THE EFFECTS OF INTEREST RATE SPREAD ON NON-PERFORMING LOANS IN COMMERCIAL BANKS IN KENYA

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Project contains no material previously published or written by another person except where due reference is made in the Research Project itself.

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ABSTRACT

The main goal of any banking institution is to maintain profitable from its operations to ensure its sustainability and continued growth. Banks generate their profits mainly from providing loan facilities to its customers by charging them at competitive interest rates. However, the performance of the economy, especially at a time of recession, has seen customers default on their loan facilities. This has resulted in the existence of high levels of non-performing loans (NPLs) across the world since the 2008 financial crisis. High levels of NPLs have been evidenced to worsen the performance of commercial banks and have crippling effects on the economy. In Kenya, the level of NPLs has been evidenced to be growing in the last decade despite the efforts of the government to implement fiscal and monetary policies to stabilize the economy. This study seeks to determine how interest rate spreads as a microeconomic variable influence the level of NPLs in commercial banks, which translate to the total number of NPLs in the country.

Keywords: Non-performing loans, interest rate spread

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CHAPTER 1: INTRODUCTION

1.1 Background to the study

Interest rate is defined as the cost of borrowing or the price paid for the rental of funds. It is expressed as a percentage rate over the period of one year. Interest rates usually reflect the time value of money, or the principle that people would generally rather have money today than tomorrow. Interest rates reflect market information regarding expected change in the purchasing power of money or future inflation (Ngugi R. , 2001). The financial system and economy heavily relies on it because it influences the price of financial products, the level of capital investments and stimulate business and economic activity.

Interest rate spread is the interest rate charged by banks on loans to private sector customers minus the interest rate paid by commercial or similar banks for demand, time, or savings deposits (World Bank.org). The spread differs among countries due to the different financial policies they enforce hence, this limits their comparability. Interest rate spreads help financial intermediaries to generate profits as well as cover costs incurred such as administrative costs, information costs, transaction costs and default costs.

A non-performing loan is defined by many researchers as a bad debt whose recovery is highly doubtful because they are not being serviced as required. It occurs when payments of interest and the principal are not made for 90 days or more. Once a loan is categorized as non-performing, the probability that it will be repaid in full is substantially lower. The accumulation of non-performing assets is found to be attributed to economic downturns and macroeconomic volatility, terms of trade deterioration, high interest rates, excessive on overly high-priced interbank borrowings, insider lending and moral hazards (Daumont & Leroux, 2004).

How do non-performing loans occur? Loans are not necessarily annual events but happen at different periods of the year. Customers of banks vary in the sense that some might be entrepreneurs, business people, civil servants, contractors, small scale traders, large corporations or even the government at large. Each one of them can contribute, in one way or another, to the poor performance of loans in the banking sector.

Civil servants who have loan facilities with banks usually have their salaries delayed or denied for a specific period. During this time, their loans wills top being serviced and this will contribute to the rise in NPLs. Another example is the case of contractors working with the government. Many of them borrow from banks to execute their projects. Some of these projects are left abandoned due to poor mobilization of funds by the government; these loans they borrow end up being classified as non-performing and contribute to the existing bad loans. The government too contributes to NPLs as they borrow from banks to fund projects but due to the poor priority of projects and abandonment of other projects, the repayment of loans becomes difficult.

Non-performing loans are attributed for being an indicator of financial sector crises in many economies around the world. For instance, from 2007 to 2009, the United States economy was hit by the worst financial crisis since the Great Depression. Defaults in subprime residential mortgages led to major losses in financial institutions, producing not only numerous bank failures, but also leading to the demise of Bear Stearns and Lehman Brothers, two of the largest investment banks in the United States (Mishkin & Eakins, 2012).

The loan risk classifications according to (Basel II, 2004) include; (1) Normal: solvent loans with zero to less than 30 days at risk and given 1 percent provision (2) Watch: loans with principal or interest due and unpaid for 30 to 90 days and allocated 3 percent provision (3) Substandard: loans, past due for more than 90 days but less than 180 days given 20 percent provision (4) Doubtful: loans past due for more than 180 days and allocated 100 percent provision (5) Loss: loans considered uncollectible and past due for 360 and above days and given 100 percent provision.

When the level of non-performing loans is high, the provisions do not create adequate protection (Waweru & Kalani, 2009). For this reason, it is important to identify the factors attributing to loan defaults so as to reduce the level of non-performing loans. They can be divided into microeconomic and macroeconomic factors. In this case, we will look at the impact of interest rate spreads as a microeconomic factor contributing to non-performing loans in Kenyan commercial banks.

Why should we look into interest rate spreads as a determinant of NPLs in Kenya? Studies carried out by (Demirguc-Kunt & Detragiache, 1998) used a multivariate logistic model for a sample of developed and developing countries during the period from 1980 to 1994. The results concluded that inflation and the real interest rate are positively associated with a banking crisis whereas the Gross Domestic Product has an inverse relationship.

1.2 Role of Commercial Banks

Commercial banks play a vital role in the economy of developing countries, such as Kenya, by facilitating and encouraging economic development when they grant individuals and corporations capital for investment. They achieve this by providing capital to finance investments within the country while still confirming to monetary policies laid out by the Central Bank of Kenya. For instance, the Government of Kenya came up with an economic development plan, dubbed "Kenya Vision 2030" in 2007 that highlights the provision of financial services as a key variable to attaining economic growth in the years leading to 2030. The plan's objectives for the financial sector were to: (1) improve stability, (2) enhance efficiency in the delivery of credit and other financial services, and (3) improve access to financial services and products for a much larger number of Kenyan households (CBK, Financial Sector Report, 2008).

Commercial banks usually charge low interest rates on deposits and a higher interest rate on the money it lends out. This is so as to cover for the costs they incur such as transaction and information costs when processing loan facilities and generate profits from offering such facilities. The interest rate spread has been evidenced to reflect the profitability and efficiency of the intermediation process in the banking sector (Ndung'u & Ngugi, 2000).

However, banks have been found to, in an attempt to defend their profit margins, charge high interest rates on performing loans. This is because they seek to compensate for the already existing bad loans in their portfolios by generating increased profits to off-set these losses. This in turn results in high borrowing costs for borrowers. When they are unable to service their loans, it leads to increases in the national non-performing levels of loans.

