

# Non-performing Loans and Banks' Financial Stability in Kenya; Evidence from Commercial Banks

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## Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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## ABSTRACT

The size of non-performing loans plays a vital role in banking stability of any given economy. The paper investigates the resilience and stability of banks amidst the deteriorating quality of its assets since the last Global financial crisis. This study examined the effect of non-performing loans on banks financial stability in Kenya's commercial banks using secondary data for the period January 2015 to December 2019. A multiple regression model was utilised in analysing the data. Non-performing loans as measured by non-performing ratio had a positive and statistically significant relationship with banks financial stability as measured by Z a-score. The results implied that non-performing loans in Kenya's commercial banks affects the banks financial stability. Loans to deposit ratio results specified a positive and non-statistically insignificant relationship with banks financial stability. The results inferred that loan to deposit ratio do not affect the banks financial stability. Inflation rate results had a positive but statistically significant relationship with banks' financial stability indicating that inflation rate affects banks' financial stability. The results for loan growth had a negative but statistically significant relationship with banks financial stability. The study recommended implementation of measures that curb increase in non-performing loans as they threaten banking financial stability.

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## 1. INTRODUCTION

Accumulations of non-performing loans are a persistent feature of economic crises and financial stress incidences. Non-performing loans (NPLs) normally accrue as credit boom turns to bust. In other instances, huge amounts of bad loans could result from prolonged low growth and structural imbalances in the banking sector. Current cases consist of numerous European countries, as well as the United States following the 2007 to 2009 Great Economic Crisis. Previous instances comprised some Asian economies in the late 1990s, the Nordic countries in the 1990s and the US savings and loan (S&L) crisis in the 1980s [1].

Non-performing loans are one of the basic indicators of the financial strength and stability of banks and form the main measure of credit risk in the banking system. The surge in non-performing loans shows that the numbers of economic units that have challenges in servicing their loans are on the rise, increasing the probability of credit default. In such a scenario, the value of bank assets erodes and its wealth shrinks due to losses incurred as a result of debt write-offs [2]. Given that the banks do not operate independently and distinctly from one another, but rather intertwine and function with multiple backlinks, the poor performance of one bank can simply spill over to the entire banking sector and trigger financial instability and stress. On the worst, the deteriorated quality of loans in the banking sector generates a threat of systemic risk, panic and deposit outflows, limitations to financial intermediation, and ultimately limitations to investments and growth. Moreover, experience has revealed that the increase in non-performing loans plays a key role in the occurrence of bank crises [3].

According to the [4], the banks' assets quality reflected by nonperforming loans deteriorated in 2018 compared to 2017. The gross non-performing loans (NPLs) rose by 19.69 percent to Ksh.316.7 billion in December 2018 from KSh 264.6 billion in 2017. Similarly, gross NPLs to gross loans rose from 12.3 percent by end of 2017 to 12.7 percent by end of 2018. The rapid NPLs growth rates recorded in 2016 degenerated in second half of 2017 through 2018. Conversely, the ratio of gross NPLs to gross loans has maintained a steady upward trend, signifying elevated credit risk in the banking industry. Banks responded to this risk by

increasing provisions for bad debts, to the highest level in 2018 after the introduction of IFRS 9 that became operational in January 2018. Banks in the medium peer group category were the main drivers of increase in the growth of Gross NPLs to Gross Loans ratio in the fourth quarter of 2018 compared to banks in the Small and Large Peer Group categories. In the period December 2016 to December 2018, banks in the small peer group recorded the highest average NPLs ratio of 16.6 percent compared to 15.3 percent for medium and 8.28 percent for large peer group banks. The deteriorating asset quality amid decline in private sector lending elevates credit and liquidity risks to the banking sub-sector. In order to mitigate the risks, banks increased provisioning for non-performing assets, thereby increasing loan coverage ratio (percentage of specific provisions to total NPLs) to 44.7 percent in December 2018 from 34.5 percent in December 2017. Banks also tightened credit standards as well as enhanced credit recovery efforts.

