in the volume of loans given by banks in a given country. Rapid and less cautious credit growth can lead to higher defaults, raising NPLs.

Bank Liquidity: Adequate liquidity enables better management during the loan defaults, reducing NPLs. It is measured by the ratio of a bank's liquid assets to its assets.

The model selection procedure followed careful steps. The first step was to understand the nature of the dependent variable. The dependent variable has persistence nature, this necessitates a dynamic panel data approach, such as the Arellano-Bond generalized method of moments (GMM) estimator (Erdas and

Ezanoglu, 2022; Us, 2017; Kuzucu and Kuzucu, 2019; Louzis *et al*, 2012; Cheng and Bang, 2021; and Hu *et al*, 2014). Hence, this study utilized Arellano-Bond generalized method of moments (GMM) estimator. Once the model was selected, the next thing to be decided was the selection of another model for robustness check. Accordingly, the Blundell-Bond estimator, as endorsed by Harris *et al.,* (2009), Yu and Qayyum (2023), Cheng and Bang (2021), and Kiviet *et al.,* (2017), was selected and employed for the robustness check.

The general form of the Arellano-Bond GMM estimator is as follows:

$$NPL_{it} = \alpha_0 + \alpha_1 NPL_{i,t-1} + \alpha_2 NPL_{i,t-2} + \beta_1 GDP\ Growth_{it} + \beta_2 Inflation\ Rate_{it} + \beta_3 Lending\ Interest\ Rate_{it} + \beta_4 Exchange\ Rate_{it} + \beta_5 Regulatory\ Quality_{it} + \beta_6 Trade\ Openness_{it} + \beta_7 Bank\ Capital_{it} + \beta_8 Credit\ Growth_{it} + \beta_9 Bank\ Liquidity_{it} + \epsilon_{it}$$

Where:

- i indexes countries (7 countries in the sample),
- t indexes time
- α_0 is the constant term,
- α_1 & α_2 captures the persistence of NPLs (dynamic nature),
- $\beta_1, \beta_2, \ldots, \beta_9$ are coefficients of the explanatory variables,
- ϵ_{it} is the error term

The Sargan test of over-identifying restrictions, as discussed by Vu *et al.,* (2024), was conducted. The test result (chi^2 (46) = 46.55508, p = 0.4494) fails to reject the null hypothesis, indicating the validity of the instruments used. Additionally, the Arellano-Bond autocorrelation tests, highlighted by Baum *et al.,* (2007) and Roodman (2009), were performed. These tests confirm the absence of problematic second-order serial correlation (AR(2), p = 0.2667), supporting both the model's overall validity and the reliability of the results.

Results

Descriptive statistics analysis

The descriptive analysis highlights key trends in the East African banking sector. NPLs averaged 6.9%, with values ranging from 2.0% to 12.2%, indicating significant variability in credit risk. GDP growth averaged 5.2%, fluctuating between -11.7% and 15.0%, reflecting both economic downturns and strong recovery phases. Inflation showed a mean of 8.2% with a standard deviation of 6.6%, highlighting considerable volatility that may affect loan repayment. Lending interest rates were notably high, averaging

21.3% and peaking at 60.0%, suggesting significant borrowing costs. Exchange rates exhibited stability, with an annual percentage change of 0.1% on average. Regulatory quality, with a mean score of 37.3, and trade openness, averaging 69.8%, underscore institutional variability and economic integration levels. Bank capital, at an average of 10.7%, along with credit growth (18.5%) and liquidity (18.0%), reflects moderately stable banking operations.

When compared to sub-Saharan Africa, East African countries show unique challenges and opportunities. Lending interest rates in East Africa are significantly higher than the sub-Saharan average, which typically falls below 20%. Regulatory quality, with a mean of 37.3, lags behind many other Sub-Saharan countries, suggesting room for institutional strengthening. Similarly, bank capital buffers are moderate compared to higher averages in Southern Africa, where capital adequacy often exceeds 12%. However, trade openness in East Africa (69.8%) aligns well with the region's efforts toward economic integration and slightly surpasses the Sub-Saharan average, reflecting promising prospects for international trade (World Bank, 2024). These comparisons highlight distinct regional dynamics and areas for policy intervention.

