

Credit Risk Management And Financial Performance Of Commercial Banks In Kenya: Panel Evidence From 2018-2023

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Abstract:

This paper examines how credit risk management affects the financial performance of commercial banks in Kenya using panel evidence from 39 banks over the period 2018-2023. The study is motivated by the persistent rise in non-performing loans in the Kenyan banking sector and the need for stronger evidence on how risk variables, control mechanisms, and lending conditions shape bank outcomes. Three related panel models are estimated. The first evaluates the effect of credit risk on return on equity (ROE), the second examines how credit risk control variables influence non-performing loans (NPLs), and the third assesses how lending growth conditions affect NPLs. Levin-Lin-Chu unit root tests indicate that the series are stationary at level, while Hausman tests support the use of random effects for the profitability and lending-growth models and fixed effects for the credit-risk-control model. The results show that the capital to risk-weighted assets ratio and the NPL-to-advances ratio significantly reduce ROE, while market share improves profitability. In the NPL models, the loan and advances ratio, the NPL-to-advances ratio, provisioning intensity, interest rate spread, money supply, and the actual liquidity ratio are key determinants. The findings imply that the quality of loan books, pricing of credit, and liquidity management remain central to bank stability and performance in Kenya. The paper recommends stronger early warning systems, more disciplined provisioning, better borrower screening, and transparent credit pricing.

Key Words: credit risk management, financial performance, non-performing loans, commercial banks, panel data, Kenya

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I. Introduction

Commercial banks perform a central intermediation role by mobilising deposits, allocating credit, and transmitting monetary conditions to the real economy. Because lending is the dominant earning asset for banks, the quality of credit risk management directly influences profitability, solvency, and systemic stability. In Kenya, the issue is especially important because asset quality weakened sharply in recent years. According to the Central Bank of Kenya, the stock of non-performing loans increased to Ksh. 647.4 billion in December 2023 from Ksh. 503.2 billion in December 2022, while the gross NPL to gross loans ratio deteriorated from 13.9 percent to 15.6 percent. These trends reinforce the policy relevance of analysing how credit risk variables shape bank performance and loan quality within a changing regulatory and macroeconomic environment.

Theoretical and empirical work has long recognised that poorly managed credit exposures can impair bank earnings and trigger broader instability. Merton's credit risk framework links default risk to balance-sheet weakness and the relationship between assets and liabilities (Merton, 1974). The lending lifecycle perspective similarly shows that loan origination, monitoring, restructuring, and recovery jointly determine the quality of credit portfolios (Berger & Udell, 2002; Casu et al., 2006). In developing banking systems, these issues are intensified by information asymmetry, borrower volatility, regulatory compliance costs, and uneven risk-pricing practices (Bessis, 2011; Waweru & Kalani, 2008).

Existing African evidence generally suggests that non-performing loans and weak asset quality depress bank profitability, although the magnitude and channels vary across countries and estimation strategies (Adekunle et al., 2015; Munangi & Bongani, 2020; Muriithi et al., 2016). In Kenya, however, part of the literature either focuses on earlier periods, analyses credit risk in isolation, or uses designs that do not sufficiently capture unobserved heterogeneity across banks. This paper responds to that gap by adapting the attached master's project into a journal article and organising the evidence around three linked questions: how credit risk affects profitability, how credit risk control variables influence NPLs, and how lending-growth conditions shape NPL outcomes.

The contribution of the paper is therefore threefold. First, it provides recent panel evidence for Kenya using bank-level observations over 2018-2023. Second, it connects profitability and NPL behaviour in a unified framework rather than treating them as unrelated outcomes. Third, it translates the empirical findings into practical policy lessons for the Central Bank of Kenya and bank management on provisioning, credit screening, pricing, and liquidity management.

II. Literature Review

Theoretical framing

The paper draws primarily on credit risk theory associated with Merton (1974), which treats default as a balance-sheet event that occurs when the market value of assets falls below debt obligations. Applied to banking, the framework suggests that loan portfolio deterioration and capital pressure can weaken profitability and resilience. The lending lifecycle theory complements this view by emphasising that effective risk management is not confined to initial screening. It extends from appraisal and pricing to post-disbursement monitoring, restructuring, and recovery (Berger & Udell, 2002; Mishkin & Eakins, 2015). The theory of credit risk control further highlights the institutional tools that shape outcomes, including capital adequacy, diversification, provisioning, early warning systems, and stress testing (Bessis, 2011; Oduor & Waweru, 2022).