The Government of Kenya has embarked on numerous revisions of the Banking Act, Central Bank of Kenya Act and other guidelines aimed at strengthening CBK's supervisory role. For instance, in the National Budget Statement for the fiscal year 2014/2015, the Cabinet Secretary

for the National Treasury announced the introduction of the Committee on Interest Rates in a bid to coordinate financial stability in the economy and ultimately long run economic growth and development. The committee introduced the Kenya Bankers' Reference Rate (KBRR), which banks would use when pricing its loan products, and the transparent disclosure of bank charges through the Annual Percentage Rate(APR). It was estimated that these interest rate measures would drive average interest rates downwards, thus making credit affordable and accessible to as many Kenyans as soon as possible.

NPLs need to be closely monitored and controlled as they have often been associated with bank failures and financial crises in both developed and developing countries. For instance, the 1997 Asian Financial Crisis which saw large business conglomerates in Korea running into financial difficulties, resulting in high accumulation of NPLs at Korean banks, thus undermining the financial soundness of domestic banking institutions (Kihwan, 2006). Similarly, Indonesia had over 60 banks collapsing during the same crisis because NPLs represented nearly 75% of total asset portfolios.

In Kenya, the government has been keen to address concerns over the level of NPLs in the banking sector. In 2013, the CBK required banks to write-off loan accounts from their accounting books that had not been serviced for more than three months. This amendment saw bad loans increase by 30.9 per cent from Ksh. 61.6 billion to Ksh. 80.6 billion, the highest level in over six years, even outpacing growth in new credit advanced by the lenders (CBK, Banking Supervision Annual Report, 2013).

1.3 Purpose of the Study

Non-performing loans have gained increasing global attention over the last two decades. For this reason, the study will seek to establish the impact interest rate spreads has on NPLs in Kenya and measures in which the government can put in place to mitigate its effects.

1.4 Beneficiaries of the Study

Insight on non-performing loans will assist economic players such as: (a) the government in formulating effective monetary and fiscal policies through the Central Bank to reduce NPLs in the banking sector; (b) bank policy designers tasked with creating credit risk management techniques so as to reduce the default risk they are exposed to; and (c) institutions that hold NPLs in their portfolios. They may choose to sell them to other investors in order to get rid of risky assets in their portfolios.

1.5 Problem Statement

(Ndung'u & Ngugi, 2000) argued that banks are seen to charge a premium on their loans due to their uncertainty of which loans will perform and those that will not. This premium will depend on the bank's credit policy and will result in the widening of interest rate spreads. (Fofack, 2005) argued that literature on banking crises have focused on the macroeconomic determinants and less on the various sources of non-performing loans, which are used as indicator variables to measure the intensity of the crises rather than a critical factor leading to it.

Deteriorating loan quality has been evidenced to be at the core of most systematic banking crises. (Kihwan, 2006) links the financial crises in Korea in 1997 to the high accumulation of NPLs by commercial banks in the country. The level of NPLs is thus a key indicator of the magnitude of banks' difficulties, even if banks themselves tend to be over-optimistic in their assessment of repayment prospects (Hardy & Alexander, 1998).

Due to the relatively large number of banks in Kenya today, providing insight to what factors contribute to NPLs is important, seeing the increasing number of NPLs in the Kenyan banking industry. According to (CBK, Financial Sector Report, 2013), NPLs grew from 4.7% in 2012 to 5.2% in 2013. If neglected by banks, NPLs can compound into financial crises the moment the loans exceed bank capital in a relatively large number of banks.

According to (Crowley, 2007), lending-deposit rates are closely related to the banking sector's stability. The research carried out by (Fofack, 2005) provides evidence that interest rate spreads both on a macroeconomic and bank-specific level have a negative correlation with NPLs. While many studies look at the causes and implications of high interest spreads in other countries around the world, studies concerning African banking spreads have received less attention (Waweru & Kalani, 2009). It is noted that most studies tend to concentrate on the determinants

of interest rate spreads (Crowley, 2007) or on the determinants of NPLs in various countries (Fofack, 2005).

1.6 Hypothesis

H_0: Interest rate spreads have no significant relationship with the level of NPLs in *the Kenyan banking system*

H_1: *Interest rate spreads have a significant relationship with the level of NPLs in the Kenyan banking system*

1.7 Research Objectives

The general objective of the research was to establish the effects of interest rate spread on non-performing loans in the commercial banks in Kenya. The research had the following specific objectives:

(i) To establish the trend of interest rate spreads and NPLs in the Kenyan banking sector

(ii) To establish the relationship between interest rate spreads and the level of non-performing loans.

1.8 Research Question

The research was guided by the following questions:

(i) What was the trend of interest rate spreads and NPLs in the Kenyan banking sector?

(ii) What is the relationship between interest rate spreads and the level of non-performing loans in Kenya?

CHAPTER 2: LITERATURE REVIEW

This chapter provides literature relating to theories regarding interest rates and interest rate spreads. It also summarizes literature from other authors concerning their research on the same area of study.

2.1 Theoretical Framework

There are several economic theories explaining the effects of interest rate an economy as well as the determinants of interest rates. This study will highlight two of these theories:

2.1.1 The Loanable Funds Theory of Interest Rates

This theory focuses on the determination of real interest rates in an economy. Real interest rates are rates of return expressed in terms of real purchasing power while loanable funds are the sums of money supplied and demanded at any time in the money market.

This theory states that the interest rate is determined by the demand and supply of funds in the economy as applied to the market of loanable funds. The theory is based on the following assumptions:

1. The market for loanable funds is fully segmented, characterized by the perfect mobility of funds within the market.
2. Perfect competition in the market. This means that all borrowers and lenders are price takers and only one pure state of interest prevails in the market at any time. The rate of return and levels of income are known, allowing for individuals to make rational choices between goods today and goods tomorrow.

The basis of the theory is that savers make a decision between consumption today (present) and consumption in the future. If an individual was to consume more today, they will save less and have less investable funds. Thus, their future income and consumption will be lower. As an incentive to save, they must be paid interest.

Real interest rate is therefore the rate needed to persuade people to forgo present consumption. It follows that there is a relationship between savings and the interest rate. However, there exists a negative relationship between real investment and savings. For instance, as the interest rate declines, the more investment projects become profitable and investors will be willing to borrow more in order to invest.

Thus, the real investment rate is determined by the intersection of the demand for savings (denoted by the willingness to forgo present consumption) and the demand for investment funds (denoted by the profitability of investment projects).

