

**RELATIONSHIP BETWEEN INTEREST RATE
AND CREDIT RISK IN COMMERCIAL BANKS IN KENYA**

Githigia Dominic Mirie

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DECLARATION

This research project is my original work and has not been presented in any other institution for examination.

NAME: GITHIGIA DOMINIC MIRIE

ADMIN NO: D61/79401/2012

SIGN:.....DATE:.....

SUPERVISOR DECLARATION:

This research project has been prepared and submitted for examination with my approval as University supervisor.

SUPERVISOR: DR. JOSIAH ADUDA

SIGN:.....DATE:.....

DEDICATION

To Josephine Mirie my dear wife, and my two sons Ryan and Tyron Mirie. And to my fellow students in the Finance class of 2012/13.

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I wish to acknowledge the much and undying support that I have received from my dear wife Josephine Miriie, and my two sons Ryan and Tyron Mirie throughout the course of my studies for my Master's degree. The entire team at DMG Peters & Associates was very encouraging too, especially for accepting to take on some of my professional duties as I took time out to study and carry out the research.

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May the Lord bless you all abundantly.

ABSTRACT

Over the last 14 years, the Kenyan banking sector has been the subject of national interest due to high interest rates charged on loans and high rates of loan defaults. Responding to the situation, the Central Bank of Kenya, which is the industry's regulator, has over the years instituted a number of policies that have been aimed at stabilising the market. This includes the Kenya Bankers' Rate (KBR) that was introduced in July 2014 to serve as the industry's common reference point when determining interest rates.

The objective of this study was to find out whether there exists a relationship between interest rate and credit risk in commercial banks in Kenya. The study involved collecting secondary data from Central Bank of Kenya for the prevailing interest rates and non-performing loans (NPLs) over the period between 2000 and 2013. The data was then analysed using SPSS and results presented in graphs and regressions.

The results showed that there was a significant relationship (68.7%) between interest rates and credit risk in commercial banks in Kenya. This study also found out that there could be a host of other factors that are responsible for the credit risk in Kenyan commercial banks. The study therefore recommends further studies to be carried out on other variables which could be responsible for the credit risk. This includes the pace of judicial processes and internal efficiencies in banks.

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LIST OF ABBREVIATIONS

CBK	Central Bank of Kenya
CRB	Credit Reference Bureau
FSAP	World Bank Financial Sector Assessment Program
FSD	Financial Sector Deepening Trust
IMF	International Monetary Fund
KBA	Kenya Bankers Association
KBR	Kenya Bankers Rate
MFB	Microfinance bank
MFC	Mortgage finance company
MPC	Monetary Policy Committee
MRP	Money Remittance Provider
NPA	Non-performing Assets
NPL	Non-performing loans

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Crowley (2007) defines interest rate as the price that customers pay for the use of money they borrow from a lender or financial institution, or fee paid on borrowed assets. Financial intermediaries such as banks charge a price for the intermediation services offered under uncertainty and set the interest rate levels for deposits and loans. When there is high intermediation cost, reflected in the high interest rate spread; the borrower may be unable to repay his/her loan owing to the cost of such borrowings. This leads to a high risk of loan default (Chand, 2002).

The Basel Committee on Banking Supervision (2001) defines credit risk as the possibility of losing the outstanding loan partially or totally, due to credit events (default risk). The higher the exposure of a bank to credit risk, the higher the likelihood of the banks to experience financial crisis, and the vice-versa.

Kenya has so far experienced three important banking crises (1986, 1993 and 1998) that led to the closing down of a total of 37 commercial banks (Kithinji and Waweru, 2007; Ngugi, 2001). Muriuki (1998) attributes the crises to the huge portfolio of non-performing loans that the banks had in their books. By 2003, the average non-

performing loans portfolio stood at about 30% of gross advances (Thorsten et al 2009). This impacted the country's banking sector, more so it's understanding of credit risk, and shaped the country's institutional response to the risk. This challenge led to the Central Bank of Kenya instituting a number of measures that were aimed at lowering the rate of loan default.

As a move to ensure the stability of Kenya's banking sector, Thorsten et al (2009) point out that in 1998, Central Bank of Kenya enhanced capital requirements to avoid a repeat of the banking crises experienced in the mid-1980s and early 1990s. To this end, the gearing ratio was raised to 7.5% from 5%. In 2000, the Central Bank adopted the Basel I, and later Basel II standards on capital adequacy. This led to the introduction of additional capital adequacy ratios of 8% and 12 % for core capital and total capital to risk weighted assets respectively.

In response to gaps identified in the 2003 joint IMF/ World Bank Financial Sector Assessment Program (FSAP), a series of legal and regulatory reforms were undertaken. This included significant changes to the Banking Act (Cap 488) and to prudential guidelines to strengthen arrangements in relation to bank licensing, corporate governance, capital adequacy, risk classification of assets and overall risk management (Thorsten et al, 2009). Further, Central Bank of Kenya gazetted the Credit Bureau Regulations in 2007 (Banking Supervision Report 2007). This made it

mandatory for the Deposit Protection Fund and institutions licensed under the Banking Act to share information on nonperforming loans through credit reference bureaus licensed by the Central Bank of Kenya.

Effective July 2014, Central Bank of Kenya introduced the Kenya Bank Reference Rate (KBRR), which is based on the central bank's policy rate and the prevailing rates on certain Treasury bills, to serve as the basis on which Kenyan banks will price loans. However, as Central Bank explained, this does not represent a cap on the amount of interest that banks can charge. This left the fate of the interest rates component of loan pricing in the hands of the banks.

Although Kenya's financial sector was liberalized in the early 1990s to allow for market determination of interest rates, concerns about high interest rate have persisted and attracted a lot of debate in both public and policy forums. However, there has been little empirical research on this issue, particularly with respect to the relationship between interest rate and credit risk in Kenya's banking sector, which formed the subject of this study.

1.1.1 Interest Rates

Interest rate seems to be a strong determinant of credit risk because it influences the debt burden of borrowers. This means that the trade-off between interest rate and credit risk is expected to be positive. In fact, a rise in debt burden caused by an

upward increase in interest rates could lead to a higher rate of classified loan (Aver, 2008; Louzis, et al. 2011; Nkusu, 2011).