Taken together, these perspectives imply that bank profitability should worsen when asset quality deteriorates and when provisioning burdens rise, but may improve when market positioning and monitoring systems strengthen. They also imply that NPL dynamics are jointly influenced by internal bank practices and broader macro-financial conditions such as liquidity and interest rate spreads.

Empirical review

Empirical studies generally report a negative relationship between credit risk and bank profitability. For Kenya, Muriithi et al. (2016) find that higher non-performing loan ratios and weaker asset quality reduce returns for commercial banks. Musau et al. (2018) emphasise that access, rivalry, and inclusion can mediate risk exposure, implying that the structure of banking markets matters for portfolio quality. Ngugi and Kagiri (2022) similarly argue that stronger risk management practices are associated with better financial performance among Kenyan banks.

Beyond Kenya, the evidence is consistent but not uniform. Adekunle et al. (2015) document that non-performing loans depress returns in Nigerian commercial banks, while Munangi and Bongani (2020) show that rising NPLs significantly weaken profitability in South Africa. Taiwo et al. (2017), however, find that although risk management improves profitability, its effect on lending growth is less pronounced. These differences suggest that the profitability channel and the lending channel should be examined separately. This paper does so by estimating distinct but related models for profitability and NPL behaviour.

III. Data And Methodology

Research design and data

The study adopts a non-experimental panel research design based on secondary data for commercial banks operating in Kenya over the period 2018-2023. The original project covered 39 commercial banks and drew data from published bank financial statements, Central Bank of Kenya reports, and Kenya Bankers Association publications. The use of panel data is appropriate because it captures both time variation and bank-specific heterogeneity, thereby improving inference relative to purely cross-sectional or simple time-series approaches.

Three dependent-variable settings are considered. In the profitability model, financial performance is measured by return on equity (ROE). In the second and third models, loan book quality is proxied by the log of non-performing loans (lnNPL). The main explanatory variables are the capital to risk-weighted assets ratio (CRWAR), loan and advances ratio (LAR), market share index (MSI), non-performing loans to advances ratio (NPLAR), loan to advance provision ratio (LTAPR), interest rate spread (IRS), money supply (M2), and actual liquidity ratio (ALR).

Table 1: Key variables and measurements

Variable	Definition	Measurement
ROE	Financial performance indicator	Profit after tax / shareholders' funds
CRWAR	Capital adequacy	(Tier 1 + Tier 2 capital) / risk-weighted assets
NPLAR	Loan book quality	Non-performing loans / total advances
LTAPR	Provisioning intensity	Loan loss provisions / loans and advances
IRS	Cost of intermediation	Lending rate minus deposit rate
ALR	Liquidity position	Liquid assets / quick liabilities
MSI	Relative competitive position	Bank market share index

Source: Adapted from variable definitions.

Theoretical Framework

This proposed study is anchored on the Credit Risk Theory proposed by Merton (1974). To model the variables, fixed effect and random effect models will be used. Both models are used in financial markets for risk assessment and derivative pricing. Merton's model can incorporate volatility as a variable to determine the risk of default, where volatility may be modeled or estimated using a GARCH model (Hull *et al.*, 2004; Jumbe & Gor, 2022; Ghahramani & Thavaneswaran, 2008).

In practical applications, these models may be used together in a comprehensive risk management strategy, where Merton's model evaluates credit risk based on inputs that include volatility figures derived from GARCH models. This is especially helpful in situations when the volatility of assets directly influences the probability of default, influencing choices about investment and credit risk management. Both models are utilized in finance, although the GARCH model is more focused on understanding and predicting the dynamics of volatility in financial markets, while the Merton model concentrates on credit risk and the likelihood of default.

The Merton model (1974) is a widely used credit risk model that assesses the credit default risk of a business. The approach views the company's stock as a call option on its assets and evaluates its potential worth using mathematical techniques (Merton, 1974).

The fundamental equation of the Merton Model is:

$$V = E + D \dots\dots\dots 3.1$$

Where:

The letters V, E, and D stand for the total worth of the company's assets, market value of its stock, and face value of any debt incurred.

The model is based on the assumption that if a company's assets' market value (V) is less than the debt's face value (D), it will default. In this case, when the business goes bankrupt, the equity value, E, is erased. In order to estimate the firm's asset volatility and calculate the default likelihood, the model also recommends modelling the firm's assets as a geometric Brownian motion. Financial institutions and analysts use this model to evaluate the credit risk attached to a specific company or organization. This is achieved by calculating the probability that the company's assets won't be enough to settle its debt.