The theory also takes into account the monetary factors of hoarding, dishoarding and an increase in the money supply in the determination of real interest rates. The loanable funds theory implies that borrowers and savers in a banking system need to be compensated at equilibrium. A large interest rate spread will lead to inefficiency as one party is left feeling exploited.

2.1.2 The Liquidity Preference Theory

It was developed by John M. Keynes in his book titled: The General Theory of Employment, Interest Rates and Money.

Keynes believed there were three reasons for holding money:

1. Transaction motive: to purchase goods and services since money is a medium of exchange. When income increases, people will purchase more and thus, hold more money.
2. Precautionary motive: this is to provide money in case of emergencies such as health issues and unexpected termination from work.
3. Speculative motive: this provides money for individuals to invest.

This theory assumes that people store their wealth in terms of bonds or money. Interest rates in the short term are more volatile than in the long term. Therefore, investors would like to receive a higher premium for holding securities in the short term as compared to holding securities in the long run.

2.2 Empirical Evidence

(Berger & DeYoung, 1997) carried out research on commercial banks in US between 1985 and 1994. The research concluded that increases in NPLs tend to be followed by decreases in measured cost efficiency. This was evidenced by the fact that the lagged NPL coefficient was -0.0599 and was significant at the 1% level. This suggests that the high levels NPLs cause banks to increase spending on monitoring loans, which translates to an increase on the interest charged on the banks loans.

(Klein, 2013) analyzes NPLs in Central Eastern and Southern Eastern Europe in the period of 1998 to 2011. The research covered the economies of 16 countries within the region. He found that excessive lending (measured by loan to asset ratio and the past growth rate of banks' lending) leads to NPLs. After carrying out Augmented Dickey Fuller tests, he found that an increase in NPLs by one percent lead to a real GDP decline of credit.

(Song, 2001) argued that when banks hold NPLs, they need to earn sufficiently high interest rate spreads on the profitable part of their operations in order to offset past losses and maintain their operations. When interest rates are no longer controlled, there will be strong incentives for banks to factor in both past and current losses into current interest rates. This was evidenced by his research carried out on commercial banks in China from 1996 to 1999. The results showed that the nominal interest charged on loans varied depending on their terms to maturity. In October 1997, the interest on short term loans (less than one year) was 7.65% whereas the interest charged on long term loans (longer than 5 years) was 10.53%.

(Fofack, 2005) carried out research on NPLs in 16 countries within Sub-Saharan Africa from 1993 to 2002. He carried out causality tests which concluded that the increase in net interest rate spread (as a bank specific variable) by one unit accounted for a decrease in NPLs by 0.6 units in state owned banks and a decrease of 0.13 units in private banks. This implies that bank ownership affects the extent to which interest rate spreads influence the level of NPLs in commercial banks.

The research carried out by (Warue, 2013) sought to analyze the effects of bank specific and macroeconomic factors on NPLs in Kenya. After carrying out a pooled panel regression on the variables, she found that an improvement in bank specific factors by one unit lead to a corresponding decline in NPLs in commercial banks by 8.361 units. The study provided evidence that bank specific factors influenced NPL's performance at a higher magnitude compared to macroeconomic factors which contributed to a 0.561 unit decrease in NPLs. The results of the study also evidenced a positive and significant correlation between interest rate spreads and the level of NPLs across all bank categories. The increase in interest rate spreads by one unit resulted in a 1.051 unit decrease in NPLs across the bank size model and bank ownership categories model. This implies that the wider the interest rate spread gap, the more profits earned by banks. The study's results suggests that banks plough back profits earned to

improve the lending policies and procedure strategies for debt collections, with an aim to improve NPL levels in Kenyan commercial banks.

2.3 The causes of Non-Performing Loans in commercial banks

Interest rate spreads are attributed to causing increased NPLs in Sub-Saharan countries. (Fofack, 2005) carried out a correlation analysis that showed that: (a) interest rate spreads as a macroeconomic variable showed a negative relationship with NPLs (increase in interest rate spreads led to a 20% decrease in the performance of loans); and (b) the interest rate spread as a banking variable also showed a negative relationship with NPLs (increase in banking interest rate spreads led to a 26% decrease in the performance of loans).

Supporting Fofack's study, (Banco Central do Brasil, 2002) analysis on interest rates in Brazil showed that the variation in interest rate spread was strongly correlated with both the lending and deposit rates compared to other Latin American countries.

Economic downturns also lead to the emergence of NPLs in the banking sector of a country. According to (Kihwan, 2006), after the recession of the world economy in 1990, the government of Korea allowed many financial institutions to engage in foreign-currency dominated activities in a short span of time. It saw banks borrowing cheap short-term Japanese funds to finance long-term investment projects. After the Asian economic crisis of 1997, Korea was unable to meet its loan obligations as the total short-term external debts amounted to $63.8 billion while usable gross foreign reserves were only $9.1 billion. Many financial institutions saw their NPLs grow and ended up seeking government financial assistance.

Excessive lending by banks is a factor that has led to increased NPLs in many countries. Loans are among one of the primary sources of bank profits. Therefore, banks can involve themselves in increased loan activities so as to realize higher profits. However, this can lead to increased default risk exposure as was the case for Merrill Lynch & Co. in the 2008 U.S.A. financial crisis. The company had accumulated too many risky assets in the form of mortgage-backed securities which had low ratings. The economic recession saw an increase in default rates by mortgage owners and ultimately lead to the crash of the company, since it was heavily invested in mortgages.

According to (Ndung'u & Ngugi, 2000), commercial banks in Kenya have been observed to be increasing their loan advances and it has consequently led to the increase of NPLs. The low asset quality in banking financial statements was associated with poor credit administration and the institutions' weak information capital. In addition to this, banks might have capital ratios that are above the satisfactory level whereas the performance of the sector within the regulatory environment indicates an increased credit risk.

The mismatch between maturities of assets and liabilities of banks has led to increasing NPLs. According to (Ho & Saunders, 1981) interest rate sensitive liabilities tend to grow faster than interest rate sensitive assets, thus making it difficult for banks to immunize the effects of interest rate changes.

The lack of diversity in the financial sector of many countries has attributed to the growth of NPLs. The financial system is normally dominated by the banking sector. This is evidenced by (Škarica, 2013) who found that the banking sector development of Central and Eastern Europe has been a vital part of economic growth and financial integration. This shows that if the banking sector was to experience a financial crisis, it would have a significant impact on the performance of the economy. The (CBK, Financial Sector Report, 2013) shows that commercial banks dominate the financial institutions in Kenya: 43 commercial banks and 1 mortgage finance company. The collapse of the banking sector would heavily cripple the Kenyan economy.