### 1.1 Statement of the Problem

System-wide NPL complications can harshly impact negatively on banking stability, hence, damaging a country's growth prospects. Bad loans crisis thwarts banks from distributing credit throughout the economy. To begin with, their profitability suffers, as income from bad assets falls below normal levels. Second, provision for bad debts needs to be increased; and, third, funding costs rise as counterparties seek to cover the risks of lending to weakened banks. In the interim, write-downs and write-offs deplete capital cushions, besides, NPLs require higher risk weights. Furthermore, NPLs crowd out new lending, as banks burdened with high NPLs have limited capability to extend new credit. Overall, banks with high NPLs experience low profitability and low growth, and this can take a very long time to be resolved [5].

The NPLs tend to hinder the interest revenue, reduce investment openings as well as develop liquidity crises in the financial system, this result in bankruptcy problem which leads to banking financial instability and a weak economic system [6].

In recent times, NPLs in Kenya's banking system has been trending and becoming a cause of concern for banks' stability in the face of reeling economic downturn. The banks' assets quality

reflected by nonperforming loans deteriorated in 2018 compared to 2017. The gross non-performing loans (NPLs) rose by 19.69 percent to Ksh.316.7 billion in December 2018 from KSh 264.6 billion in 2017. Similarly, gross NPLs to gross loans rose from 12.3 percent by end of 2017 to 12.7 percent by end of 2018. The rapid NPLs growth rates recorded in 2016 degenerated in second half of 2017 through 2018 [7].

The continuous surge in non-performing loans in the banking sector in Kenya is alarming. An increased amount of non-performing loans may not only shrink the financial returns, but also decrease the capital and escalate the risk profile of the bank resulting to banking financial instability. This paper investigates the effect of non-performing loans on banking financial stability in Kenya with an aim of providing recommendations that will inform policy.

## **2. LITERATURE REVIEW**

### **2.1 Theoretical Review**

#### **2.1.1 Information asymmetry theory**

Information asymmetry theory was first applied by [8]. The theory states that it may be complex to differentiate between good and bad borrowers and this may lead to adverse selection and moral hazard problems. In line with the theory, [9,10] show the role of loan growth in bank risk-taking and resulting instability. The theory also relates to contagious withdrawals when depositors are imperfectly informed about the type of shocks hitting banks and about interbank exposures.

#### **2.2 Empirical Review**

Empirical review on banking financial stability in Kenya is still scanty. [11] utilised fixed effect model and discovered that real effective exchange rate had a significant positive impact on NPLs for small, medium and large banks in Guyana. In a very elaborate study, [12] studied the main drivers of stability of commercial and co-operative banks to find out whether the factors varied among the two classes of banks in Romania. The study employed Z-score to proxy bank stability index. [12] analysed macroeconomic variables data spanning from 2008 to 2012 on simple regression models. The results showed that only GDP growth and interbank rate positively impacted on co-operative bank's stability. Conversely, the result could not find any significant factor that could

affect the stability of commercial banks among the macroeconomic variables considered.

Ekanayake and Azeez [13] attributed NPLs in Sri Lanka banking system to both macroeconomic conditions and banks' specific factors. They established that NPLs have a positive relationship between loan to asset ratio and prime lending rate, and argued that larger banks incur lesser loan defaults compared to smaller banks.

Onwe [14] explored the relationship between liquidation and banking industry stability in Nigeria. The study utilized transformed Pearson correlation coefficient to separately establish the effect of bank failure and NPLs on the banking system stability. A long run relationship between bank failure and stability of banking industry was recognised.

Liu and Wilson [15] found that banking stability varies across bank types, in that banks with a regional focus are more stable on average than national banks. [16] scrutinized bank systemic risk across large and small banks in 52 countries. Empirical result showed that large banks create more individual and systemic risk than smaller banks, especially when large banks have insufficient capital or unstable funding.

Dayong et al. [17] did a follow up assessment by investigating the impact of NPLs on bank behaviour using a threshold panel regression model with dataset that covered sixty city commercial banks, sixteen state-owned banks and joint stock banks, and eleven rural commercial banks. The results affirmed the moral hazard hypothesis, which implied that an increase in the NPLs caused more lending risk, therefore potentially stimulating more poor quality loan and financial system instability.