These factors are taken into account while determining the theoretical worth of an organization's equity, together with the values of the company's debt, interest rate, and volatility of stock returns. Analysts and investors can evaluate a company's capacity to pay its debts and fulfil its financial commitments using the Merton model. It provides insights into the company's risk of credit default and helps in evaluating solvency by analyzing debt maturity dates and total debt obligations.

The Merton model can be used to assess the credit risk of commercial banks. The model's evaluation of equity in relation to the asset value of the bank can provide crucial information about the credit risk that commercial banks must deal with. The model considers the bank's debt, the value of its assets, the risk-free interest rate, and the standard deviation of stock returns. The Merton model takes these factors into account to give analysts and investors a better understanding of a bank's capacity to pay debt, service its debt, and maybe avoid credit default. Additional factors, such as regulatory frameworks, macroeconomic conditions, and specific risks associated with the banking sector, should also be taken into account when evaluating the credit risk of commercial banks (Benos, 2007).

A GARCH model is used primarily in financial time series to model the volatility (variance) of returns which changes over the years. A commonly used form of the GARCH model is the GARCH (1, 1) model (Ghahramani & Thavaneswaran, 2008).

The GARCH (1, 1) model can be specified as follows:

Return Equation:

$$r_t = \mu + \varepsilon_t \dots\dots\dots 3.2$$

Equation 3.2 describes the total asset returns r_t at time t, where μ is the expected mean return, and ε_t represents the error term, encompassing all variations from the mean not explained by the model.

Error Term:

$$\varepsilon_t = \sigma_t z_t \dots\dots\dots 3.3$$

Here, ε_t is decomposed into σ_t , the time-varying standard deviation (volatility) of returns, and z_t , a random shock with standard normal distribution (mean 0 and variance 1). This formulation implies that the size of the residual depends on the level of volatility at time t and the realization of the random shock.

Variance Equation (GARCH (1,1) process):

To derive the variance equation from the error term, we note that σ_t^2 is modeled as a function of:

ω : a constant term,

$\alpha\varepsilon_{t-1}^2$: the component that models the response of today's variance to the size of the previous day's squared shock (capturing the effect of past volatility shocks),

$\beta\sigma_{t-1}^2$: the component representing the persistence of past variance into today's variance.

The variance equation is thus specified as:

$$\sigma_t^2 = \omega + \alpha\varepsilon_{t-1}^2 + \beta\delta_{t-1}^2 \dots\dots\dots 3.4$$

The key transition here is recognizing that the variance of returns is not constant but evolves over time depending on past shocks (ε_{t-1}^2) and past variances (δ_{t-1}^2). The parameters α and β capture the sensitivities to these components, respectively. This setup allows the model to adaptively update its estimate of variance based on new information, reflecting the real-world phenomena where volatility tends to cluster in time. Therefore, σ_t^2 is directly influenced by the size and variance of the previous period's residuals, making it inherently linked to the error term described in the initial equations.

The GARCH (1,1) model is praised for its robustness in financial modeling of volatility, especially in capturing the "volatility clustering" phenomenon—large changes in prices tend to be followed by large changes, and small changes tend to follow small changes (Leutcht *et al.*, 2015).

The GARCH (1, 1) variance equation will be used to estimate the conditional variance of the bank's returns as specified in the theoretical framework. Incorporate credit risk variables directly into the return equation or as additional explanatory variables impacting the variance equation.

Econometric specification

Empirical model on credit risk and financial performance

Examining the connection between credit risk and Kenya's commercial banks' financial performance is the main objective of the study. The study will employ the model used by Muriithi *et al.*, (2016) in order to achieve this purpose. Similar models have been used by Kolapo *et al.*, (2012), Poudel (2012), and Almekhlafi *et al.*, (2016) in their investigations on the connection between commercial banks' profitability and credit risk. Credit risk is measured using independent variables such as capital to risk-weighted assets (CRWAR), asset quality (AQR), loss loan provision (LLPR), and loan and advances (LAR). These independent variables are thought to have a general multiplicative relationship with the dependent variable. Cobb Douglas functional connection as depicted in model (3.5):

$$ROE=f(CRWAR, LLPR,AQR,LAR) \dots\dots\dots 3.5$$

Equation (3.5) will be linearized as follows:

$$ROE_{(i,t)} = \beta_0 + \gamma [ROE]_{(i,t-1)} + \beta_1 [CRWAR]_{(i,t)} + \beta_2 [LLPR]_{(i,t)} + \beta_3 [AQR]_{(i,t)} + \beta_4 [LAR]_{(i,t)} + \alpha_i + \varepsilon_{(i,t)} \dots\dots\dots 3.6$$

