

## **MACRO ECONOMIC FACTORS AND NON-PERFORMING LOANS IN THE KENYAN BANKING INDUSTRY**

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## **ABSTRACT**

Studies portray Non Performing Loans as an accurate pointer to the health status of a bank; where a high percentage of these loans indicates the institution is unable to collect the interest and principal for the amount advanced to the customers. This in turn may produce a domino effect characterized by decreasing profits for the banks due to most banks relying on these assets(loans) and advances as their largest income creators. The rise in Non Performing Loans also indicates high default rate. In response to this, the researcher sought to study the effect of macro-economic factors on Non Performing Loans in Kenyan commercial banks. The study was guided by two objectives, namely; to establish the effect of interest rate on non performing loans in commercial banks in Kenya and to determine the effect of inflation rate on non performing loans in commercial banks in Kenya. The study was based on four theories; moral hazard, asymmetric information, agency and the interest theory. Descriptive research design was applied. The target population was 42 commercial banks. The sample frame size was 210 objects. The study used secondary data from Central Bank of Kenya annual supervision reports and KBA. The number

of entries of the data were grouped into four quarters per year of study. Data was analyzed using descriptive and inferential statistics namely, correlation and panel data regression with the help of SPSS(version 22.0). Analysis of the data was through application of inferential statistics and descriptive statistics. The key findings were as follows: the relationship between real interest rate and NPLs was positive; the relationship between inflation and NPLs was negative; the relationship between exchange rate and NPLs was both a positive and negative relationship. The study recommends the following to CBK and Government of Kenya-stabilize exchange market by maintaining desirable exchange rates; employ fiscal policy to control inflation; manage interest rates and money in circulation. KBA to organize quarterly meetings where banks with high NPLs meet with banks that have low NPLs so as to learn measures that these banks have implemented.

**Key words:** Macro economic factors, Non-performing loans, banking industry, interest rate, inflation rate.

## **INTRODUCTION**

### **Background of the Study**

The banking industry represents a strong foundation that the Kenyan nation has been built on. Kenya attained independence on December 12<sup>th</sup> 1963 and since then, the banking industry has contributed to growth of the country's economy and wellbeing of millions of its Citizens. NPLs are a pointer of the banks performance (Beck, Jakubik & PiloIU, 2015); a bank is seen as performing well if the

number is low. Studies by Klein (2013) show that banks with big profits have less NPLs. This is due to these banks acquiring interest income from a greater percentage of the loans they advanced to borrowers, which has a net effect of increasing the profits. Banks with a high percent of NPLs give a picture that they have difficulties in collection of the total amount advanced known as the principal and the interest accrued. A company's income from interest falls as the amount of non-performing assets climbs (Masavu, 2015); because of this, banks report decreased profits; and may consequently close the doors. This scenario also translates into reduced collection of interest and flow of cash for the bank (Agyemang, Bardai and Ntoah-Boadi, 2020). The impact of NPLs to bank profitability is reduced income.

World bank data obtained from a global sample of 123 countries, indicates NPLs as a percentage of all bank loans, averaged at 7.44 %; Ukraine led with an index of 54.54 %; Monaco's was last with an index of 0.23 %. Kenya attained position 30 out of 123 with an index of 11.7% and position 13 out of in the African continent. In East Africa, the index is 4.7% for Uganda and 9.9% for Tanzania (Worldbank, 2018). KBA, June 2019 report on status of the banking industry, shows a steady and aggressive rise in NPLs number here in Kenyan banks. Statistics indicate Gross Non Performing Loans(GNPLs) as a proportion of Gross Loans(GLs) rose by 6.4 percent between 2014 and 2018 to stand at 12 percent; thus further attesting that this is one of the main challenges affecting banks in Kenya (KBA, 2019). The NPL trend is depicted in figure 1.1 which indicates the ratio of GNPLs to GLs has been on the increase in 2012 to 2018. Scholars adopt various definitions for NPLs. According to Nkusu (2011), this represents any loan where the interest and principal has not been paid for more than 90 days; once this is past, the loan is said to be close to or in default. As per CBK prudential guidelines, NPLs occur for loans and advances that have prior established repayment programs when the principal or interest is due and unpaid for 90 days or more (CBK, 2016).