Kozaric and Zunic [18] studied the relation between risks to which banks are exposed, the rate of non-performing loans and the rate of capital adequacy in the banking system of Bosnia and Herzegovina. In addition, as indicators of banks' risk exposure, indicators of profitability return on asset and return on equity, risk weighted assets, the share of loans in total assets, the loan/deposit ratio, ratio for the share of liquid assets in total assets and liquid assets terms of long-term obligations were used. They resolved that there is a strong correlation between the rate of capital adequacy and non-performing loans, return on asset and return on

equity. Non-performing loans had a strong negative correlation with indicators of liquid assets share in total assets and liquid assets in long-term liabilities. [18] recommended that banks in Bosnia and Herzegovina should pay more attention to non-performing loans, which are one of the biggest dangers to their liquidity and stability.

Nikolov and Popovska [19] examined the non-performing loans in the Macedonian

banking system and discovered that in a period of economic growth and higher inflation, non-performing loans were low and stable. The increase of the capital to asset and return on equity ratios also decreased the level of non-performing loans. The authors resolved that as long as the economy is stable and banks are profitable and have adequate capital, non-performing loans are on a level suitable for the banks.

### 2.3 Conceptual Framework

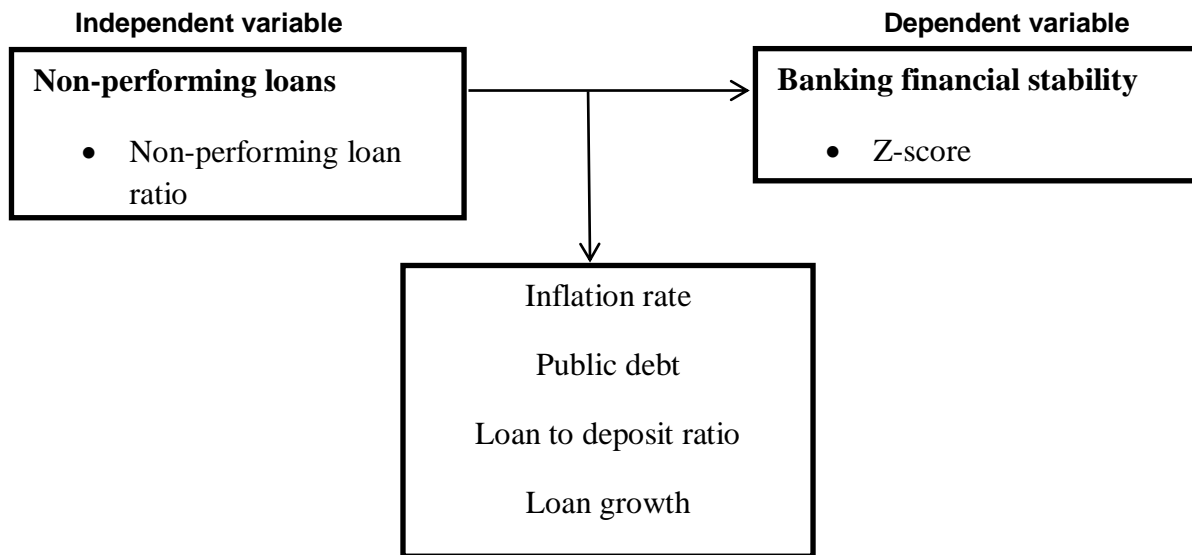


Fig. 1. Conceptual framework  
Source: Author 2020

### 3. METHODOLOGY

Annual time series data spanning from 2010 to 2019 was collected from Central Bank of Kenya, Banking Supervision Report and Kenya National Bureau of statistics. The period was chosen based on availability of data. A multiple regression model with the help of SPSS statistical software was employed to address the objective of this study. The following econometric model is utilized:

$$BFS_t = \beta_0 + \beta_1 NPLR_t + \beta_2 LDR_t + \beta_3 INF_t + \beta_4 LGR_t + \beta_5 PD_t + \epsilon_t$$