Where; i is the bank index, and t represents the time periods. In equation (3.6), The model constant, or intercept, is represented by β_0 ; the coefficients of the regressand are represented by β_i ; the performance of Bank i at time t is marked by $ROE_{i,t}$; and the lagged bank performance is shown by $ROE_{i,t-1}$. At any given time t , bank i 's capital to risk-weighted assets ratio is represented by $CRWAR_{i,t}$; the loan and advances ratio is denoted by $LAR_{i,t}$; the loss loan provision ratio is represented by $LLPR_{i,t}$; and the asset quality ratio is denoted by $AQR_{i,t}$. It is assumed that the idiosyncratic error term, represented by $\varepsilon_{i,t}$, has a normal distribution, whereas the bank-specific effect, designated by α_i , has a normal distribution with constant variance.

Empirical model on Credit risk control measures and performance

The purpose of the study is to look into how Kenyan commercial banks' profitability is affected by credit risk control techniques. To do this, the study will use the Yimkaa *et al.*, (2015) model, which gives return on equity as a function of bank risk.

$$NPL=f(RNPLAPLAL, RPLALTLA,RNPLATLA,RTLATAS) \dots\dots\dots 3.7$$

The independent variables that will be used to assess credit risk control measures are return on equity, the ratio of non-performing loans and advances to provision for loans and advances losses, the ratio of provision for loans and advances to total loans and advances, the ratio of non-performing loans and advances to total loans and advances, and the ratio of total loans and advances to total assets. Equation (3.7) will be linearized as follows:

$$NPL = \alpha_0 + \beta [NPL]_{(i,t-1)} + \alpha_1 RNPLAPLAL + \alpha_2 RPLALTLA + \alpha_3 RNPLATLA + \alpha_4 RTLATAS + \mu \dots\dots\dots 3.8$$

Where,

The intercept is represented by α_0 , the t -coefficients or measurements by α_i ($i = 1, 2, 3, 4$), and the error term is the random variable that was incorporated into the model to account for profitability aspects that the model was unable to capture. ROI, or return on equity, gauges how well the banks are doing financially. The factors that are reliant on each other are RNPLAPLAL (NPLA/PLAL) is the acronym for non-performing loans to loans and advances losses provision.

RPLALTLA: Total loans and advances divided by total loans and advances (NPLA/TLA) is known as RPLATAS. Total loans and advances divided by total assets (TLA/TAS) is known as RPLATLA. Non-performing loans and advances is known as RNPLATLA.

Empirical model on the effect of bank lending growth on non-performing loans and in Kenya

Analyzing how bank lending growth affects non-performing loans and in Kenya is the study's third goal. In order to comprehend the connection between non-performing loans—loans that aren't being repaid and bank lending growth, the model that follows is adopted from Taiwo et al., (2017), will be used.

$$TLA=f(NPL, IRS,ALR,LTDR,M2)..... 3.9$$

This function aims to show how bank lending growth might be affected by several factors listed above;

The explicit model is stated as:

$$TLA=\beta_0+\beta_1 NPL+\beta_2 IRS+\beta_3 ALR+\beta_4 LTDR+\beta_5 M_2+\mu 3.10$$

Where:

TLA stands for Total Loan Advances, or the total amount a bank lends out.

β_0 is a constant that represents the starting point for TLA before considering the other factors.

β_1 to β_5 are coefficients, which will show the degree to which each factor (like NPL or IRS) influences TLA.

μ is an error term, accounting for other factors not included in our model but that might affect TLA.

This equation helps to quantify how much each of the five factors (like the number of non-performing loans or the interest rate spread) impacts the total amount a bank lends out. The study adopts the model as used by Taiwo et al. (2017).

Levin-Lin-Chu panel unit root tests were used to examine stationarity. The reported results show that all variables are stationary in levels, implying integration of order zero, I(0).