Table 1: Descriptive statistics analysis of the study variables

Variables	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
NPL	2	12.2	6.9	2.7
GDP growth	-11.7	15	5.2	3.9
Inflation	-1	33.9	8.2	6.6
Lending interest rate	9.1	60	21.3	14.6
Exchange rate annual percentage change	-0.7	0.4	0.1	0.1
Regulatory quality	11.4	62.3	37.3	14
Trade openness	24	222.2	69.8	52.3
Bank Capital	6.2	15.6	10.7	2.8
Credit growth	8.5	40.6	18.5	8.1
Liquidity	6.3	35.4	18	7.2

Source: World Bank (2024)

Model output

The Wald chi-squared statistic is 273.01 ($p = 0.0000$), showing that the independent variables significantly explain variations in bank NPLs. This strong statistical evidence validates the relevance of the chosen predictors in understanding the dependent variable. The use of one-step results simplifies interpretation

while maintaining the robustness of the estimates. Overall, the model demonstrates a strong statistical foundation, providing reliable insights into the factors influencing bank NPLs in the context of the study.

The regression results provide valuable insights into the determinants of bank NPLs in East African countries. Lagged dependent variables indicate the persistence of NPLs over time. The one-year lag (L1) has a positive and highly significant coefficient ($\beta = 0.503$, $p < 0.01$), suggesting that previous NPL levels strongly influence current levels. Conversely, the two-year lag (L2) exhibits a negative and significant coefficient ($\beta = -0.253$, $p < 0.01$), implying that earlier NPL levels mitigate current NPLs.

Macroeconomic variables demonstrate mixed effects. GDP growth has a positive but statistically insignificant coefficient ($\beta = 0.076$, $p = 0.116$), indicating no clear relationship with NPLs. Similarly, inflation ($\beta = 0.022$, $p = 0.639$) and lending rates ($\beta = 0.103$, $p = 0.331$) do not show significant impacts, suggesting limited influence on NPLs within the study context. However, the exchange rate has a significant and negative coefficient ($\beta = -2.579$, $p < 0.01$), implying that exchange rate appreciation reduces NPLs, potentially due to lower repayment burdens for foreign-denominated loans.

Institutional and trade factors emerge as important determinants. Regulatory quality has a negative and significant coefficient ($\beta = -0.119$, $p < 0.01$), indicating that improved regulatory standards reduce NPLs. Similarly, trade openness is associated with a reduction in NPLs, as reflected by its significant negative coefficient ($\beta = -0.096$, $p < 0.01$). These results suggest that institutional strength and economic integration play a crucial role in mitigating loan defaults.

Bank-specific variables significantly influence NPL levels. Higher bank capital reduces NPLs, as evidenced by its negative and highly significant coefficient ($\beta = -0.680$, $p < 0.01$), reflecting stronger financial resilience. Controlled credit growth also helps mitigate NPLs, as shown by its significant negative coefficient ($\beta = -0.111$, $p < 0.01$). Increased bank liquidity has a similar effect, with a negative and significant coefficient ($\beta = -0.086$, $p < 0.05$), highlighting the importance of maintaining adequate liquid assets.

The constant term ($\beta = 40.286$, $p < 0.01$) is positive and highly significant, representing the baseline level of NPLs when all other variables are at zero. Overall, these results emphasize the importance of past NPL levels, exchange rates, institutional quality, and bank-specific factors in determining NPLs. While some macroeconomic variables, such as GDP growth, inflation, and lending rates, show no significant impact, institutional strength and prudent banking practices are critical for managing NPLs effectively.

Table 2: Arellano-Bond dynamic panel-data estimation output

Arellano-Bond dynamic panel-data estimation	Number of obs = 63
Group variable: countries	Number of groups = 7

Time variable: year					Obs per group: min = 9	
					avg = 9	
					max = 9	
					Wald chi2(6) = 273.01	
					Prob > chi2 = 0.0000	
NPL	Coef.	Robust std error	(Std. Err. adjusted for clustering on countries) z	P>|z|	[95% Conf. Interval]	
L1.	0.50343	0.07747	6.50	0.000	0.3516	0.6553
L2.	-0.25274	0.07844	-3.22	0.001	-0.4065	-0.0990
GDP growth	0.07646	0.04867	1.57	0.116	-0.0189	0.1719
Inflation	0.02180	0.04650	0.47	0.639	-0.0693	0.1129
Lending rate	0.10325	0.10614	0.97	0.331	-0.1048	0.3113
Exchange rate	-2.57948	0.96747	-2.67	0.008	-4.4757	-0.6833
Regulatory quality	-0.11917	0.04708	-2.53	0.011	-0.2114	-0.0269
Trade openness	-0.09641	0.03776	-2.55	0.011	-0.1704	-0.0224
Bank capital	-0.68034	0.21957	-3.10	0.002	-1.1107	-0.2500
Credit growth	-0.11097	0.04326	-2.57	0.010	-0.1958	-0.0262
Liquidity	-0.08643	0.03925	-2.20	0.028	-0.1634	-0.0095
_cons	40.28601	7.26685	5.54	0.000	26.0433	54.5288