The increase of inflation rates is estimated to cause growth in the NPLs of commercial banks. According to (Škarica, 2013) the central banks in Central and Eastern Europe were faced with an ambiguous outcome concerning NPLs when trying to stimulate growth in the economy because of inflation. When inflation increases, it leads to losses to borrowers in that they find it difficult to repay their loans as the value of money has decreased. Inflation has a positive impact on the lending rates thus leading to increased interest rate margins.

2.4 Interest rate spreads and financial liberalization

(Ho & Saunders, 1981) observed that over time, commercial bank margins have become increasingly sensitive to interest rate volatility. This was as a result of the banks placing a greater emphasis of loans in the asset portfolio (many of which have contractually fixed or insensitive interest rates). Commercial banks apply models that use the hedging hypothesis to deal with

risks. The hedging hypothesis views commercial banks as seeking to match the maturities of assets and liabilities in order to avoid reinvestment and refinancing risks which arise when assets are too long or short.

The interest rate spreads in commercial banks arise from the intermediation costs it charges customers. Banks will demand a positive interest rate spread or fee as the price of demanding immediacy of deposit and/or loan services in the face of uncertainty generated by asynchronous deposit supplies and loan demands (Ho & Saunders, 1981). Ho and Saunders conclude that interest rate spreads are dependent on four factors: the degree of managerial risk aversion; the size of transactions undertaken by the bank; bank market structure; and the variance of interest rates. Moreover, an increase in interest rate spreads indicates market inefficiency and increased costs of intermediation (Mlachila & Chirwa, 2002).

It was observed that in 1999, the Brazilian Central Bank showed a great concern for the high level of the bank loan interest rates persisting in the country. The Central Bank concluded that the high default levels as well as high operating costs were amongst the main culprits for the commercial banks' high interest margin experienced in the country (Banco Central do Brasil, 2002).

NPLs are mainly caused by financial liberalization of interest rate spreads. Financial liberalization entails abolition of interest rate ceilings and the promotion of free competition among financial intermediaries. According to (Bain, 1951), high interest rate spreads may persist if financial sector reforms do not significantly alter the structure in which banks' operate. This is supported by (Mlachila & Chirwa, 2002) study which found that financial liberalization can lead to higher growth of NPLs. Financial liberalization in Malawi was increasing the number of loanable funds through real interest rate increases, which attracts household savings to bank deposits. The expectation was that the removal of government controls on interest rates in Malawi would lead to greater competition and lower interest spreads of financial institutions. Results from their statistical tests show that interest rate spreads increase significantly after a period of financial liberalization, regardless of the definition of spreads. This was attributed to the following: upward movements in the non-financial costs; provision of doubtful debts; financial taxation through required liquidity reserves; the bank discount rate; and high and variable inflation.

The reason for high interest rate spreads in developing countries is the high reserve requirements imposed on commercial banks. High reserve requirements are designed to: protect depositors; and provide an availability of a pool of resources, allowing for financing high fiscal deficits through implicit financial tax. These high reserve requirements create an environment which promotes high inflation and persistent high intermediation margins (Mlachila & Chirwa, 2002). For this reason, the Banking Act in Kenya has been revised severally to correct for weaknesses that became evident in previous legislation and to broaden the responsibilities of monetary authorities (Ndung'u & Ngugi, 2000)

A repressed financial system is characterized by inefficiency in the intermediation process. According to (Ngugi R. W., An Empirical Analysis of Interest Rate Spread in Kenya, 2001), interest rates with set ceilings fail to reflect the true cost of capital. Such a policy regime constrains the growth of the financial system in terms of diversity of institutions and financial assets and encourages non-price competition. Financial liberalization in Kenya has been evidenced to show a widening interest rate spread despite the removal of interest rate ceilings. This period of widening interest spreads has been characterized by high implicit costs, declining profitability of financial institutions, emergence of NPLs and distressed borrowing.

The report from (Banco Central do Brasil, 2002) concludes that high interest spreads negatively impact economic growth of a country. This is from the negative relationship between interest rate spreads and the level of the Gross Domestic Product. However, high interest spreads were evidenced not to have any association with lower investment, thus evidencing that there could be some other mechanism through which interest rate spreads hinder growth (Bernanke, 1990).

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter shows the research methodology that was employed in the study. The chapter presented the research design, the target population, the sampling design, data collection techniques, the research model and data analysis.

3.2 Research design

The research design adopted was a descriptive approach. Descriptive approach is able to describe data and the characteristics of a population being studied. The researcher also used a causal research design in the study. This is because a causal research design attempts to identify a causal relationship between and independent variable (interest rate spreads) and a dependent variable (NPLs). It is also appropriate in generalizing the findings to all commercial banks in Kenya.

3.3 Population of the study

The population of the study was all commercial banks in Kenya. As of 2013, the Central Bank of Kenya reported that there were 43 commercial banks operation in the country.

3.4 Sampling design

We will sample data from all of the 43 commercial banks in the country. From the sample, the researcher was able to quantify the effects of interest rate spread on the performance of non-performing loans on various tiers of banks in Kenya (Tier 1, Tier 2 and Tier 3).

3.5 Data collection

The study will use secondary data. Secondary data will be obtained from the Central Bank of Kenya reports such as the Annual CBK reports, Financial Sector Reports, Banking Sector Reports and Credit Officer Quarterly Surveys.

Data on interest rates was observed on a monthly basis from 2003 to 2012. This is because of the volatility of interest rates observed after the post-election violence in 2007-2008, the change in government in 2013 and the implementation of the Kenya Bankers' Reference Rate in June 2013.

Data on NPLs was observed from annual reports of the CBK and the Kenya National Bureau of Statistics (KNBS). The study's data collection source was justified by the fact that data on NPLs

in all commercial banks are available in the CBK's bank supervision reports while the same applies to KNBS in making its estimations.

3.6 Variables used in the study

The variables used in the study will include lending rates, deposit rates and the ratio of NPLs to gross loans in Kenya.

Dependent variable: NPLs to gross loans (figure is expressed as a percentage)

Independent variables: lending rates and deposit rates

3.7 Research model

The study will use a correlation analysis. This will enable the research to show the magnitude of association between interest rate spreads and NPLs.