Table 1: Panel Unit Root Test

Variables	Level	t-Statistics	P-value	Remarks
Log Non-performing Loans (I0)	Intercept	-4.1362	0.000	Stationary
	Intercept & Trend	-8.1286	0.000	Stationary
Return on Equity (I0)	Intercept	-10.0506	0.000	Stationary
	Intercept & Trend	-8.2041	0.000	Stationary
Capital to Risk-weighted ratio (I0)	Intercept	-5.8595	0.000	Stationary
	Intercept & Trend	-4.8353	0.000	Stationary
Log Total Assets (I0)	Intercept	-12.1964	0.000	Stationary
	Intercept & Trend	-9.9704	0.000	Stationary
Log Gross Loan Advances(I0)	Intercept	-7.027	0.000	Stationary
	Intercept & Trend	-5.9412	0.000	Stationary
Loan and Advances Ratio (I0)	Intercept	-7.3361	0.000	Stationary
	Intercept & Trend	-6.668	0.000	Stationary
Non-performing loans to Advances ratio (I0)	Intercept	-5.9015	0.000	Stationary
	Intercept & Trend	-4.7998	0.000	Stationary
Market Share Index (I0)	Intercept	-10.0297	0.000	Stationary
	Intercept & Trend	-7.9491	0.000	Stationary
Log Total deposit (I0)	Intercept	-6.1133	0.000	Stationary
	Intercept & Trend	-4.7641	0.000	Stationary
Total loan to Advances ratio (I0)	Intercept	-6.6057	0.000	Stationary
	Intercept & Trend	-5.104	0.000	Stationary
Loan to Advance provision ratio (I0)	Intercept	-6.6057	0.000	Stationary
	Intercept & Trend	-5.104	0.000	Stationary

Source: Study Data Computations

Hausman tests guided model choice: random effects were preferred for the ROE model and the lending-growth model, while fixed effects were preferred for the credit-risk-control model.

Table 2: Hausman Test

Equation	Chi-Square	Probability>Chi-Square	Model Preferred
Equation 3.6 for objective one	7.13	0.1289	Random Effect
Equation 3.8 for objective two	23.12	0.0008	Fixed Effect
Equation 3.10 for objective three	4.80	0.5691	Random Effect

Source: Study Data

IV. Empirical Findings And Discussion

Descriptive profile of the data

The descriptive statistics indicate substantial heterogeneity across Kenyan commercial banks. The average ROE for the full sample is 5.95 percent, but with a large standard deviation of 41.54, implying wide

dispersion in profitability across institutions. Average gross non-performing loans amount to Ksh. 11,659.54 million, while the mean capital to risk-weighted assets ratio is 19.67 percent. The mean NPL-to-advances ratio is 0.1933 and the average loan-to-advance provision ratio is 0.6956. The results also show that tier 1 banks record markedly stronger profitability and larger loan books than tier 2 and tier 3 banks, consistent with their scale, diversification, and market reach.

Table 4: Descriptive Statistics of the Study variables

Variable	Overall sample	Tier 1	Tier 2	Tier 3
	Mean (s.d)	Mean (s.d)	Mean (s.d)	Mean (s.d)
Return on Equity (%)	5.9517 (41.5411)	25.669 (11.235)	3.124 (83.36)	-0.5708 (63.865)
Non-performing loans (Mn)	11659.54 (18951)	40952 (32135)	10645 (8714)	6452.6 (7330.6)
Gross Loan Advances (Mn)	83319.56 (129935)	324829 (159857)	71791 (74313)	27028 (28850)
Total Deposits (Mn)	289897 (2336835)	958922 (537802)	105424 (534137)	44601 (283141)
Capital to Risk-weighted ratio	19.667 (14.167)	17.85 (1.5155)	9.695 (24.26)	15.359 (22.189)
Total Asset (Mn)	150871 (219219)	564663 (245359)	120400 (130317)	43775.7 (45808)
Loan to advances ratio	2494.1 (9843.6)	1507.3 (4001)	3681.5 (18481)	4439.4 (17051.7)
Non-performing advances to loans ratio	0.1933 (0.1482)	0.1204 (0.03689)	0.2820 (0.2145)	0.2794 (0.20278)
Loan to Advance provision ratio	0.6956 (1.4122)	0.56768 (0.0921)	1.0229 (2.566)	1.1098 (2.4944)

Effect of commercial bank’s credit risk on financial performance in Kenya

The first objective of the study was to analyze the effect of commercial bank credit risk on financial performance in Kenya. Financial performance was measured by return on equity (ROE). To achieve the objective, the study estimated equation 3.6 using random effect model and presented the results in table 4.4

Table 5: Effect of commercial bank’s credit risk on financial performance

Dependent variable: Return on Equity (ROE)				
Variable	Coefficient	Standard Deviation	t-Statistics	P-value
Capital to Risk-weighted ratio	-0.58872	0.21425	-2.75	0.006
Loan and Advances Ratio	-0.01954	0.02643	-0.74	0.460
Market Share Index	2.3241	0.77194	3.01	0.003
Non-performing loans to Advances ratio	-60.0546	21.4198	-2.80	0.005
Constant Term	23.6747	8.5372	2.77	0.006
Sigma u	4.6196	Wald Chi-Square		34.92
Sigma e	38.4628	Probability Chi-Square		0.0000
Rho	0.01422	R-Square	Within	0.8910
			Between	0.9403
			Overall	0.9137

Source: Study data computation

The results show that the overall R-squared is 0.9137 indicating that about 91.37 per cent of the change in financial performance of commercial banks in Kenya is determined by the commercial banks credit risks that the study did consider and only 8.63per cent of the changes are determined by the factors that the study did not consider due to scope and time period.