Fofack (2005) finds a positive relationship between real interest rate and credit risk. This implies that a rising interest rate could trigger the cost of investment and thereby necessitate higher possibility of default or failure to honour debt obligations, leading to non-performing loans.

1.1.2 Credit Risk

Credit risk is defined as the change in the value of the asset portfolio of a bank, due to the failure of an obligor to meet his payment commitments (Pyle, 1997; CBK, 2005). The risk attributable to loan default leads to high effective borrowing rates, through a risk premium that varies with the exposure to default. This is because a bank has to undergo costs to carefully evaluate and closely monitor the risk, especially in an environment where probability of default is high (Parlour and Winton, 2008). Terms most commonly used in banking to proxy default risk include: liquidation, bankruptcy filing, loan loss (or charge off), nonperforming loans (NPLs) or loan delayed in payment obligation (Mugendawala 2010).

1.1.3 Interest Rate and Credit Risk

Jarrow and Turnbull (2000) show theoretically how to integrate interest rate (among other market risks) and credit risk. They propose a simple two factor model where the default intensity of borrowers is driven by interest rates and the stock index, which in

turn are correlated. Their theoretical framework is backed by strong empirical evidence that interest rate changes have an impact on the credit quality of assets. For example, Jarrow and van Deventer (1998) show that in terms of hedging a bond portfolio, both credit and interest rate risk have to be taken into account.

The theoretical model of Ho and Saunders (1981) expanded by Angbazo (1997) and Maudos and Guevara (2004) indicate that there is a positive correlation between interest rate and credit risk. The model argues in part that when banks are faced by deterioration in loan quality (credit risk), they hedge against the impending loss by transferring a portion or all of it to their customers (either borrowers or depositors). This is done by increasing the lending rate or decreasing interest on deposits. As it has been proven in the studies above, increases in lending rates compromise the ability of borrowers to repay.

1.1.4 Banking Sector in Commercial Banks in Kenya

According to the Central Bank of Kenya (2013), as at 31st December 2013, the banking sector comprised of the Central Bank of Kenya, as the regulatory authority, 44 banking institutions (43 commercial banks and one mortgage finance company - MFC), seven representative offices of foreign banks, nine Microfinance Banks (MFBs), and two credit reference bureaus (CRBs). The sector also comprised a single Money Remittance Provider (MRP) and 101 forex bureaus. Out of the 44 banking institutions, 30 locally owned banks comprise 3 with public shareholding and 27 privately owned while 14 are foreign owned. The 9 MFBs, 2 CRBs and 101 forex

bureaus are privately owned. The foreign owned financial institutions comprise of 10 locally incorporated foreign banks and 4 branches of foreign incorporated banks. (CBK, 2013).

1.2 Research Problem

Lending is the core business of banking, and loans constitute a major proportion of banks' assets. Interest charged on loans forms the most important source of revenues for banks. As is the case with banking globally, proportions of loans advanced by Kenyan banks often go bad and therefore affect the financial performance of these institutions.

As a way of cushioning themselves from the risk of going under due to bad debts, banks usually calculate a risk margin which they eventually load to the total cost of loans advanced, and also reduce the amount of interest that they pay on deposits. Licensing of Credit Reference Bureaus notwithstanding, there still exists some information asymmetry that some borrowers carrying high risk of default exploit to borrow from different banks. This distorts the credit market, as high interest is charged on facilities to compensate for the credit risk.

Stieglitz and Weiss (1981) caution banks against high interest rates. The two scholars point out that attempts to charge higher interest rate negatively affects the quality of a bank's loan mainly because of incentive and adverse selection effects. First, it raises

the overall riskiness of the portfolio of assets. Rising interest rates reduces the returns on all projects and makes less risky projects unprofitable (incentive effect). This makes firms switch to more risky projects as interest rates rise. Secondly, the banks have to screen borrowers. This is because at a high borrowing interest rate, borrowers may be less worried about the prospect of nonpayment (adverse selection effect). Banks could monitor the behavior of borrowers but information is at a cost and also, not perfect. This implies that the rational profit maximizing banks will practice credit rationing, which defeats the assumption generally made in financial liberalization literature, that of interest rate liberalization eliminating credit rationing.

Fiscal policies by the Central Bank have done much to stabilise the market, but at times some interventions lead to unforeseen developments in the banking sector. For instance, while interest rates on Treasury Bills dropped to 5.1 per cent in the second half of 2013, making it less lucrative for banks to lend to the government and more attractive to advance credit to the private sector, interest rates on loans to bank borrowers rose up to 25% (FSD Kenya, 2014). As a result, the annual growth in private sector credit appeared to stagnate at 20.47 per cent in January 2014 compared to 20.08 per cent in December 2013 (FSD Kenya, 2014). While Central Bank's move was aimed at availing more funds to the banks to lend to the public, the subsequent high interest rates charged by the banks made it unattractive for borrowers to take up loans in the fear that they might not be able to pay back.

According to the Central Bank of Kenya Supervision Report, the level of non-performing loans has been increasing steadily from shs.56 billion in 1997, to shs.83 billion in 1998 to shs.97 billion in 1999. This high level of non-performing loans continues to be an issue of major supervisory concern in Kenya. It is accepted that the quantity or percentage of non-performing assets (NPAs) is often associated with bank failures and financial crises in both developing and developed countries. (Caprio and Klingebiel, 2002).

Kenya's experience with the financial reform process shows a widening interest rate spread following interest rate liberalization. Non-performing loans have been a hindrance to development not only in Kenya but the world over. Oloo (2001) traced the genesis of NPLs in Kenya and attributed it to external environment in which the Kenyan financial sector was operating. Sharp increase in Interest rates ensured and there after it was forced to mop up the excess liquidity and the country experienced the highest rate of nonperforming loans leading to some financial institutions going under receivership. Tireito (2012) carried out a study on the relationship between interest rates and Nonperforming loans covering period 2008 to 2012 on commercial banks in Kenya. He found out that there was a significant relationship between interest rates and non-performing loans. (Simba, 2013).