Beck et al., (2015) found that foreign currency rates, lending rate and economic growth (Real GDP) which are classified as macro-economic factors affect NPLs significantly. The rate, one currency trades with another is the exchange rate Haniifah (2015). The exchange rate pricing is key in an economy. A drop in home currency value will lead to pricy imported goods. In instances where an importing trader has a letter of credit issued by commercial banks, the exchange rate is fixed and drop means that any fluctuations on the LC will be borne by the importer and once the goods are received, the sale price will be high /unaffordable hence making the goods unsellable thus increasing the probability of default. Interest rate is the price of money indicated as percentage per year. Prior studies define it as the sum of money a debtor pays in order utilize the funds borrowed (Crowley, 2007). It plays a huge part on both sides of a deal; to the debtor, this is the fee paid for use of the loan or credit granted; to the creditor, this is the income earned in granting a loan or credit and also for bearing the lending risk. The interest rate represents the return on investment to the saver and investor. Interest rate increments impact asset performance in banks primarily because it increases loans costs applied on the debtors (Ombaba, 2013). Studies have shown one leading source of bank income is interest due from advances and loans (KBA 2006-2018).

GDP represents final overall output of services plus goods created by the economy of a country within that country. Badar and Javid (2013) assert that GDP is a key pointer of the economic condition of a country; and that a country's economic production that has incorporated price

changes is the real GDP. Improved performance of the economy as reflected in growth of GDP results in fewer NPLs. According to Skarica (2014), times of booming economy results in fewer NPLs; these increase when the economy is in recession. Inflation rate is the increase in percentage price levels. It depreciates the value of money causing an increment in the cost of commodities thus increasing the debtor's operation costs; consequently a huge percentage of the borrower's income is directed towards coping with increased prices thus antagonizing the borrower's ability to service his or her debt. Gonsel (2012) posits that influence of inflation to credit risk is positive. The bank's efficiency is affected by inflation (Prakash, 2013). There is an association between interest rates pertaining to loans and inflation: when the rate of inflation is high, the lending interest rate is also high. This affects borrowing cost by causing an increase in both the borrower's obligation and the risk associated with credit advancement.

The CBK (2018) annual report shows the five foremost borrowers per sector with NPL: GL percentage >10% and who's numbers make up 257B of the 317B stock of NPLs which translates to 81%. These are Trade with 25.77% (81.622B); Manufacturing at 16.35% (51.791B); Real Estate at 14.85% (47.033B); Personal/Household at 14.42 % ( 45.672B) and Agriculture at 9.62 % ( 30.452B)

### **Statement of the Problem**

One of the major concerns in Commercial banks, CBK, KBA is the growing NPL numbers in the Kenyan banking industry that have breached the single digit to stand at 12% per (KBA, 2019). This translates to 12 out of 100 loans become NPLs. NPLs are a pointer of the bank performance. Beck et al., (2015) studied key determinants of NPLs using a sample of 91 countries in the globe and found that a bank is seen to be doing well if it held NPLs that were low in number. This is due to these banks acquiring interest income from a greater percentage of the loans they advanced to borrowers, which has a net effect of increasing the profits.

KBA reports released in June 2019 depicted in appendix I shows a decline in the trend of interest income from loans as seen in the rising numbers of NPLs and interest in suspense. Masavu (2015) confirmed that NPLs influence a bank's interest income. It also depicts the relationship between interest in suspense and NPLs as a positive one. Where the bank has NPLs, an interest in suspense amount is indicated in the balance sheet, which denotes that the bank has pending money that is due as the result of a loan, but that its borrower has not paid on the loan per an agreement.

NPLs reduce bank profitability and inhibit their intermediary function due to illiquidity and poor cash flow. Nir Klein in his 2013 study titled "Non-Performing Loans in CESEE: Determinants and Impact on Macroeconomic Performance" whose focus of study was parts of Europe namely, South Eastern, Eastern, and Central demonstrates that banks with fewer NPLs make large profits; meaning these banks obtain interest income from most of the loans they book and this improves their total profit. In these two studies, a methodological gap exists to show what percentage of NPLs makes up the definition of "few" NPLs in order for the bank to be seen as making large profits.

According to Garcia (1997), banks use depositors' funds to finance advances and loans to borrowers; hence recovery of these amounts by the banks is imperative. In occurrences of

nonpayment on booked loan payments, the principal is not recoverable leading the financial institution to replenish these sums in order to keep the banks deposit fund intact. A methodological gap exists that needs to show how a rising NPL can contribute to a crisis in terms of liquidity thereby affecting bank capacity to make payments to account holders with deposits; which can lead to risks that touch on bank reputation and trigger bank closure.