The contribution of each bank in the model is given by rho value which 0.01422 implying that each bank contributes 1.422 percent to changes in return on equity across all banks. In addition, the Chi-square is 34.92 with the probability 0.000 meaning the model is good and fit for the analysis of the effect of credit risk on the financial performance of commercial banks in Kenya. Further, the coefficient of the constant term is 23.6747 and statistically significant at 5 percent level of significance meaning that without the credit risks the study considered, the financial performance of commercial banks 23.67 percentage points.

The coefficient of capital to risk-weighted ratio was negative (-0.58872) and statistically significant at 5 percent level. This means that an increase in capital to risk-weighted ratio by one percentage point leads to a decline in financial performance of commercial banks by 0.5887 percentage points. This is because the increase in capital to risk-weighted ratio increases credit risk exposure thereby facilitating financial instability of the bank hence slowing down return on equity affecting profitability of the bank. The finding concurs with Munangi and Bongani (2020) that found an inverse relationship between the credit risk and financial performance of South Africa banks. Similarly, the study confirms Muriithi *et al.*, (2018) that found a negative correlation between credit risk and profitability of Kenyan commercial banks. This is because high credit risk lowers the return on equity hence affecting banks performance significantly in the financial sector.

The coefficient of market share index was positive (2.324) and statistically significant at 5 per cent significance level. This means that an increase in market share index by one percentage point leads to an increase in financial performance of commercial banks by 2.324 percentage points. This is because as bank increase its market share its customer base increases leading to an increase in deposits, loans amongst other parameters hence improving performance of the commercial banks. The finding corroborates Taiwo *et al.*, (2017) that as bank’s

customer bases increases by expanding its market share improves performance over time. However, it varies from small to large banks in the financial sector. In case of small banks, increase in market share affects the growth of loans hence negating on the financial performance.

The coefficient of non-performance loans to advances ratio was negative (-60.055) and significant at 5 percent level of significance. This implies that an increase non-performance loans to advances ratio by one percentage point reduces financial performance of commercial banks by 60.06 percentage points. This is because as the ratio increases more money is set aside to take care of bad loans hence limiting credit creation thereby reducing money circulation in the financial sector affecting financial stability of banks affecting their performance in the long-run. The finding affirms Kola *et al.*, (2019) increase in the non-performing loans to advances ratio has a detrimental effect on financial performance of commercial banks, this is because if accumulate beyond manageable levels necessitate diversion of more funds to cater for the bad loans hence lowering financial performance of the banks.

Effect of commercial bank’s credit risk control measures management on Non-performing loans in Kenya

The second objective of the study was to assess the influence of commercial bank’s credit risk control measures management on non-performing loans in Kenya. To achieve the objective, the study estimated equation 3.8 using fixed effect model. Credit risk control was measured by capital to risk-weighted ratio. Fixed effect model was preferred over random effect model since the P-value of Chi-Square was less than 0.005 at 5 percent level of significance and presented the results in table 4.5

Table 6: The influence of commercial bank’s credit risk control measures management on Non-performing loans

Dependent variable: Non-Performing Loans (lnNPL)				
Variable	Coefficient	Standard Deviation	t-Statistics	P-value
Capital to Risk-weighted ratio	-0.008659	0.005576	-1.55	0.122
Loan and Advances Ratio	-0.004605	0.001331	-3.46	0.001
Market Share Index	0.061938	0.059704	1.04	0.301
Non-performing loans to Advances ratio	4.34574	0.409744	10.61	0.000
Loan to Advance provision ratio	0.52444	0.094569	5.55	0.000
Constant Term	7.3435	0.21414	34.29	0.000
Sigma u	1.3078	F (6, 189)		30.76
Sigma e	0.49529	Probability >F		0.0000
Rho	0.87456	R-Square	Within Between Overall	0.8941 0.8240 0.8835