(Ho & Saunders, 1981) integrated the hedging and expected utility approaches to analyze the determinants of bank interest margins. They assume that once deposit prices and lending prices are set at the beginning of the period, they remain unchanged over the rest of the period. They define the prices of loans and deposits as:

$$P_L = P - b$$

$$P_D = P + a$$

Where:P is the bank's opinion of the price of loan or deposit, and (a) and (b) are fees for the provision of intermediation services. Spread was defined as (a + b). The price of loans is denoted as P_L as the price of deposits is denoted as P_D.

The researcher incorporated the regression by (Ngugi R. , 2001) to calculate the interest rate spread:

$$R_L = \frac{rm\psi}{(1-w)\theta} + \frac{Cl}{(1-w)\theta} + \frac{rb}{(1-w)\theta}$$

$$R_D = \frac{Cd}{(1-w)\theta} + \frac{rm\psi}{\delta} + \frac{rb(1-\psi)}{\delta}$$

Therefore: $S \equiv R_L - R_D \equiv \frac{rm\psi}{(1-w)\theta} + \frac{Cl}{(1-w)\theta} + \frac{rb}{(1-w)\theta} = \frac{Cd}{(1-w)\theta} + \frac{rm\psi}{\delta} + \frac{rb(1-\psi)}{\delta}$

Where: R_L is the lending rate

R_D is the deposit rate

S is the interest rate spread

rb is the government securities interest rate (Treasury bill rate)

ψ is the proportion of liquidity gap from the inter-bank market; and

w is the proportion of NPLs which is assumed to be random, taking values between (0,1) that is influenced by interest rates on loans, uncertainty in the economy and bank policy of collateral.

Cd is the deposit rate as described by the Central Bank of Kenya

Cl is the lending rate as described by the Central Bank of Kenya

rm is the inter-banking rate

δ is the level of default risk the bank is exposed to

θ is the level of credit risk experienced by the bank

The equation $S = R_L - R_D$ implies that the spread is defined by operational costs, interest rate elasticities, reserve requirements, demand and supply of funds, costs of adjustment in the secondary market, returns on other financial assets and policy actions.

The research used a simple regression approach to determine the relationship the independent variables and the dependent variable, such that the model become:

$$NPL_t = \alpha + \beta_1 S + \varepsilon_t$$

Where: S is the interest rate spread

And ε_t is the error term

The hypothesis statements used in the study include the following:

H_0: Interest rate spreads have no significant relationship with the level of NPLs in *the Kenyan banking system*

H_1: *Interest rate spreads have a significant relationship with the level of NPLs in the Kenyan banking system*

3.8 Data Analysis

The regression model will be carried out to determine the magnitude of influence interest rate spreads had on NPLs.

Positive correlation coefficients observed in the study represented a significant relationship between interest rate spreads and NPLs (reject the null hypothesis) whereas a negative correlation coefficient represented no significant relationship between interest rate spreads and NPLs (fail to reject the null hypothesis).

CHAPTER 4: RESULTS AND FINDINGS

4.1 Introduction

This chapter presents the research findings on the study on the effects of interest rate spreads on Non-Performing Loans in commercial banks in Kenya. The data was collected on a sample of 43 commercial banks from the period 2003 to 2012.

4.2 Interest Rate Spreads

In Figure 4.1 shows that there was a general decline in the interest rate spread from 2000 to 2005, then an increase in the interest rate spread till 2012. The level of interest rate spread in 2005 fell despite the average commercial banks' lending rates decreasing from 12.53% in 2004 to 12.42% in 2005. In addition to this, there was an increase in the average deposit rates from 2.4% in 2004 to 4.05% in 2005. This helped narrow down the spread from 10.1% to 8.35%. However, they are seen to increase steadily after 2005 and then sharply decline in 2013. This is as a result of the Central bank pursuing a tight monetary policy within that period which saw average commercial bank lending rates drop from 19.65% to 17.30% while average deposit rates increased to 6.65% from 6.50%. The interest rate spread further declined in 2014, which might have been as a result of the implementation of the Kenya Bankers' Reference Rate used to price credit facilities in commercial banks.

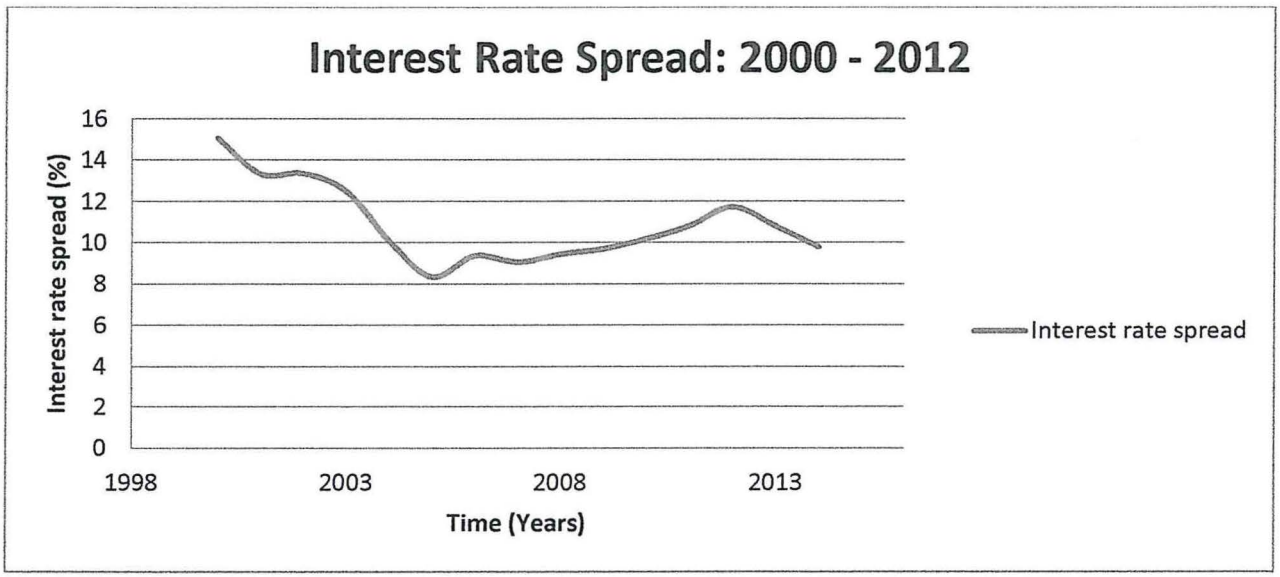


Figure 4.2: Interest Rate Spreads

4.3 Trends in NPLs in Kenya

Kenya has experienced banking problems since independence evidenced by two major financial crises: one in the mid-1980s and another in the early 1990s. The main factors that contributed to this include: under-capitalization, non-performing loans, over investment in speculative property market, insider lending to directors, loans to non-viable projects under the influence of officials, difficulties in recovering non-performing loans through the judiciary and a conflict of interest in those cases where shareholders participate in day-to-day management of their banks (Ngugi R. W., An Empirical Analysis of Interest Rate Spread in Kenya, 2000).