When left unsolved, nonperforming assets can compound into financial crisis, the moment these assets exceed bank capital in a relatively large number of banks. In Sub-Saharan Africa, of which Kenya is a case, the probability of a banking crisis occurring may be even more important because non-performing asset-related risks are compounded by the structure of the banking system which is dominated by a few large banks (Fofack, 2005).

It was therefore hypothesized in this study that loading of the credit risk factor on creditworthy customers increases the cost of borrowing which ends up reducing borrowing appetite and increasing the risk of default. This was the interesting relationship between interest rates and credit risk that this paper intends to study.

1.3 Objectives of the Study

- i. To analyze credit risk trends in Kenya's banking system.
- ii. To establish the relationship between credit risk and interest rates in Kenya's banking sector.

1.4 Value of the Study

While Kenya's banking sector has operated under liberal economic and financial policies since early 1990s and thus allowing for market forces to determine interest rates, there have been concerns over high interest rates charged on borrowers and the

consequent high risk of default. Most of the studies in this field have concentrated on the interest rate spread factor, but rarely has there been mention of the effect in interest rates on credit risk and the vice versa. The fact that this study attempts to analyze the determinants relationship of these two factors, is of great policy and empirical significance. This is more so considering that CBK's Monetary Policy Committee (MPC) has endeavoured to ensure i) attainment of realistic interest rate that encourage borrowing for purposes of national economic development; and ii) a safe, sound, efficient and competitive banking system through discreet risk management. This study was also a requirement for the award of an MBA Degree in Finance by University of Nairobi.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a summary of the findings by other scholars and researchers who have previously conducted studies in the fields of interest rates and credit risk both globally and in Kenya. This section also reviews some of the theories that have been advanced towards a better understanding of interest rates and credit risk.

2.1 Theoretical Framework

2.1.1 Loan Pricing Theory

According to Olokoyo (2011), this approach explains the attendant risks of banks having to set high interest rates in order to optimize returns from lending. When banks set very high interest rates, they induce the problem of adverse selection and moral hazard. This attracts borrowers with very risky projects into the banks' portfolio. In return, the already high interest rates incentivize the borrowers into adding more risk to their investment portfolio due to high affinity for high returns. In view of this, banks should consider the problems of adverse selection and moral hazard since it is very difficult to forecast the borrower type at the start of the banking relationship (Stiglitz and Weiss, 1981).

2.1.2 Firm Characteristics Theories

These theories predict that the number of borrowing relationships will be decreasing for small, high-quality, informationally opaque and constraint firms, all other things being equal. (Godlewski & Ziane, 2008)

2.1.3 Credit Market Theory

A model of the neoclassical credit market postulates that the terms of credits clear the market. If collateral and other restrictions (covenants) remain constant, the interest rate is the only price mechanism. With an increasing demand for credit and a given customer supply, the interest rate rises, and vice versa. It is thus believed that the higher the failure risk of the borrower, the higher the interest premium (Ewert et al, 2000).

2.2.1 Interest Rate trends in Commercial Banks in Kenya

Ndung'u (2000) points out that the liberalization experience in Kenya shows that domestic interest rates have remained high even when inflation has been low and declining. That is, the economy has been on a deflationary trend since 1994, save for a few blips in 1997, and the exchange rate has been volatile. As Karumba and Wafula (2012) found out in a recent study of collateral-backed lending in Kenya, interest rate premium increased with rise in the collateral pledged. This was contrary to what would have been expected: higher interest rate premium for firms pledging little or no collateral.

2.3 Determinants of Credit Risk

The major determinants of credit risk can be categorised as: market forces and the macro-economic environment. Demirguc-Kunt and Huizinga (1998) point to internal inefficiencies in the banks and in the legal system, as well as high-level corruption as potential determinants of credit risk. Other market related determinants include the level of development of the banking sector, and explicit and implicit taxation - such as profit taxes, reserve requirements, as well as contract enforcement.

Tennant (2006) argues that macro-policy variables, such as public sector domestic borrowing, discount rates and Treasury Bill rates have an impact on interest rate volatility and hence credit risk. Fisher (1933) and Pesola (2005) concur that when the macro-economic situation falters there is an essential decrease in solvency of the banks' customers, hence growth of non-performing loans. Macroeconomic variables which have been empirically shown to increase credit risk include: high and variable inflation and real interest rates (Demirguc-Kunt and Huizinga, 1998); interest rate uncertainty (Brock and Franken, 2002); broad money growth (Crowley, 2007); increased fiscal deficits (Crowley, 2007); and a high share of commercial bank public sector loans (Randall, 1998).

Mugendawala (2010) points out at the following as important macroeconomic determinants of interest rates and thus higher credit risk: i) Inflation - this is the rate of change in the general price levels of consumer goods and services captured

annually within the country. This is usually measured by the annual changes in the consumer price index (CPI). High and volatile inflation and the uncertainty it creates leads to an increase in interest rates. Similarly, in a weak macroeconomic environment, and in developing countries in particular, the quality of collateral is likely to be weak, which increases the costs to banks in their effort to recover loans. This tends to increase the amount of Non-Performing loans provisioning and lead to higher spreads. ii) Liquidity in the market - this refers to the liquid assets that are held by banks over time. Excess liquidity appears to be an influential factor in determining interest rates. In countries where excess liquidity is very high (and banks have surplus funds), the marginal cost of deposit mobilization is high and the marginal benefits are likely to be very low. In this scenario, interest rates on deposits will be low. iii) Treasury bill rate - this is interest rate on the 91-day government debt instrument. The 91-day Bill rate in most of the countries is taken as the benchmark for any credit pricing (Nannyonjo, 2002; Samuel and Valderrama, 2006; Tennant and Folawewo, 2009). In Kenya, the bank rate, lending rate and deposit rate are in most cases referenced to this rate. Any increase in the 91-day T-bill rate leads to higher interest rates as it raises the cost of finance and of doing business which interferes with the borrower's ability to pay.