Source: Study data computations

The results show that the value of F-statistics was 34.29 with probability of 0.000 at 5 percent statistical level meaning that the model was good and fit for the assessment of the influence of commercial bank credit risk on non-performing loans in Kenya. Therefore, variables such as capital to risk-weighted ratio, loan and advances ratio, market share index, non-performing loans to advances ratio and loan to advances provision ratio are the credit risk control measures that influence the non-performing loans of commercial banks in the financial sector. Additionally, the value of the overall R-squared was 0.8835 implying that about 88.35 percent of the changes in non-performing loans of commercial banks are influenced by the factors the study did consider and only 11.65 percent of the changes in non-performing loans are influence by other factors that were beyond the scope of this study. Further, the coefficient of the constant term was found to positive (7.3435) and statistically significant at 5 percent significance level, this means that without the credit risk control measures the study considered, non-performing loans of commercial banks would be a significant positive percentage which would adversely affect the operations of the banks.

The coefficient of loan to advances ratio which is a measure of commercial banks credit risk was negative (-0.004605) and significant at 5 percent significant level. This means that an increase in loan to advances ratio by one percentage point leads to a decline in non-performing loans by 0.0046 percentage points. This is because the ratio measure accessibility of capital loans by customers hence its increase in accessibility implies that banks’ ability to offer credit increases and the customers are also capable of honouring their obligation when fall due hence banks do not suffer from bad loans leading to a reduction in non-performing loans. The finding validates Kihuro *et al.*, (2022) that found an inverse influence of credit risks and non-performing loans within commercial banks in Kenya. The study also called for stringent measures to control credit risk to ensure the amount of non-performing loans the banks owns also falls.

The coefficient of non-performing loans to advances ratio was found to be positive (4.3457) and statistically significant at 5 percent level of significance meaning that an increase in non-performing loans to loan

advances ratio by one percentage point increases non-performing loans by 4.346 percentage points. This is because the ratio measures the efficiency of banks as well as the financial health of the banks therefore its increase means that the financial health of the banks is good implying that the banks do not suffer from bad loans measured by non-performing loans. The study finding corroborates Munangi and Bongani (2020) that non-performing loans to total loan advances significantly affect the level of non-performing loans therefore there is need to implement strict credit regulatory, regulation controls and also increase oversight to management credit risk thereby lowering the amount of non-performing loans within the banking sector.

Further, the study revealed that the coefficient of loans to advances ratio was positive (0.5244) and statistically significant at 5 percent significance level. This implies that an increase in loans to advances ratio by one percentage point leads to an increase in non-performing loans by 0.5244 percentage points. This is because as the ratio increases, the liquidity of the banks also increases affecting the level of non-performing loans. The finding negates Musau *et al.*, (2018) that found an inverse significant effect of loans to total advances on non-performing loans as the ratio is an indicator of credit risk. The finding also contradicts theory that an increase in the ratio means a reduction in non-performing loans since the banks become more liquid hence have the ability to advance more loans to their customers. This increases their customer base and more people are able to participate in the formal economy and continuously borrow hence sustaining the operations of the bank over time.

Effect of bank lending growth on Non-performing loans in Kenya

The third objective of the study was to determine the effect of commercial bank lending growth on non-performing loan in Kenya. To achieve the objective, the study estimated equation 3.10 using random effect model. The model was selected since the P-value of chi-square of the model was greater than 0.05 at 5 percent significance level. The results are presented in table 4.6

Table 7: Effect of bank lending growth on Non-performing loans

Dependent variable: Log Non-performing loans (lnNPL)				
Variable	Coefficient	Standard Deviation	t-Statistics	P-value
Interest rate spread	0.89053	0.07042	12.65	0.000
Loans to Advances ratio	0.000649	0.00541	1.20	0.231
Market Share Index	0.5415	0.02827	1.92	0.055
Money Supply (M2)	4.78319	0.31304	15.28	0.000
Actual Liquidity Ratio (ALR)	-0.00548	0.00109	-4.99	0.000
Loan to Advance provision ratio	0.66883	0.07739	8.64	0.000
Constant Term	-2.8262	0.74529	-3.79	0.000
Sigma u	0.36771	Wald Chi-Square		652.77
Sigma e	0.43887	Probability Chi-Square		0.0000
Rho	0.41245	R-Square	Within	0.5911
			Between	0.9107
			Overall	0.8543

Source: Study data computations

The results show that the value of Wald Chi-square was 652.77 with a probability of 0.000 which is less than 0.05 at 5 percent level of significance. This implies that the model was good and fit for the determination of the effect of bank lending growth on non-performing loans. Additionally, the value of rho was 0.41245 which measures the contribution of each bank lending growth on non-performing loans implies that each bank contributes about 41.25 percentage points to the overall non-performing loans in the financial sector. Further, the overall R-square value was 0.8543 means that about 88.43 percent of the changes in non-performing loans are determined by the factors that the study considered and only 11.53 percent are determined by other factors that were beyond the scope of this study. Lastly, the coefficient of the constant term was negative (-2.8262) and statistically significant at 5 percent level of significant. This means that without the factors the study considered, commercial bank non-performing loans would be negative indicating minimal or absence of non-performing loans.