The table below shows the level of NPLs in Kenya from 2000 to 2014.

YEAR	GROSS NPL/GROSS LOAN (%)
2000	33.3
2001	13.1
2002	18.1
2003	34.9
2004	29.3
2005	25.6
2006	21.3
2007	10.6
2008	9
2009	7.9
2010	6.3
2011	4.4
2012	4.7
2013	5.2
2014	5.6

Source: CBK

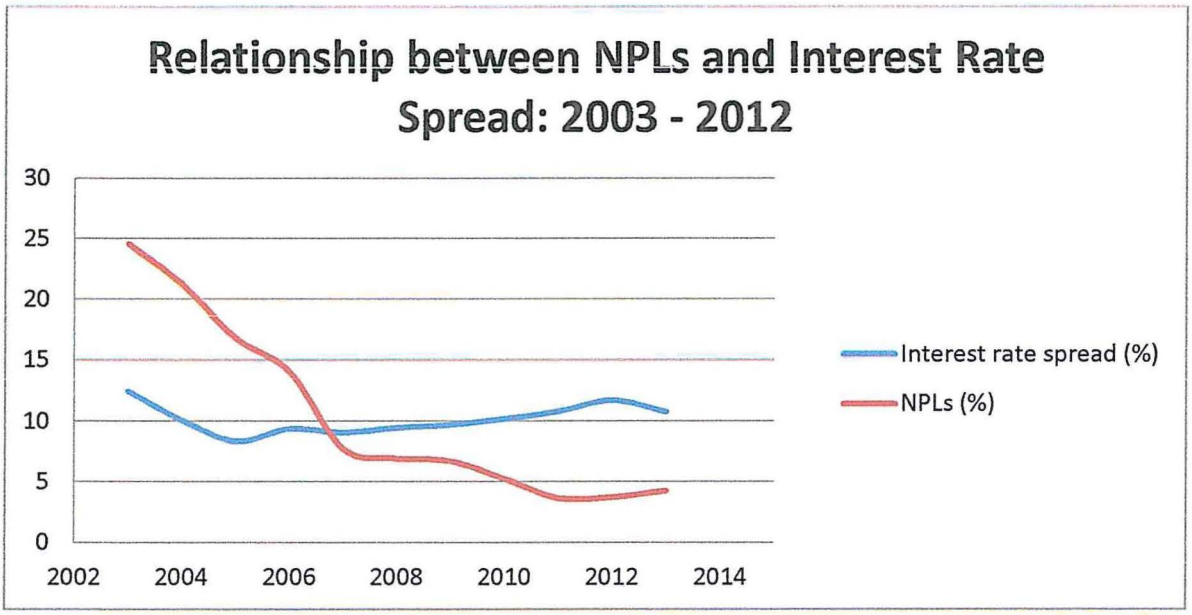
Table 4.2: Levels of Non-Performing Loans

The steep decrease of NPLs in 2001 is mainly attributed to the collapse of some financial institutions such as the Trust Bank in 2001 and write-offs made by some banks so as to clean off their balance sheets. The level of NPLs spiked in 2003 to 34.9% due to the concentration of NPLs in public sector commercial banks which had levels of NPLs standing at an alarming 45%. However, these NPLs were historical in nature and were as a result of weak credit risk management and the external influence of the management on the institutions affected.

According to the (CBK, Financial Sector Report, 2013), a mix of high interest spreads and subdues economic activities associated with uncertainty around the March 2013 general elections

affected the quality of loans in banks. This is why NPLs grew from 4.7% in 2012 to 5.2% in 2013. In 2014, the level of NPLs grew yet again as a result of The Central Bank of Kenya rules that demanded commercial banks to re-classify their NPLs in a strict manner. Commercial banks ended up increasing the number of loans written-off and had to draw funds from their profits to cater for these losses. This had a negative impact on commercial banks' overall earnings.

4.4 Interest rate spreads and Non-Performing Loans



Source: CBK

Figure 4.4: The relationship between NPLS and interest rate spreads

The trend observed is that before 2005, interest rate spreads and the level of NPLs were both declining. After this period, NPLs continued to decline whereas interest rate spreads were increasing. The decrease in NPLs despite the continued rise in the interest rate spread could be attributed to the introduction of credit ratings in the country. Commercial banks are requesting customers to provide their credit rating information before issuing credit facilities. This reduces the probability of default by the customer when servicing loans.

4.5 Regression Results

Regression was conducted using the degree of interest rate spread as a predictor of Non-Performing Loans.

The study conducted used a fixed effects approach where interest rate spreads was the only independent variable and a random effects approach where the independent variables of the regression were interest rate spreads, market share and the return on assets.

The study was conducted for all 43 commercial banks in Kenya, which is listed in Appendix 1.

4.5.1 Fixed Effects Approach

In this section, the regression equation used was:

$$NPL_t = \alpha + \beta_1 S + \varepsilon_t$$

Where: S denotes the interest rate spread

Looking at all 43 commercial banks in Kenya, the following results were obtained:

Model 1	S (Coefficient)	R. Square	Adjusted R. Square	Std. Error of the Estimate
	0.9861584	0.1007	0.0985	0.1475036

Table 4.5.1: Model summary for the aggregate banking sector

The adjusted R^2 is referred to as the coefficient of determination because it tells us how the level of Non-Performing Loans varied with the variation in the interest rate spread. From the table above, the value of the adjusted R^2 is 0.0985, meaning that interest rate spread accounts for 9.85 percent of the variance in NPLs. P-values obtained in the regression were 0.00, signifying we should reject the null hypothesis. This means that there is a significant relationship between interest rate spreads and NPLs in the aggregate banking sector. The co-efficient obtained shows that a unit changes in the interest rate spread will result in the level of NPLs changing by 0.986 units. The resulting linear equation is: NPLs = 7.246077 + 0.9861584S

The Pearson correlation test obtained the following results:

	NPLs	S
NPLs	1.0000	
S	0.2733	1.0000

Table 4.5.2: Model summary for the Pearson correlation for aggregate banking sector

This shows that the strength of association between NPLs and interest rate spreads for the aggregate Kenyan banking sector is low (r=0.2733). This shows that interest rate spreads have a low explanatory power as a cause of the level of Non-Performing Loans in the country.