2.3.1 Credit risk trend in Kenya's banking system

In Kenya, credit risk is a real threat to the banking industry due to the fact that loan portfolios form the largest part of the balance sheet items (CBK, 2005). Kenya has

experienced banking problems since 1986 culminating in major bank failures (37 failed banks as at 1998) following the crises of; 1986 - 1989, 1993/1994 and 1998 (Kithinji and Waweru, 2007; Ngugi, 2001). The crises were mainly attributed to non-performing loans (Murugu, 1998). Net loans at the level of Shs. 215 billion as at December 31, 2001 accounted for 51% of total net assets of the Kenyan's banking sector. As this date, the proportion of non-performing loans to total loans was 30% (CBK 2004). According to the CBK (July, 1999) the level of non-performing loans in 1998 was estimated at Shs. 80 billion or 30% of advances, up from 27% in 1997 as compared to 81.3 billion or 33.4% of total loans in November 2001.

Odunga et al (2013) argues that the performance of the banking industry in Kenya has improved tremendously over the last decade, since only two banks have been put under CBK statutory management compared to 37 bank-failures between 1986 and 1998 (Mwega, 2009). However, in the same period the level of interest rates have remained high, implying an attempt by commercial banks to pass their inefficiencies to consumers. This could be attributed to the inability to push their operational costs downwards.

2.4 Empirical Studies

There have been extensive empirical studies conducted on the relationship between interest rate and credit risk across the globe. However, few of these works have focused on the Kenyan situation. This empirical literature review focuses on the

works of such scholarly works in order to contextualize the Kenyan situation. In essence, the empirical studies attempt to put into perspective the variables of the study with the object of responding to the research question.

A few papers analyzing the pricing of loans to households have focused on the United States, where the main result is that in the 1980s mortgage interest rates were not linked to the household characteristics that are proxy for their risk (Duca and Rosenthal, 1994). During the 1990s, following a drop in data storage costs and an improvement in credit scoring techniques, lenders started to estimate the specific default risk of each borrower (Bostic, 2002). Initially, they used credit scoring much more to select customers than to price loans (Frame et al., 2001). Subsequently, they also increasingly used this information to improve the pricing of their loans to households.

Smith (2013) in a comparison of the British and US markets, says there is evidence that collateralized household loans, such as mortgages, have been most affected by these changes in pricing techniques: Edelberg (2006) says that in the second part of the 1990s the spread between high- and low-risk mortgages was around 100 basis points, or roughly 38 basis points for a 1 percentage point increase in the probability of default.

According to a study by Magri and Pico (2010) on risk-based pricing of loans to households in Italy, as in the United States, there is a link between household credit risk, measured by the predicted probability of mortgage delinquency, and the loan interest rate. Using a linear estimation for mortgage interest rates, the spread between the lowest and the highest classes of credit risk is around 43 basis points for mortgages granted in the period, between 2000 and 2007. The increase in the probability of delinquency between the lowest and the highest risk classes is around 10 percentage points.

Vítor Castro (2012) employing dynamic panel data approaches to Greece, Ireland, Portugal, and Spain (GIPSI) over the period 1997q1-2011q3, concludes that the banking credit risk is significantly affected by the macroeconomic environment: the credit risk increases when GDP growth and the share price indices decrease and rises when the unemployment rate, interest rate, and credit growth increase; it is also positively affected by an appreciation of the real exchange rate. He adds that his study observed a substantial increase in the credit risk during the recent financial crisis period.

Several robustness tests with different estimators have yielded similar results. Employing a proper dynamic panel data approach, that relies on the Arellano-Bond estimator, over a group of Asian countries (Japan, South Korea and Thailand),

spanning the period from the first quarter of 1997 to the third quarter of 2011, Jason (2012) concludes that the credit risk in these five countries is significantly affected by the macroeconomic environment. In particular, the credit risk increases when GDP growth and the share price indices decrease, and rises when the unemployment rate, interest rate, and credit growth increase. It is also positively affected with an appreciation of the real exchange rate.

Describing Kenya's banking sector internal and external operating environment, Ngugi (2001) says that Kenya's experience with the financial reform process shows a widening interest rate spread following interest rate liberalization. This period is characterized by high implicit costs with tight monetary policy achieved through increased reserve and cash ratios. In addition, financial institutions witnessed declining profitability, non-performing loans and distress borrowing. The treasury bill rate increased as the government relied heavily on the domestic market to finance its fiscal deficit, while the expansionary fiscal policy resulted in increased inflation and tightening of monetary policy.

Njenga and Wanyoike (2014) study of the effects of risk factors on unsecured loans in Kenya inferred that there exist conspicuous disparities in interest rate spread across commercial banks; and that most banks have defined their credit risk limit.

Kimutai and Jagongo (2013) in their study on factors influence credit rationing by commercial banks in Kenya, an indicator of perceived credit risk, the scholars established that the key factors that influenced credit rationing by commercial banks in Kenya are loan characteristics, firm characteristics and observable characteristics. Some of the recommendations that the study made were that that it is beneficial for banks to ration credit but it should be done with professionalism and with no biasness, the factors that influence rationing of credit should be evaluated thoroughly by the person in charge and given priority before issuing credit.

According to the International Centre for Economic Growth (1999), despite the role of commercial banks in providing credit ,there is historical evidence of credit rationing even to creditworthy borrowers by commercial banks all over the world Only 1.5 percent of MSEs receive loans from commercial banks in Kenya. This could be an indicator of banks' averseness to lending to such clients due to high risk, as well as the borrowers' averseness to seeking bank loans due to high cost of lending.

According to Were and Wambua (2013) empirical results show that bank-specific factors play a significant role in the determination of interest rate spreads. These include bank size based on bank assets, credit risk as measured by non-performing loans to total loans ratio, liquidity risk, return on average assets and operating costs. The scholars however underplay the role of macroeconomic factors such as real

economic growth and inflation in credit risk. Similarly, the impact of policy rate as an indicator of monetary policy is found to be positive but weak. From their findings, on average, big banks have higher spreads compared to small banks. There is need for explore policy options meant to enhance competition in the industry and measures to break market dominance will be one such option.

2.5 Summary of Literature Review

While it is clear from the foregoing that though much has been written on the issue of credit risk and interest rates, few if any scholarly works have been devoted to the creating a link between the two and explaining the Kenyan market. For instance, Njenga and Wanyoike (2014) study of the effects of risk factors on unsecured loans, while the works of Were and Wambua (2013) focus on the role of bank-specific factors in the determination of interest rate spreads, and Kimutai and Jagongo (2013) focus on factors that influence credit rationing by commercial banks in Kenya. There is thus a clear gap on the relationship between interest rates and credit risk, which was what this study sought to fill.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methods that were adopted by the study in obtaining information on the relationship between borrowing interest rates and non-performing loans in Kenyan banks. The chapter also describes and explains the research instruments that were used in the study. This chapter is thus structured into research design, target population, data Collection, and data analysis techniques.