The coefficient of interest rate spread was positive (0.8905) and statistically significant at 5 percent level of significance meaning that an increase in interest rate spread by one percentage point increases non-performing loans by 0.8905 percentage points. This is because as the cost of borrowing increases, customers are more likely not to honour their obligations and therefore the banks which acted as a guarantor for loans faced larges amount of loans which are not being honoured, this increases the about of non-performing with the bank. The study disagreed with Adekunle *et al.*, (2015) that found insignificant effect of interest rate spread on non-performing loans in Nigerian commercial banks.

The coefficient of money supply was found to be positive (4.78319) and significant at 5 percent significance level. This means that an increase in money supply by one percentage point increases non-performing loans by 4.783 percentage points. This is because an increase in money supply can sometimes leads to increase

in non-performing loans in the short-run due to increased lending rates and relax lending standards as well as relax macroeconomic policies. The finding fails to agree with Muriithi *et al.*, (2016) that found a negative significant effect of money supply on non-performing loans within commercial banks in Kenya. Economic theories have also indicated that an increase in money supply can either increase or reduce non-performing loans depending on which aspect of money is considered. It is important to note that in the short-run increase in money supply has a positive effect on non-performing, however, in the long-run money supply increase has a negative effect on non-performing loans.

The coefficient of actual liquidity ratio was found to be negative (-0.00548) and statistically significant at 5 percent level of significance. This means that an increase in actual liquidity of commercial banks reduces non-performing loans of the banks. This is because banks are in a position to cover their short-term obligation enabling them to mitigate the short-term effect of non-performing loans. A highly liquid bank has more assets to cover their short-term obligations like providing for non-performing loans and it also reflects on the ability of the customers to service their loans in time. The finding agrees with Taiwo *et al.*, (2017) that found a significant effect of actual liquidity ratio of banks on non-performing loans. Economic theories have also indicated that banks with ample liquid assets are better placed to absorb losses emanating from loan defaults as high rate of default implies low financial performance indicating bad financial health of the bank.

Lastly, the study revealed that the coefficient of loan to advance provision ratio is positive (0.6688) and significant at 5 percent level of significance implying that an increase in loan to advance provision ratio by one percentage point increases non-performing loans by 0.6688 percentage points. This is because an increase loans made to deposits determines the liquidity of the bank and therefore, an increase in the ratio most likely increase the amount of non-performing loans as a lot of money circulates outside the banking sector therefore lowering the financial performance of commercial banks. The finding contradicts Kihuro *et al.*, (2022) that found negative significant effect of loan to advances ratio on non-performing loans in Kenya commercial banks.

V. Conclusion And Policy Implications

This paper set out to examine the relationship between credit risk management and the financial performance of commercial banks in Kenya. Using panel evidence from 2018-2023, the results show that asset quality and credit risk remain central to both profitability and loan portfolio stability. Credit risk indicators, especially the NPL-to-advances ratio, significantly depress ROE. At the same time, provisioning intensity, interest rate spread, money supply, and liquidity conditions significantly shape the behaviour of non-performing loans. Market share improves profitability, suggesting that scale and competitive positioning can partly offset risk pressures.

Several policy implications follow. First, the Central Bank of Kenya and bank management should strengthen credit appraisal, post-disbursement monitoring, and early warning systems so that deteriorating accounts are identified before they migrate into full default. Second, credit reference bureau use and borrower information sharing should be expanded to reduce asymmetric information and repeated delinquency. Third, provisioning and expected credit loss frameworks should be enforced more consistently, not only for compliance purposes but as active tools of risk recognition. Fourth, transparency in credit pricing is essential because wide interest rate spreads appear to worsen default risk. Finally, liquidity management should remain a priority, as stronger liquidity positions are associated with lower NPLs in the reported estimates.

The study is limited by its reliance on secondary reported data and on static panel estimators. Future research can extend the analysis using dynamic panel methods, post-2023 data, and explicit bank-tier interaction effects to show whether the risk-performance relationship differs systematically between large, medium, and small banks.

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