Source: stata output

Model output Robustness check

Checking regression robustness across models ensures consistent findings, free from methodological biases. Significant inconsistencies in coefficient signs and significance levels may require further scrutiny (Kiviet *et al*., 2017; Hauk & Wacziarg, 2009; Istudor *et al.,* 2020). This study employed the Blundell-Bond estimator for robustness checks. The check reveals that 7 out of 9 variables displayed consistent coefficients or significance levels, thereby affirming the reliability of the results.

Table 3: model output robustness check

	Arellano-Bond estimator		Blundell-Bond estimator	
NPL	Coef.	P>|z|	Coef.	P>|z|
L1.	0.50343	0.000	0.48135	0.000

L2.	-0.25274	0.001	-0.23563	0.071
GDP growth	0.07646	0.116	-0.00781	0.898
Inflation	0.02180	0.639	-0.00610	0.818
Lending rate	0.10325	0.331	-0.00008	0.999
Exchange rate	-2.57948	0.008	-0.89389	0.005
Regulatory quality	-0.11917	0.011	0.02773	0.408
Trade openness	-0.09641	0.011	-0.04949	0.000
Bank capital	-0.68034	0.002	-0.31204	0.006
Credit growth	-0.11097	0.010	-0.07905	0.235
Liquidity	-0.08643	0.028	-0.13942	0.004
_cons	40.28601	0.000	20.59254	0.000

Source: Stata output

Discussion

The study found that GDP growth has a positive but not significant effect on NPLs. This indicates that as GDP grows, NPLs also grows. The reason is laid in the structure of GDP among the sample East African countries. These east African countries economies are mainly driven by agriculture. Since this sector receives no (or minimal) bank loan, agriculture-based GDP growth has limited influence on NPL. Similar findings were reported by Artenisa and Hyrije (2023) and Chun and Ardaaragchaa (2024). However, this finding contrasts with Nor *et al.,* (2021), who found that economic expansion reduces credit risk. This study underscores that Region-specific policies are necessary to address bank NPL issues.

This study found that inflation does not significantly affect NPLs. This finding aligns with Fajar and Umanto (2017). In East Africa, relatively moderate inflation mitigated the impact on borrowers, explaining the observed weak link. This contrasts with findings of Mpofu & Nikolaidou (2018) and Islam & Nishiyama (2019). For East Africa, has limited role in influencing credit risk and the banking sector's.

This study revealed that there is no significant relationship between lending rates and NPLs. This suggests that lending rates do not directly impact NPLs in East African countries. These findings were supported by Fajar and Umanto (2017). However, the findings differ from Umar and Sun (2018), who concluded that lending rates and credit risk are strongly related.

The study found that exchange rate significantly reduces NPLs of banks of east African countries. A stronger local currency eases the financial burden of foreign currency-denominated borrowers, making it easier for them to meet their obligations. The findings of this study align with researchers such as Beck *et al.,* (2015) and Kuzucu and Kuzucu (2019). This study concludes that maintaining stable currency in East African countries help mitigate bank NPL.

Further, this study reveals that better regulatory quality among the east African countries significantly reduces NPLs. This finding aligns with Ahiase *et al.,* (2024) and Forson *et al.,* (2023). However, this finding contrasts with Nor et al., (2021), who concluded that better regulatory quality could lead to higher NPLs. Such differences reflecting regional the importance of considering the regional while studying NPL.

The study concluded that trade openness plays a significant role in reducing NPLs. This finding supports the fact that greater integration into global trade can improve borrower incomes and reduce default rates. However, the finding of this study contrasts with Mpofu and Nikolaidou (2018), who concluded that increased trade openness heightens credit risk. On the other hand, the finding of this study aligns with Rahman *et al.,* (2023). These differences highlight the importance of regional contexts.