When we look at individual tiers in the country, the following regression results were obtained:

Model 2	S (Coefficient)	R. Square	Adjusted R. Square	Std. Error of the Estimate
Tier 1	1.270349	0.3366	0.3250	0.23622
Tier 2	0.8320584	0.1187	0.1125	0.1888899
Tier 3	1.014012	0.0802	0.0755	0.2465477

Table 4.5.3: Model summary for individual tiers in the banking sector

From the above table, it can be observed that the explanatory power of the interest rate spread on NPLs was highest in Tier 1 banks as it was able to generate a R^2 value of 0.3366 and a coefficient of 1.270349. It had the lowest explanatory power in Tier 2 banks in terms of its coefficient which was 0.8320. The linear regression equations obtained were as follows:

NPLs (Tier 1) = 3.476418 + 1.270349S, NPLs (Tier 2) = 4.753753 + 0.8320584S,
NPLs (Tier 3) = 10.2466 + 1.014012S

The Pearson correlation coefficients obtained were as follows: Tier 1-0.5802, Tier 2-0.3446 and Tier 3-0.2832. From these results, Tier 1's level of NPLs is moderately influenced by the interest rate spread in the country as it accounts for 58.02 percent.

4.5.2 Random Effects Approach

This approach introduced two variables to explain the causes of NPLs. This was the market share of the individual banks and the return on assets of the banks. The regression equation was:

$$NPL_t = \alpha + \beta_1 S + \beta_2 MS + \beta_3 ROA + \varepsilon_t$$

Where: MS denotes the market share as a percentage

ROA denotes the return on assets as a percentage

Looking at the aggregate banking sector, the following results were obtained:

Model 3	S (Coefficient)	MS (Coefficient)	ROA (Coefficient)	R. Squared	Adjusted R. Squared
	0.9158457	0.1514557	-0.1004637	0.1242	0.1176
Std. error of the Estimates	0.1479766	0.0793511	0.0398039		
P values	0.00	0.057	0.012		

Table 4.5.3: Model summary for the aggregate banking sector

The regression equation obtained for the aggregate banking sector was: NPLs = 7.587437 + 0.9158457S + 0.1514557MS -0.1004637ROA. There is an inverse relationship between the level

of NPLs and the return on assets in the banking sector such that a unit increase in returns on assets would result in the decrease of NPLs by 0.10046 units. However, the relationship between market share and NPLs was not significant across the banking sector, evidenced by the large p-value.

The Pearson correlation matrix obtained the following coefficients:

	NPLs	S	ROA	MS
NPLs	1.0000			
S	0.2733	1.000		
ROA	-0.1116	-0.0693	1.000	
MS	0.1632	0.1345	-0.0573	1.000

The relationship between NPLs and return on assets was observed to be negative whereas the relationship was positive for market share and interest rate spread.

The following results were obtained for individual tiers in the banking sector:

Model 4	S (Coefficient)	MS (Coefficient)	ROA (Coefficient)	R. Square	Adjusted R. Square
Tier 1	0.8852149	0.6543816	-1.587938	0.4794	0.4510
Std. Error	0.5037758	0.2230602	0.2390953		
P value	0.003	0.005	0.000		
Tier 2	0.4132009	0.3256338	-0.8777068	0.3509	0.3372
Std. Error	0.1741696	0.0640177	0.2694281		
P value	0.019	0.000	0.001		
Tier 3	1.334123	-30.54772	-0.1230201	0.2795	0.2682
Std. error	0.226177	4.525656	0.0426545		
P value	0.00	0.000	0.004		

Table 4.5.4: Model summary for the individual tiers in the banking sector

From the regression results in the table above, interest rate spread had the highest amount of influence on NPLs in Tier 3 banks (coefficient of 1.334123). Interest rate spreads was also observed to have a significant influence on the level of NPLs. This is represented by the low p-values which were all less than 0.05.

The market share had a significant amount of influence on Tier 2 and Tier 3 banks (p-values of 0.00) but not on Tier 1 banks. This is shown by the p-value of Tier 1's market share variable of 0.05. However, market share had a negative influence on Tier 3 banks such that a unit increase in the market share resulted in an increase in NPLs by 30.54 units.

The Pearson correlation coefficient matrices are as follows:

	NPLs	S	MS	ROA
NPLs	1.0000			
S	0.5802	1.000		
MS	0.2794	0.1031	1.000	
ROA	-0.4681	-0.4192	0.1645	1.000

Tier 1

	NPLs	S	MS	ROA
NPLs	1.0000			
S	0.3446	1.000		
MS	0.5051	0.2675	1.000	
ROA	-0.4262	-0.3036	-0.3536	1.000

Tier 2

	NPLs	S	ROA	MS
NPLs	1.0000			
S	0.2832	1.000		
ROA	-0.1864	-0.0653	1.000	
MS	0.3311	0.2372	-0.0354	1.000

Tier 3

From the Pearson's correlation test, interest rate spread was highest in Tier 1 banks at 0.5802; the market share's correlation coefficient with the NPL was highest in Tier 2 banks at 0.5051 and was only negative in Tier 3 banks. The return on asset was negative in all tiers. It was largest in Tier 1 banks at -0.46 where it was closely followed by that of Tier 2 banks at -0.42.

4.6 Interpretation of Results

There is a positive relationship between interest rate spreads and NPLs, which confirms the positive relationship observed under the analysis, that is, the larger the interest rate spread, the larger the level of NPLs in commercial banks. This is further supported by the coefficients

obtained from the regressions and the level of significance of the variables, denoted by the p-values. Therefore, there is enough evidence to reject the null hypothesis:

> H_0: *Interest rate spreads have no significant relationship with the level of NPLs in the Kenyan banking system*

In the fixed effects approach, the interest rate spread in Tier 1 was attributed to influence NPLs at a greater level as compared to Tier 2 and 3. This is because Tier 1 banks have been evidenced to charge larger lending rates on their loans because of their customer loyalty and because a larger bank is believed to be well capitalized hence they have lower chances of collapsing as compared to smaller banks. Despite high interest spreads being identified as an indicator of bank inefficiency, this may not be the case in this scenario. Tier 3 banks which represent small banks have lower interest rate spreads as they charge competitive interest rates on their loans so as to attract customers and grow their loan accounts.