Where

$\beta_0$  = Beta

$BFS_t$  = Banking sector stability as measured by Z - Score

$NPLR_t$  = Non- performing loan ratio

$LDR_t$  = Loan to deposit rate at time t

$INF_t$  = Inflation rate at time t

$LGR_t$  = Loan growth

$\epsilon_t$  = Error term

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  = Beta coefficients

### 3.1 Z-score Construction

This study adopts Z-Score model as a measure of banking financial stability as formalized by [20]. Z-score measures' banking financial stability and it is computed using the following three important soundness indicators: Equity/Assets ratio (E/A), the return on assets (ROA) and the standard deviation of return on assets ( $\sigma$  (ROA)) which is a proxy for return volatility. Z-score illustrates exactly how many standard deviations ROA may possibly change to make the banks total assets fall short of its total debts. Z-score compares a bank's buffers (capitalization and returns) with the volatility of those returns. The popularity of Z-score is derived from the established inverse relationship it has with the probability of insolvency of financial institutions. Z- Score is computed using the following equation:

$$Z - Score = \frac{ROA + \frac{E}{A}}{\sigma(ROA)}$$

### 4. RESULTS

The descriptive statistics in Table 1 revealed that the average financial stability (Z-score), NPL, loan to deposit ratio, inflation rate, loan growth and public debt are 15.62 per cent, 9.80 per cent,

82.6 per cent, 6.10 per cent, 2405.76, and 3.81 per cent, respectively. The variations from the mean are also moderate as illustrated by the standard deviation of 0.37 percent, 2.55 percent, 5.13 percent, 1.69 percent, 190.4 and 13.16 percent for financial stability (Z-score), NPL, loan to deposit ratio, inflation rate, loan growth and public debt respectively.

The results in Table 2 confirmed that non-performing loans, loans to deposit ratio, loan growth, inflation rate and public debt collectively explained financial stability as indicated by an R-squared of 29.9%.

Table 3 results of analysis of variance exhibited that there was a statistically significant difference between non-performing loans and banks' financial stability as indicated by (F (5, 54) = 4.598, with a P- value of 0.001 which is less than 0.05.

The multiple regression model results in Table 4 indicated that non-performing loans as measured by non-performing ratio had a positive and statistically significant relationship with banks financial stability as measured by Z a-score as depicted by a P- value of 0.001 which is less than 0.05. The results implied that non-performing loans in Kenya's commercial banks affects the banks financial stability.

**Table 1. Descriptive statistics**

	Mean	Std. deviation	N
Z-score	15.616819310574703	.374742214935027	60
Non-performing loans ratio	9.798748868836748	2.553923213833536	60
Loan to deposit ratio	82.643589609465250	5.132170802752338	60
Inflation rate	6.1585	1.69952	60
Loan growth	2405.757	190.4566	60
public debt	3.814808707045446	13.155007121776142	60

**Table 2. Model summary<sup>b</sup>**

Model	R	R square	Adjusted R square	Std. error of the estimate	Durbin-Watson
1	.546 <sup>a</sup>	.299	.234	.328049293213952	.670

a. Predictors: (Constant), public debt, Inflation rate, Loan growth, Loan to deposit ratio, Non-performing loans ratio; b. Dependent Variable: Z-score

**Table 3. ANOVA<sup>a</sup>**

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	2.474	5	.495	4.598	.001 <sup>b</sup>
	Residual	5.811	54	.108		
	Total	8.285	59			

a. Predictors: (Constant), Public debt, Inflation rate, Loan growth, Loan to deposit ratio, Non-performing loans ratio; b. Dependent Variable: Z-score

Table 4. Coefficients of determination

Model	Unstandardized coefficients		Standardized coefficients Beta	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity statistics		
	B	Std. error				Lower bound	Upper bound	Zero-order	partial	Part	Tolerance	VIF	
1	(Constant)	15.821	1.197	13.222	.000	13.422	18.220						
	Non-performing loans ratio	.126	.036	.860	3.550	.001	.055	.197	-.006	.435	.405	.222	4.514
	Loan to deposit ratio	.018	.010	.244	1.696	.096	-.003	.039	.222	.225	.193	.630	1.588
	Inflation rate	.063	.028	.285	2.253	.028	.007	.119	.306	.293	.257	.813	1.230
	Loan growth	-.001	.000	-.700	-3.116	.003	-.002	.000	-.186	-.390	-.355	.257	3.885
	public debt	.004	.003	.158	1.348	.183	-.002	.011	.207	.180	.154	.947	1.056

a. Dependent Variable: Z-score

Loans to deposit ratio results specified a positive and non-statistically insignificant relationship with banks financial stability (Z- score) as pointed out by a P- value of 0.096 which is greater than 0.05. The results inferred that loan to deposit ratio do not affect the banks financial stability.