From the reviewed literature obtained from various studies, there were contextual and methodological gaps. This study addressed the contextual gap as the research data was for Kenyan banks. NPLs can be caused by macroeconomic or bank-specific factors (Warue, 2013). Focus of the study was macro- economic determinants that represent the systemic risk which is beyond control of the individual borrower. The study sought to find out the relationship between select macroeconomic factors and the NPLs in Kenya. The study will extend existing knowledge on how macro-economic factors affect NPLs.

### **Objectives of the Study**

The study was guided by the following objectives:

- i. To establish the effect of interest rate on non performing loans in commercial banks in Kenya.
- ii. To determine the effect of inflation rate on non performing loans in commercial banks in Kenya.

### **Hypotheses**

The researcher formulated the following hypotheses to guide the study.

**H0<sub>1</sub>:** Interest Rate on loans has a positive relation with NPLs in Commercial Banks.

**H0<sub>2</sub>:** Inflation rate has a positive relation with NPLs in Commercial Banks.

## **EMPIRICAL LITERATURE REVIEW**

### **Interest Rates and Non-Performing Loans**

Louzis, Vouldis and Metaxas (2012) focused on the banking sector in Greece and studied determinants of NPLs per the following: loan types, namely business, consumer and mortgage loans. The studies were centered on the basis that loan quality is influenced by Bank-specific and macroeconomic variables and that these two have different effects between different loan categories. The study outcomes were that unemployment, GDP, management quality and interest rates explain NPLs presence in Greek banks.

Poudel & Poudel (2013) did a study on credit risk determinants in Nepal banking industry from 2001 to 2011. The study incorporated 29 of the 31 banks in the country. Findings indicate interest rates affect debt burden and in turn creates credit risk; the researchers posit that credit risk is positively affected by interest rate; thus, a high rate of NPLs is because of debt burden increase due to rising interest rates. Efficiency of banking sector is affected by inflation; the findings indicate

that the value of money undergoes depreciation due to inflation and this decreases the investments rate of return; during periods of high inflation, interest rates on loans are also high. As a result, borrowing cost increases borrowers' obligation thus more credit risk. Castro (2013) studies, focused on macroeconomic determinants of the credit risk in the banking system in Greece, Ireland, Portugal, Spain and Italy from 1997 to 2011. The research studied how macroeconomic variables affect the risk associated with credit in this group of countries referred to as (GIPSI) which are considered as vulnerable as a result of unfavorable economic and financial conditions such as recession, unemployment, high levels of public deficits and debts and difficulties in borrowing money to finance their economies. The study found there was an increase in credit risk when GDP growth decreases; and credit risk rises when interest rate, rate of unemployment and growth in credit increase. The findings showed the relationship of long-term interest rate and credit risk is positive. Koju, Koju, Wang (2017) focused on 30 banks in Nepal from 2003 to 2015 and using static and panel data estimation assessed impact of banking management and economic factors on NPLs. Results indicate main cause of high NPL as low economic growth. The researchers posit that banks with greater spread on interest have a likelihood of presenting high NPLs percentages; and that high interest rates applied to facilities leads to greater spread. This scenario results in greater costs on facilities advanced to customers translating to higher instalments for the loans advanced which increases their rate of default. The study suggests that, to have a stable economy and financial system, there needs to be efficient management and effective financial policies.

### **Inflation Rate and Non-Performing Loans**

Laryea, Ntow-Gyamfi and Alu (2016) performed a study in Ghana aimed at investigating determinants of NPLs and how bank profitability is impacted by NPLs; 22 banks formed the study sample covering the period 2005 to 2010. The study found that factors associated with the banks as well as macroeconomic ones cause NPLs; NPLs are positively related to inflation though, inflation is not a significant determinant for occurrence of NPLs. Skarica (2014) used NPLs data per country and sought to find out factors that determine NPLs in 7 countries within eastern and central Europe. The period was between the third quarters of 2007 and 2012. The findings indicated inflation, unemployment and economic slowdown are significant determinants that lead to NPLs. These three factors represent the economy hence economic slowdown was found as the primary cause of high NPL levels as seen from the significantly large coefficients on inflation rate, unemployment and GDP.