In the random effects approach, the explanatory power of interest rate spreads on NPLs is reduced significantly by market share and the return on assets. The market share of banks had a positive relationship with NPLs for Tier 1, 2 and the aggregate banking sector, but it is insignificant in the aggregate banking sector. This could mean that when banks in these tiers increase their market share, they are able to grow their customer base, which eventually translates to growth in the amount of activities as well as deposits. This is because bigger banks have good reputations, customer loyalty and are relatively better managed as compared to smaller banks. In addition to this, they are able to mobilize deposits are very low interest rates (near-zero deposit rates in some cases) while attracting large loans demands from their customers, despite their high lending rates. However, the relationship of market share and NPLs was negative in Tier 3 banks. This could suggest that they are able to generate increased cash flows through transaction charges, maintenance fees and interest earned on loans when they expand their customer base. These income channels will assist the banks in offsetting losses such as those brought about by holding NPLs in their balance sheets.

The return on assets had a negative relationship with the level of NPLs across all tiers. This could be interpreted as a profit-maximization behaviour of firms, where banks with higher profits are able to offset expenses that accrue because of holding NPLs in their balance sheets and in

turn recover these expenses by charging higher interest rates on their credit facilities. This will result into banks having a large spread between its lending and borrowing rates. This is consistent with the findings of (Song, 2001).

CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the discussions drawn from the data findings analyzed and presented in Chapter 4. The chapter is structured into the conclusions, recommendations and areas for further research.

5.2 Conclusion

The study concludes that there is a positive and significant linear relationship between interest rates spreads and NPLs in tier banks in Kenya, more so in Tier 1 banks than Tier 2 and Tier 3 banks. This study's results are consistent with the findings of (Warue, 2013) which states that interest rate spread was positive and significantly related to NPLs across all bank categories in Kenya. This is because the wider the interest rate spread the more profits banks are able to earn. The findings of this research however contradict the findings of (Fofack, 2005) of an inverse relationship between interest rate spreads or margins and the level of NPLs.

Further, the market share variable was found to be significant in Tier 2 and Tier 3 banks. However the relationship of market share and NPLs was found to be negative in Tier 3 banks. This suggests that an increase in the market share of Tier 3 banks would result in the decrease of NPLs in their balance sheets. The Return on Assets (ROA) variable was observed to be negatively and significantly related to NPLs in all tier banks. This is consistent with the findings of (Klein, 2013), which states that higher quality of the bank's management, as measured by its previous period's profitability, leads to lower NPLs in the future.

5.3 Recommendations

The Central Bank should come up with measures which would continue to foster competition among banks and promote the growth of medium and small banks so as to reduce the dominance of bigger banks in the country. This could require the joint efforts among individual banks, the banking industry and various regulators.

The Central Bank should come up with measures that ensure the strengthened supervision of banks in regards to their lending activities in the future. These measures and policies should ensure that commercial banks avoid excessive lending activities and maintain high credit standards. This is because of the adverse effects of high levels of NPLs could have on the

Kenyan banking sector, which could possibly spill over to the broad economy, as evidenced in various financial crises in the past (Kihwan, 2006).

Banks should also find ways of diversifying their products and services so as to strengthen their other channels of income. This could be achieved by incorporating technology in their systems so as to keep up with trends in the market, making it more efficient for its customers to access their services. This diversification could also help in reducing their reliance on interest income as their 'cash cow' as it is exposed to high levels of credit and default risks.

The government should also be keen in monitoring the amount of Non-Performing Loans in the financial sector. According to (Hardy & Alexander, 1998), deteriorating loan quality has been at the core of most systematic banking crises around the world. This was evidenced by the Asian financial crisis of 1997. The level of NPLs is therefore regarded as an important indicator of the magnitude of banks' difficulties.

5.4 Limitations of the study

The limitations were considered to be factors that were present in the research and inhibited the researcher from getting adequate information during the study.

The main limitation was that some data was not readily available. Information regarding the amount of Non-Performing Loans of individual banks was only available on an annual basis. Accessing monthly or quarterly data for the respective banks was difficult. For this reason, annual data for all 43 banks was used and conclusive results were drawn from the available data. Data on interest rates was transformed from monthly data into annual data using a method of direct linear interpolation.

5.5 Areas of further research

Further research could be carried out on the effect of the Kenya Banker's Reference Rate (KBRR) on the level of NPLs in Kenya's banking sector. The KBRR has been an instrumental tool in the banking sector in pricing loans as the Central Bank of Kenya requires all banks to use it. The Kenya Bankers' Reference Rate was introduced in June 2014.

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APPENICES

Appendix 1

List of Commercial Banks in Kenya

Tier 1 Banks

1. Barclays Bank Kenya
2. Standard Chartered Kenya
3. Kenya Commercial Bank
4. Equity Bank
5. Cooperative Bank of Kenya
6. CFC-Stanbic Holdings

Tier 2 Banks

7. Bank of Africa
8. Bank of Baroda
9. Bank of India
10. Chase Bank Kenya
11. Citibank
12. Commercial Bank of Africa
13. Diamond Trust Bank
14. Eco-bank Kenya
15. Family Bank
16. Housing Finance Company of Kenya
17. I&M Bank
18. Imperial Bank Kenya
19. National Bank of Kenya
20. NIC Bank
21. Prime Bank (Kenya)

Tier 3 Banks

22. Equatorial Commercial Bank
23. ABC Bank (Kenya)
24. Consolidated Bank of Kenya
25. Credit Bank
26. Development Bank of Kenya
27. Dubai Bank
28. Fidelity Commercial Bank Limited
29. First Community Bank

30. Giro Commercial Bank
31. Guaranty Trust Bank Kenya
32. Guardian Bank
33. Gulf African Bank
34. Habib Bank
35. Habib Bank AG Zurich
36. Jamii Bora Bank
37. K-Rep Bank
38. Middle East Bank Kenya
39. Oriental Commercial Bank
40. Paramount Universal Bank
41. Trans National Bank Kenya
42. United Bank for Africa
43. Victoria Commercial Bank