Inflation rate results had a positive but statistically significant relationship with banks' financial stability as indicated by a P-value of 0.028 at 5% level of significance. A higher inflation decreases actual returns from any particular investment therefore leading to banks' financial stability.

The results for loan growth had a negative but statistically significant relationship with banks financial stability as measured by Z a-score as depicted by a P- value of 0.003 at 5% level of significance.

Further, public debt results indicated a positive and statistically insignificant relationship with banks' financial stability as depicted by a P-value of 0.183 which is greater than 0.05 implying that a country's public debt has no effect on banks financial stability.

The deterioration of credit quality reduces banks' market value causing an increase in funding costs hence financial instability. Financial regulators and policy makers need to come up with stringent policies of curbing NPLs.

## **5. DISCUSSION**

The results are in line with the work of [21] who studied the effects of non-performing loan on banking stability of National and International Licensed Banks in Nigeria. According to Ngozi's results, both National and International Licensed Banks in Nigeria confirmed that an increase in the NPLs ratio raised riskier lending causing further deterioration of the loan quality and financial system instability. International banks were found to withstand shocks from NPLs in the long run regardless of perceived temporary flux in the short run, while the stability of national banks was found to be susceptible to NPLs shocks in the long run. The stability of banks with international and national authorization unveiled symmetric response to shocks in NPLs, while the industry portrayed asymmetric response.

The loan to deposit ratio is an indicator of banks' liquidity and reflects the risk attitude of banks. The results showed a positive but insignificant

relationship with banks' financial stability as evidenced in Table 4, which is consistent with the findings of [22] who studied factors affecting NPL in Taiwan banking industry. When the loan to deposit ratio is low the returns tend to be low. Banks tend to increase profitability by granting loans haphazardly without maintaining credit standard, which in turn may lower the loan quality and hence causing financial instability.

Inflation rate is positive and statistically significant relationship with banks financial stability as exhibited in Table 4 The results support the work of [23] on non-performing loans and macro financial vulnerabilities in advanced economies and found a positive relationship between credit risk and inflation. High inflation rate decreases the real value of loans and eases the ability of debtors to pay loan on time, and therefore decreases default risks.

The public debt is positively and insignificant in Table 4 over the period. These findings contradicted with the results of [24] who examined the determinants of non-performing loans in Eurozone and found out that higher public debt reduces loan in the market, which increases the interest on loan. Increase in interest rates increases the cost of loans and, as a result, there is less chance of timely payment of loans, which causes high NPLs leading to financial instability.

## **6. CONCLUSION**

The increase in NPL in Kenya's commercial banks is alarming and the damage it can cause to an economy can go unmentioned. This study investigated the effect of non-performing loans on banks financial stability in Kenya. Non-performing loans as measured by non-performing ratio had a positive and statistically significant relationship with banks financial stability as measured by Z a-score. The results implied that non-performing loans in Kenya's commercial banks affects the banks financial stability. Loans to deposit ratio results specified a positive and non-statistically insignificant relationship with banks financial stability (Z-score). The results inferred that loan to deposit ratio do not affect the banks financial stability. Inflation rate results had a positive but statistically significant relationship with banks' financial stability indicating that inflation rate affects banks' financial stability. A higher inflation decreases actual returns from any particular investment therefore leading to banks' financial

stability. The results for loan growth had a negative but statistically significant relationship with banks financial stability as measured. The study recommended adoption of measures that curb increase in non-performing loans as they threaten banking financial stability especially by commercial banks in Kenya.

## FUNDING

This study received no specific financial support. This study contributes to the scant literature on Non-performing loans and banks financial stability in Kenya. The study focused on commercial banks' lending rates and stock of credit to private sector using multiple regression model.

## COMPETING INTERESTS

Author has declared that no competing interests exist.

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