3.2 Research design

The research design used in this study was both cross sectional and descriptive survey method aimed at establishing the relationship between interest rates and credit risk in Kenyan banks. This method was preferred because it allows for prudent comparison of the research findings. A period of 14 years (2000 to 2013) was selected to cover the duration within which Central Bank of Kenya has effected some of the most fundamental changes in the country's monetary and fiscal policies in Kenya's liberalised economy. This is also the period within which the country has experienced some of the highest interest rates in history.

3.3 Population of the Study

The population of interest for this study comprises the 44 commercial banks licensed to carry out banking business in Kenya under the Banking Act (Cap 488) section (4) and (5), and which were in operation as at August 2014, according to Central Bank of Kenya (2014): (Appendix I).

3.4 Data collection

The study entailed the use of secondary data obtained from the following sources: Data on borrowing interest rates trends and monthly averages as published by the Central Bank of Kenya. Annual financial statements and banking supervision reports on Kenyan banks obtained from the Central Bank. The researcher also used secondary data from the International Monetary Fund (IMF) as well as Kenya Bankers Association (KBA). The data collection form comprised the average borrowing interest rates and average ratio of nonperforming loans (Appendix II).

3.5 Data Analysis

Since the study concerned establishing the relationship between interest rates and credit risk, Linear Regression was used for data analysis. In the quest to establish a link between borrowing interest rates and credit risk (non-performing loans) the researcher used the bivariate regression analysis. Cooper and Emory (1995) stated that bivariate regression analysis varies over arrange of +1 through to 0 to -1.

The Pearson product moment coefficient (R) was used to establish the association between the variables (Interest rates and Credit risk) based on the population data. A coefficient of determination (R^2) was performed to determine how much of the dependent variable comes about as a result of the independent variable being tested. The researcher test R^2 at 95% significance level.

Regression analysis was used to determine the nature of relationship. The Bivariate regression analysis was expressed as follows:

$$Y = a + \beta X + \varepsilon.$$

Where

Y= Non-performing loans (which was the measure of credit risk). The ratio of NPLs=Nonperforming loans/Gross Loans, Moyer (1990). Therefore:

$$Y = \frac{NPL}{Gross\ Loan}$$

X= Interest rate ($Inf + L + T$)

Inf = Inflation rate

L = Liquidity

T = 91 Treasury Bill rates

ε =was the error term assumed to have zero mean and independent across time period

β =coefficient (ratio of magnitude of change in relation to nonperforming loans when the interest rate changes)

α = constant (Level of non-performing loans when the interest rate is 0).

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION OF FINDINGS

4.1 Introduction

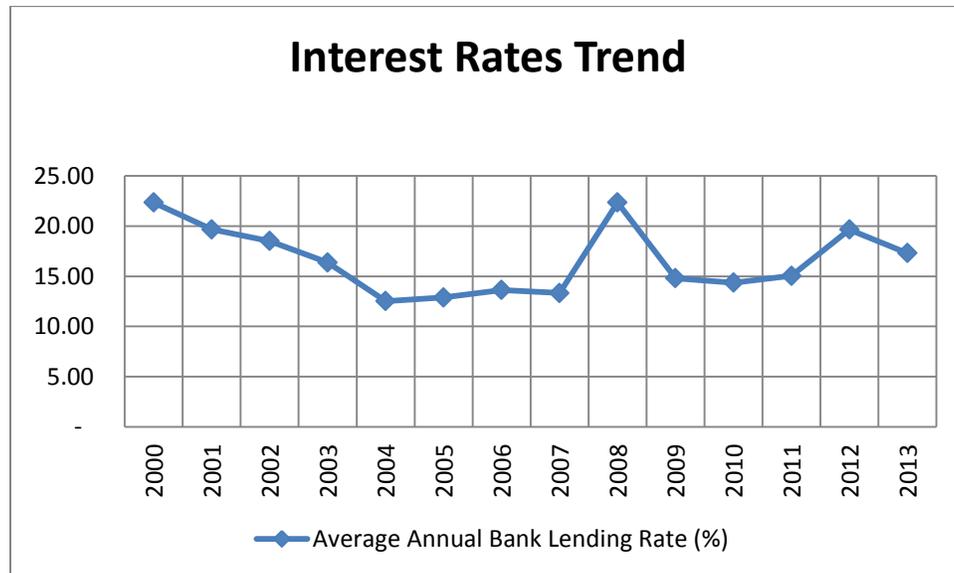
The objective of this study was to establish the relationship between interest rate and credit risk in Kenyan commercial banks. This chapter presents the analysis and the findings with regard to this objective and discussions on the same.

4.2 Characteristics of the Respondents

The study relied on secondary data collected and published by the Central Bank of Kenya from 2000 to 2013. The data comprised information regarding interest rates charged by commercial banks in Kenya, as well as the value of non-performing loans. The latter has been used to analyse the level of credit risks in Kenyan commercial banks. While this study takes cognisance of the fact that some commercial banks didn't exist from as far back as the year 2000, it also regards the fact that some of the commercial banks that existed back then have either closed shop or merged with others to form new entities. For purposes of consistency, the research had to drop the number of banks under study to the 40 that have been in operation from the year 2000 to 2013.