Nkusu (2011) analyzed the link between NPLs and macroeconomic performance in 26 advanced countries. Data was from 1998 to 2009. The study was in two parts: determinants of NPLs; and interactions between NPLs and economic performance. The findings were: NPLs are determined by financial guidelines and control. Differences in these two, affect banks' behavior and procedures for management of risk. This explains differences in NPL across the area under study. The macroeconomic setting impacts debtors' financial performance and their ability to pay amounts advanced. The study found positive correlation between inflation and NPLs and that shock to GDP growth leads to increase in NPLs. Warue (2013) examined how NPLs and bank-specific and macroeconomic factors are connected and the occurrence level of NPLs in Kenyan banks as a result of these factors. The study period was 1995 to 2009. Data used was primary and secondary. A



census of 44 banks in the Kenyan banking industry was done. The research design was causal-comparative. The study revealed that bank specific factors contribute at a higher magnitude to NPLs performance and also found a negative relation between NPLs and inflation.

**RESEARCH METHODOLOGY**

The design applied was descriptive research. It was suitable for this study as it is cost effective since it is compatible with secondary data. This study targeted 42 commercial banks in Kenya. According to CBK (2019) financial industry report, there were 42 operational entities. In this study, due to the large population, sampling of the data selected was through random selection. The five variables from the year 2009 to June 2019 resulted in a total of 630 objects. The researcher used secondary data from various sources namely; CBK annual bank supervision reports and CBK website; banking surveys by KBA and KNBS. Data pertaining to the five variables were collated using data collection schedule designed in MS-excel. The researcher conducted a normality test to determine if the sample is from a normally distributed population and stationarity test to determine if a variable’s value remaining unchanged with variations in time. A correlation test and multicollinearity test was done using Karl Pearson coefficient of correlation. A test for autocorrelation was done using Durbin Watson test. In order to determine correlation, the researcher performed the Karl Pearson’s correlation coefficient test. The researcher performed the Durbin-Watson statistical test to check for autocorrelation. The researcher applied descriptive analysis, panel regression analysis and ANOVA. The data analysis was carried out using SPSS as guided by Laerd Statistics (2018). The researcher also applied multiple regression (Laerd Statistics, 2018) to analyze the data. The regression equation below was used.  $Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + e$ ; Where  $\alpha$ =Constant,  $e$ =Residual or deviation or error,  $\beta_1$ =Inflation coefficient;  $\beta_2$ =Real Interest Rate coefficient;  $X_1$ = Inflation;  $X_2$ =Real Interest Rate.

**Results**

*Table 1: Descriptive statistics*

	N	MIN	MAX	MEAN	STD DEV
NPL RATE=NPL/TOTAL OUTSTANDING LOANS OR DISBURSED LOANS	42	0.04	0.1278	0.074	0.027
MONTHLY INFLATION	42	4.03	16.83	7.92	3.59
REAL INT RATE	42	-2.06	12.39	7.64	3.2

*Source: Study data 2022*

Table 1 portrays results of the descriptive analysis for 2009 to June 2019. It shows 42 occurrences of the 5 variables. The average NPLs was 0.074 which is 7.4% of loans drawn that become NPLs. The maximum NPL was 0.1278 =12.78% and Minimum is 0.04=4.0%. The Standard Deviation was

0.027=2.7% meaning the variable can increase or decrease by this; The average monthly inflation rate was 7.92. The maximum is 16.83 and Minimum is 4.03. The Standard Deviation was 3.59 meaning the variable can increase or decrease by this. The average exchange rate of USD to Kes. was 91.32. The maximum was 103.52 and Minimum 75.14. The Standard deviation was 9.53 meaning the variable can increase or decrease by this;

The standard deviation was 11793.95 meaning the variable can increase or decrease by this. The descriptive analysis drawn from the sample data depicted the following trends: NPL was lowest in 2009 Q1 at 4%, Inflation was highest in 2009 Q1 at 16.8%, Real Interest Rate was lowest in Q1 2009 at -2%, Kenya Shillings was strongest in 2009 Q4 at 75.14. In the year 2019, NPL was highest at 13% in Q1 and Q2; Inflation at 4.67% which was almost at its lowest mark of 4% in 2010; Kenya Shillings was at 100.73 almost at its weakest mark of 103.52 in 2017 Q3. In the year 2013 Q2/Q3, Real Interest Rate was highest at 12.39%, NPL was at 5% which was almost at its lowest mark of 4%. In the year 2011 Q1, High interest rates cause the debt burden to increase. There was a negative relation of NPLs with inflation (Koju et al.,(2017). Inflation is an indicator of price stability; during periods of inflation, the real value of payments that the borrower should pay falls. There was a positive relationship of NPLs and exchange rates (Khemraj et al.,(2009); when FCY rate to Kes is low, NPLs decrease; when FCY rate to Kes is high, NPLs rate increases.