The study found that bank capital has significant and negative effect on NPLs. This indicates that banks with better capital are well equipped to manage credit risks. The findings of this study align with findings by Koju *et al.,* (2018). However, this conclusion opposes arguments by Msomi (2022) and Jabbouri and Naili (2019), who argued that higher capital adequacy may encourage unnecessary and excessive risk-taking. The findings reveal the critical role of maintaining robust capital to reduce loan defaults.

The study concludes that credit growth reduces NPLs. This conclusion aligns with prior research that suggests increased lending boosts economic activity, enhances borrowers' repayment capacity, and consequently lowers NPL (Festić *et al.,* 2011; Katuka *et al.,* 2024).

The research establishes that bank liquidity plays a crucial role in reducing NPLs. Adequate liquidity likely ensures smoother loan operations and consequently mitigates defaults. This finding aligns with Alaoui (2022). However, the results differ from Boussaada *et al.,* (2022), who found a nonlinear relationship, who indicated that when liquidity levels become excessive, banks may engage in riskier lending practices, which can eventually elevate credit risk. These contrasting findings highlight the need for delicate balance required in managing liquidity.

Finally, the study finds that past loan performance significantly influences current risk levels, with a positive relationship for lagged NPLs and a negative relationship for two-year lagged NPLs. These results highlight the persistence of credit risk over time, emphasizing the need for timely and effective interventions to break cycles of default and promote financial stability.

Hypothesis test

H1: Higher GDP growth is associated with a decrease in NPLs. Hypothesis **Rejected** ($\beta = 0.076$, $p = 0.116$).

H2: Rising inflation rates are positively correlated with NPLs. Hypothesis **Accepted** ($\beta = 0.022$, $p = 0.639$).

H3: Higher lending interest rates lead to an increase in NPLs. Hypothesis **Accepted** ($\beta = 0.103$, $p = 0.331$).

H4: Exchange rate volatility has a significant impact on NPLs. Hypothesis **Accepted** ($\beta = -2.579$, $p < 0.01$).

H5: Stronger regulatory quality is associated with lower levels of NPLs. Hypothesis **Accepted** ($\beta = -0.119$, $p < 0.01$).

H6: Greater trade openness reduces NPLs. Hypothesis **Accepted** ($\beta = -0.096$, $p < 0.01$).

H7: Higher levels of bank capital are negatively associated with NPLs. Hypothesis **Accepted** ($\beta = -0.680$, $p < 0.01$).

H8: Rapid credit growth is positively correlated with NPLs. Hypothesis **Rejected** ($\beta = -0.111$, $p < 0.01$).

H9: Increased bank liquidity negatively impacts NPLs. **Accepted** ($\beta = -0.086$, $p < 0.05$).

Conclusion

This study provides insights into the determinants of NPLs in East Africa, comparing them with existing literature. The findings reveal no significant relationship between GDP growth, inflation, or lending rates and NPLs, suggesting that macroeconomic variables may exert limited direct influence on credit risk within the East African context. This underscores the need for tailored economic policies addressing structural and systemic challenges.

Conversely, exchange rate appreciation significantly reduces NPLs, emphasizing the critical role of foreign exchange stability, particularly for economies reliant on foreign-denominated loans. Improved regulatory quality and trade openness are also pivotal in mitigating credit risks, reflecting the importance of strong oversight and economic integration in fostering financial resilience. These findings highlight the potential of institutional improvements to stabilize banking systems in the region.

Bank-specific factors, including higher capital buffers, controlled credit growth, and balanced liquidity levels, demonstrate a significant role in reducing NPLs. These results align with global evidence advocating for prudent banking practices to manage risk effectively. The persistence of credit risk, as

indicated by the influence of lagged NPLs, further underscores the necessity for proactive risk management and timely interventions.

The findings highlight the context-specific nature of credit risk in developing economies, contributing to the theoretical understanding of NPL determinants. Unlike in advanced economies, where macroeconomic variables like GDP growth and inflation often play a significant role, this study underscores the importance of institutional and bank-specific factors in East Africa. This challenges the assumption that macroeconomic stability alone is sufficient to mitigate credit risk, emphasizing the need for region-specific theoretical frameworks.

Overall, this study reinforces the importance of stable exchange rates, robust regulatory frameworks, and sound banking practices in addressing credit risk. By situating these findings within the unique dynamics of East Africa, it provides actionable insights for policymakers and financial institutions to enhance the resilience of the region's banking sector.

Limitations

The study's reliance on secondary data may introduce biases, particularly if the data from different countries are not consistently reported. Future research could address these limitations by using primary data to provide more robust insights.

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