4.3 Data Analysis and Results

Figure 4.1. Annual Average Borrowing Interest Rates

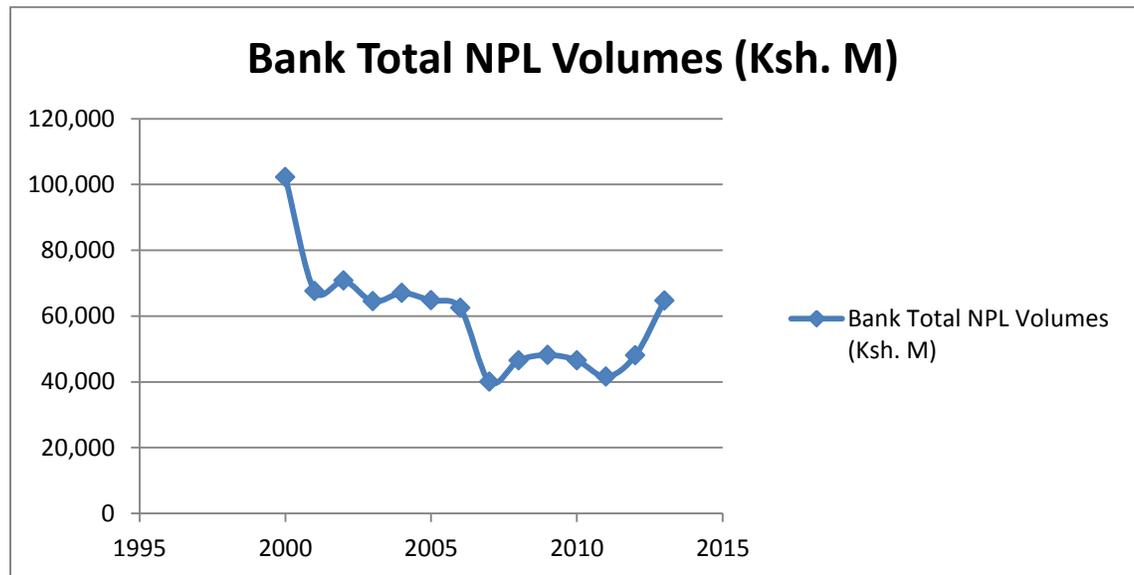


Source: Researcher's data analysis

Figure 4.1 shows a steady decline in interest rates charged by Kenyan commercial banks from 22.3% in the year 2000 up to 12.5% in 2004. The interest rates then stabilize around 13% through 2005, increasing marginally through to 2007, when there comes a spike to 22.34% in 2008. This was particularly the year after the 2007 disputed elections and the resultant political violence, indicating that the prevailing political climate can affect bank lending rates. There is a steep decline in the rates going to 14.8% in 2009, some stability through to 2011, when there the rates shoot up

to 19.65% in 2012, before dropping to 17.3% in 2013. A possible explanation for the hike in interest rates in 2012 could be the charged political atmosphere that prevailed in the run up to the peaceful general elections that were held in March 2013. The interest rates appear to come down in response to political stability that followed the general elections.

Figure 4.2. Average Annual Growth in Non-performing loans (Credit Risk)

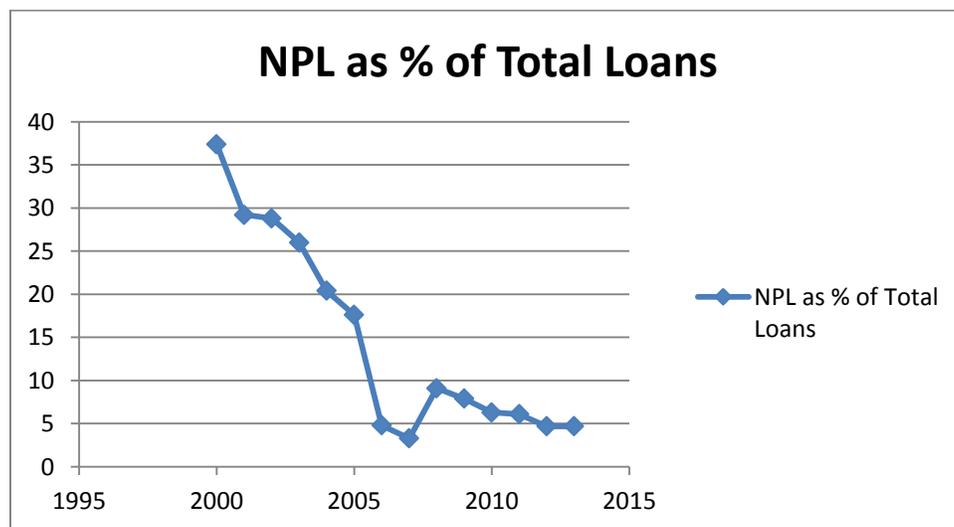


Source: Researcher's computations.

Figure 4.2 above shows a steady decline in volumes of NPLs from a high of Ksh. 102,179 million in the year 2000 to Ksh. 65,552 million in 2001. CBK statistics show that in some banks NPLs accounted for as much as 50% of all loans advanced in the

year 2000. This illustrates the findings of Ngugi (2001), who states this period was characterized by high implicit costs with tight monetary policy achieved through increased reserve and cash ratios. He adds that financial institutions witnessed declining profitability, non-performing loans and distress borrowing. This figure however rises to Ksh. 70,800 million in 2002 before taking another dip in 2003 to record a low of 64,449. Notably, this was immediately after the coming into power of the NARK government, during whose tenure some of the most fundamental changes were experienced in Kenya's banking sector. 2007 is the year posting the lowest values of NPLs at Ksh. 40,031 million, before rising once again to Ksh. 64,000 million in 2013.

Figure 4.3 Percentage of NPLs to Total Loans Advanced.



Source: Researcher's computations.

As shown in Figure 4.3 above, the percentage of NPLs to total loans advanced by commercial banks in Kenya has been on a steady decline since the year 2000. Back in 2000, NPLs accounted for 37.4% of all loans advanced by Kenyan commercial banks, compared to only 3.3% in 2007, which was the lowest point in credit risk.

Table 4.1. Analysis of Variance (ANOVA)

Independent Variable: Interest Rate

Dependent Variable: Credit Risk (Non-performing loans)

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	2764.323	2764.323	28.63839741	0.00017319
Residual	13	1254.826	96.52505		
Total	14	4019.148			

The ANOVA Table 4.1 above shows regression sum of squares of 2764.323 out of total variation of 4019.148. This shows that 68.7% variation in the dependent variable

is explained by the model. In other words, there is a 68.7% correlation between a rise in interest rates and consequent rise in credit risk, and the vice versa.