**Regression Analysis**

*Table 2: Regression Analysis Results*

SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R					0.887016391
R Square					0.786798078
Adjusted R Square					0.742903565
Standard Error					0.014245874
Observations					42
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	7	0.025464158	0.003637737	17.92474777	0.00000000101
Residual	34	0.006900128	0.000202945		
Total	41	0.032364286			
		<i>Coefficients</i>	<i>Std Error</i>	<i>t Stat</i>	<i>P-value</i>
	Intercept	0.081180097	0.047498940	1.709092814	0.096548149
Inflation	X Variable 1	-0.00230105	0.001816441	-1.26678836	0.213840420
Real interest rate	X Variable 2	-0.00246086	0.001853720	-1.32752545	0.193180009

*Source: Study data 2022*

Table 2 portrays regression results. The results in the table were substituted to the regression equation below:



$Y = \alpha + \beta_1X_1 + \beta_2X_2 + e$ ; where  $e$ =Residual or deviation or error,  $\beta_1$ =Inflation coefficient;  $\beta_2$ =Real Interest rate coefficient;

Substitution:

$Y=0.0811+-0.00230X_1+-0.00246X_2+0.014245874$ . Holding all factors at zero,  $Y=0.0811+-0+-0+0.014245874=0.09535$ , this translated to 9.535% NPL rate; thus for every 100 loans advanced, 9.5 turn out as NPL. On the other hand, if all factors are held constant, the value of NPLs would be 0.0811 or 8.11%. The coefficient sign is a plus indicating the direction of the relationship between the variables. The positive value represents direct correlation.

Coefficient of Determination

Co-efficient of determination is also known as “goodness of fit” or "R-squared. Since the study had more than one independent variable, the researcher used the adjusted R square value of 0.7429 which translates to 74.29%. This indicates that Inflation, Real Interest Rate, predicted 74.29% of NPLs. These results also suggest that 25.71% of NPLs were due to other factors. Thus the model is a good fit.

**Table 3. Analysis of Variances (ANOVA)**

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	7	0.025464158	0.003637737	17.92474777	0.00000000101
Residual	34	0.006900128	0.000202945		
Total	41	0.032364286			

Source: Study data 2022

Table 3 portrays results of the ANOVA which reveals that at 5% significance level, there was a statistically significant interaction between the effects of independent variables on the dependent variable. The value of F critical translated to 2.29(7, 34); F was 17.92, which is greater than F critical and this confirms significance of the model. The significance F value obtained was 0.00000000101 and this is less than 5% significance level. This shows there is a significant interaction hence reject the null hypothesis; accept the alternative hypothesis.

**Summary**

This study aimed at finding how interest rates, inflation rate affect NPLs in Kenyan banking industry. It revealed how these add to the increasing NPLs. It targeted all the 42 operational Kenyan commercial banks as reported in CBK (2019) industry report.

**Conclusion**

The relationship between real interest rate and NPLs was found to be positive; as real interest rate rises, the level of NPLs rises and vice versa. High interest rates cause the debt burden to increase. Results from the analysis led the researcher to accept the hypothesis: Lending Interest rate is positively related with NPLs. Finally, the relationship between inflation and NPLs was found to be negative; as it rises, NPLs drop. Inflation is an indicator of price stability; during periods of inflation, the real value of payments that the borrower should pay falls. Results from the analysis led the researcher to reject the hypothesis: Inflation rate is positively related with NPLs.

## Recommendations

The Central Bank of Kenya and the government to control inflation since levels that are high hinders economic growth and this results in loss of value of the Kenya shilling in comparison to foreign currencies. Here they should employ fiscal policy by using both contractionary model and expansionary model at appropriate intervals. The Central Bank of Kenya to manage interest rates and money in circulation by application of monetary policy appropriately. Through this when money supply goes down, demand for goods reduces hence prices fall and interest rate falls.

## Suggestion for Further Research

This study focused on four macro-economic factors namely inflation and Interest rates and NPLs. The researcher suggests further studies to determine which of these independent macroeconomic factors contributes in a major way to loans becoming NPLs and then develop a control mechanism to reduce their impact.

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