Table 4.2 Model Summary

<i>Regression Statistics</i>	
Multiple R	0.829329956
R Square	0.687788176
Adjusted R Square	0.610865099
Standard Error	9.824716054
Observations	14

Table 4.2 above demonstrates that there is a positive relationship between interest rates and credit risk in Kenyan commercial banks. The R-value (0.829) shows that the relationship is quite strong. The regression results further indicate that 68.7% of the variation in Non-performing Loans can be accounted for by the model (adjusted R² of 0.687).

The value of $R = 0.829$ indicates that interest rates and credit risk in Kenyan commercial banks are positively related. There is a strong linear relationship between the two. The value of $R^2 = .68$ indicates that 68% of the percentage growth in credit risk is explained by interest rate, and 31.3% is not. This indicates that there may be

several other important variables that contribute to credit risk, despite interest rate being a major cause.

The study had a Standard deviation of error of 9.82, which is acceptable given that the research covered a wide time span of 14 years.

4.4 Summary and Interpretation of Findings

Results from this study demonstrate that there have been marked reduction in levels of credit risk in Kenya's financial sector mainly on account of pursuit of prudent macro-economic policies that have put interest rates on check. The results show a steady decrease in interest rates charged by Kenyan commercial banks from a high of 22.34% in 2000 to 13.33% in 2007. This is however followed by a spike in the rates in 2008. This is the same trend that the volumes of NPLs and the percentage of NPLs to total loans advanced by commercial banks have tended to follow across the duration under study, showing that there is an important relationship between the two sets of variables.

4.4.1 Major Findings

The study identified a strong relationship between interest rate and credit risk ($R = 0.829$). This indicates that interest rate is a major contributor to credit risk in Kenyan commercial banks. Taking the falling trends in interest rate and credit risk from the year 2000 to 2013 as a reflection of the impact of fiscal and monetary policies pursued by the CBK during the period under review, it becomes clear that the macro-

economic environment within which financial institutions operate greatly impacts the institutions' stability and profitability. This is in agreement with Tennant (2006), who argues that macro-policy variables, such as public sector domestic borrowing, discount rates and Treasury Bill rates have an impact on interest rate volatility and hence credit risk. The significance of the macro-economic policies on interest rates and credit risk cannot be gainsaid, considering that loans advanced form an important part of banks' assets, and thus high levels of credit risk end up threatening the stability of financial institutions. (Fofack, 2005).

As illustrated in Figures 4.1 on Interest rate trends and 4.3 on NPLs as a percentage of total loan advances show a rise in percentage of NPLs to loan advances in 2008, there is an evident correlation in the hikes in interest rates and NPL in the same year. However, looking at the entire trend from the year 2000 to 2013, the above findings concur with Odunga et al (2013) who observe that the performance of the banking industry in Kenya has improved tremendously over the last decade.

Although the study found out that interest rate factor accounts for up to 68% ($R^2 = 0.68$) of all non-performing loans advanced between 2000 and 2013, there were other important factors that account for 31.7% of the credit risk. These factors should however not be overlooked in future studies on credit risk in Kenyan commercial banks. Rather, they should be studied, understood and measures devised on how to put them under control as a way of enhancing the stability of the country's financial sector.

4.4.2 Previous Studies

While Ngugi (2001) describes Kenya's banking sector's internal and external operating environment during the reforms period as characterized by widened interest rate spread (and thus higher perception of risk by commercial banks) following liberalization of interest rate, this study shows that the period that follows the year 2000 shows positive yields resulting from the tight monetary policies that were previously achieved through increased reserve and cash ratios. Further, there is a reversal of the trend of declined profitability that had been occasioned by the high interest rates and credit risk that characterized the period preceding the year 2000. Tireito (2012) carried out a study on the relationship between interest rates and Nonperforming loans covering period 2008 to 2012 on commercial banks in Kenya. He found out that there was a significant relationship between interest rates and non-performing loans. (Simba, 2013).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

From the secondary data collected and analyzed, the following summary of findings, conclusions and recommendations were made based on the objectives of the study, which was to establish whether there exists a relationship between borrowing interest rate and credit risk in commercial banks in Kenya.

The study found out that the trend of NPLs advanced by Kenyan commercial banks, and thus credit risk, has been on a downward trend since the year 2000. This trend has however largely been determined by prevailing interest rates.

The study established that 68.7% of the variance in credit risk could be accounted for by interest rate. This implies that high interest rates are a major cause of loan default in Kenyan banks, and that holding all factors constant, a reduction in the rates could lead to a consequent fall in credit risk and vice versa.

However, interest rate is a product of a number of factors, which include macro-policy variables, such as public sector domestic borrowing, discount rates and Treasury Bill rates (Tennant, 2006). Fisher (1933) and Pesola (2005) concur that when the macro-economic situation falters (as was the case in Kenya before the year

2000) this leads to a decrease in solvency of the banks' customers, hence growth in credit risk.

The study also found that there are more factors besides interest rate that accounted for credit risk in Kenyan commercial banks. These factors accounted for up to 31.7% of all NPLs advanced by banks, and this could form an important basis for further studies on reduction of credit risk.

5.2 Conclusion

As the study shows, the credit risk trend in Kenyan commercial banks has been on a decline in the period under study (from the year 2000 to 2013), mainly in response to lowering of interest rates charged on loans.

We can therefore conclude that there is a positive and strong relationship (68.7%) between borrowing interest rates and nonperforming loans in Kenyan commercial banks. This means that in order to ensure the stability and profitability of the banks, there is need to check the interest rates charged on loans. Lowering of interest rates could also be a big incentive for borrowers to repay their loans on time, besides stimulating borrowing for economic development.

However, the study shows that interest rate is not the sole determinant of credit risk, but that up to 31.3% of the variance can be explained by other factors, such as the prevailing political and economic climate. Pesola (2005).

5.3 Recommendations, Policy and Procedures

Although the Central Bank released new lending guidelines (KBR) in July 2014 as a measure to cushion the economy against high interest rates charged by banks, Central Bank still gave a disclaimer that this is not a prescription on what banks should charge. This left the opportunity wide open for banks to load their own margins, which could lead to a rise in interest rates and consequent rise in credit risk. Since banks' internal efficiencies and cost of offering financial services are important contributors to the final value of interest rate charged on loans, enhancing such procedures and faster adoption of technology could lead to lower interest rates and hence reduced levels of credit risk.

While the Central Bank has performed effectively as the industry's regulator by educating local commercial banks on new policies and better ways of managing credit risk, a similar amount of effort needs to be made in educating consumers on better investment decisions as well as on the importance of cushioning their investments against risks that could jeopardize the borrowers' ability to repay bank loans.

Since the periods with the highest interest rates and credit risk correspond with times of political tensions in the country (2000 – clamour for better governance under former president Moi, 2002 – 2003 political campaigns that ushered in the NARK government in to power under Mwai Kibaki, and most recently 2008 during the Post-

Election Violence), this points to a need for civic education on the impact of political instability on the economy, more so on the interest rates and credit risk.

5.5 Suggestions for Further Study

As pointed out earlier in the study's summary, interest rate has been found out to be not the only contributing factor to credit risk in Kenyan commercial banks. There is need for further research on other factors such as the pace of judicial processes and banks' internal efficiencies, as well as the relationship between capital structure and performance.

Further study should be carried out to determine the relationship between interest rate and credit risk in the various categories of banks and their target markets, e.g. corporations, SMEs, and personal banking. Such a study would give better understanding of the nature of risks that various markets carry, and better inform the industry regulator and financial investors seeking to invest in such markets.

While commercial banks are important players in Kenya's financial system, they are not the only institutions affected by interest rates and credit risk. Micro-finance institutions (MFIs) and, investment banks as well as insurance companies are some of industry players that would greatly benefit from comprehensive studies targeting their respective markets.

Finally, Kenya's financial sector could benefit a lot from studies targeting the behavioural and other characteristics of the banks and borrowers that could lead to both higher interest rates charged on loans as well as credit risk.

5.4 Limitations of the Study

The secondary data on interest rates and NPLs used in this study was from the Central Bank of Kenya. This data might to some extent have been manipulated by CBK's management to suit their objectives and not for the public interest – a practice commonly known as window dressing.

The study focused on commercial banks in Kenya. However, there are other financial intermediaries such as micro-finance institutions and insurance companies whose operations and profitability often get affected by interest rates and credit risk.

Although the study was successful in drawing the relationship between interest rates and credit risk, it was clear that there are other factors that often contribute to credit risk besides interest rates. The study is therefore not conclusive on the whole issue of credit risk.

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Appendix I

Banks licensed to operate in Kenya. Source: Central Bank of Kenya.

1	African Banking Corporation Ltd.
2	Bank of Africa Kenya Ltd.
3	Bank of Baroda (K) Ltd.
4	Bank of India
5	Barclays Bank of Kenya Ltd.
6	CFC Stanbic Bank Ltd.
7	Charterhouse Bank Ltd
8	Chase Bank (K) Ltd.
9	Citibank N.A Kenya
10	Commercial Bank of Africa Ltd.
11	Consolidated Bank of Kenya Ltd.
12	Co-operative Bank of Kenya Ltd.
13	Development Bank of Kenya Ltd.
14	Diamond Trust Bank Kenya Ltd.
15	Dubai Bank Kenya Ltd.
16	Ecobank Kenya Ltd
17	Equatorial Commercial Bank Ltd.
18	Equity Bank Ltd.

19	Family Bank Limited
20	Fidelity Commercial Bank Ltd
21	GT Bank Ltd
22	First community Bank Limited
23	Giro Commercial Bank Ltd.
24	Guardian Bank Ltd
25	Gulf African Bank Limited
26	Habib Bank A.G Zurich
27	Habib Bank Ltd
28	Imperial Bank Ltd
29	I & M Bank Ltd
30	Jamii Bora Bank Limited.
31	Kenya Commercial Bank Ltd
32	K-Rep Bank Ltd
33	Middle East Bank (K) Ltd
34	National Bank of Kenya Ltd
35	NIC Bank Ltd
36	Oriental Commercial Bank Ltd
37	Paramount Universal Bank Ltd
38	Prime Bank Ltd
39	Standard Chartered Bank Kenya Ltd

40	Trans-National Bank Ltd
41	UBA Kenya Bank Limited
42	Victoria Commercial Bank Ltd
43	Housing Finance Ltd
44	Credit Bank

APPENDIX II

The table that was used in the collection of average Non performing loans (Annual average for each year 2000 – 2013)

Item	Bank	Average Borrowing Interest rates	Average Gross Loan	Average NPL	Percentage of NPL
1	African Banking Corporation Ltd.				
2	Bank of Africa Kenya Ltd.				
3	Bank of Baroda (K) Ltd.				
4	Bank of India				
5	Barclays Bank of Kenya Ltd.				
6	CFC Stanbic Bank Ltd.				
7	Charterhouse Bank Ltd				
8	Chase Bank (K) Ltd.				
9	Citibank N.A Kenya				
10	Commercial Bank of Africa Ltd.				
11	Consolidated Bank of				

	Kenya Ltd.				
12	Co-operative Bank of Kenya Ltd.				
13	Development Bank of Kenya Ltd.				
14	Diamond Trust Bank Kenya Ltd.				
15	Dubai Bank Kenya Ltd.				
16	Ecobank Kenya Ltd				
17	Equatorial Commercial Bank Ltd.				
18	Equity Bank Ltd.				
19	Family Bank Limited				
20	Fidelity Commercial Bank Ltd				
21	GT Bank Ltd				
22	First community Bank Limited				
23	Giro Commercial Bank Ltd.				
24	Guardian Bank Ltd				
25	Gulf African Bank				

	Limited				
26	Habib Bank A.G Zurich				
27	Imperial Bank Ltd				
28	I & M Bank Ltd				
29	Jamii Bora Bank Limited.				
30	Kenya Commercial Bank Ltd				
31	K-Rep Bank Ltd				
32	Middle East Bank (K) Ltd				
33	National Bank of Kenya Ltd				
34	NIC Bank Ltd				
35	Oriental Commercial Bank Ltd				
36	Paramount Universal Bank Ltd				
37	Prime Bank Ltd				
38	Standard Chartered Bank Kenya Ltd				

39	Trans-National Bank Ltd				
40	UBA Kenya Bank Limited				
41	Victoria Commercial Bank Ltd				
42	Housing Finance Ltd				
43	Habib Bank Ltd				
44	Credit Bank				