THE EFFECT OF CREDIT RISK ON INTEREST RATE SPREAD AMONG

COMMERCIAL BANKS IN KENYA

Serphine Adhiambo Makambi

D63/63945/2013

A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF BUSINESS IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE IN FINANCE DEGREE OF UNIVERSITY OF NAIROBI

NOVEMBER, 2014

DECLARATION

This research project is my original work and has not been presented for any award of degree in any university.

Signature_____ Date_____

Serphine Adhiambo Makambi

D63/63945/2013

This research project has been submitted for examination with my approval as the university supervisor

Signature_____ Date_____

Herick Ondigo
Lecturer,
Department of Finance and Accounting
School of Business
University of Nairobi.

ACKNOWLEDGEMENTS

This research has been a result of many efforts, whose contribution is greatly acknowledged. I owe profound gratitude to my supervisor, Mr. Herick Ondigo for the many hours he devoted going through the entire manuscript and pointing out numerous ambiguities from the proposal stage to the completion of this project. Without his dedication, this study would not have been possible. The guidance, encouragement and material support from my husband, Mr. Steve Anyona Makambi, enabled me to complete this project in good time. The understanding and support of my collegues at National Bank Ltd, especially my immediate supervisor, Mr. Mureti Murungi made the completion of this project a reality.

Lastly, I thank my entire family for their consistent support and encouragement. Above all, Glory is to the Almighty God for this wisdom. In HIM, all things are possible.

DEDICATION

To my husband, Steve Makambi and Children, Alice Mudora and Lawrence Misoga.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CAMEL- Capital Adequacy, Assets Quality, Management efficiency, Earnings and Liquidity

CAPM –Capital Asset Pricing Model

CBK - Central Bank of Kenya

CDS – Credit Default Swap

CRB – Credit Reference Bureaus

CRM – Credit Risk Management

IRS – Interest Rate Spread

KCB – Kenya Commercial Bank

NPL's – Non performing Loans

SACCOs – Savings and Cooperatives Societies

ABSTRACT

Commercial banks in Kenya have continuously maintained wide interest rate spreads despite efforts by both the government and the regulator to ensure the interest rate spreads narrow down. This has led to a lot of debates both in public and private panels which makes it clear that it is important for the involved parties to understand the factors that determine interest rate spread among commercial banks in Kenya in order to effect valuable changes. This study investigated the effect of credit risk on interest rate spreads in Kenya for the period 2009 to 2013, while including other factors such as Liquidity risk, Bank size and Operating costs that have been established previously to affect interest rate spreads among commercial banks in Kenya. This was accomplished using panel data analysis that was adopted and used on Kenyan data obtained from Central Bank Supervision Reports and Financial Statements for respective banks. Stata statistical package was used in estimating the regression model and descriptive analysis was also carried out on the credit risk and interest rate spreads variables. Regression analysis between interest rate spread as our dependent variable and credit risk, liquidity risk, bank size and operating costs as the independent variables was conducted and the effects of each independent variable on the dependent variable observed at 0.05 level of significance. The study findings revealed that bank size and operating costs were the most significant variables while credit risk and liquidity were insignificant at 5 percent levels. On the basis of these findings, it is recommended that competition among commercial banks in Kenya needs to be enhanced so as to be able to push banks to pay more attention to credit risk management and use it as a competitive advantage through the implementation of lean interest rate spreads.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Commercial banks play a critical role in the financial intermediation and financial development of the economy. As financial intermediaries, they facilitate mobilization of savings, resource allocation and diversification and pooling of risk. In developing economies commercial banks are the most important source of credit as majority of households have no access to capital market (Ngugi, 2001). To this end, development of commercial banking in developing countries is critical for maturity of the financial system and overall development of the economy.

Credit creation is the core function and the main income generating activity for commercial banks. However, it also presents the main challenge facing financial institutions. On one hand, provision of credit translates to increased revenue and profitability for commercial banks. On the other, it exposes commercial banks to high credit risk, due to default, which may lead to insolvency and bankruptcy. Hence, there is a tradeoff between liquidity and profitability which enhances the need for effective liquidity management through strategies that enhance sound credit risk management.

1.1.1 Credit Risk

Credit risk is mainly represented by the risk of default and subsequently increases in nonperforming loans (NPL). Default risk is the risk that customers default, meaning that they fail to comply with their obligations of service debt owed to financial institutions (Bessis,

1

2004). Credit risk also refers to the likelihood that a particular bond issuer will fail to make interest rate and/or principal repayment (Marrison, 2002).

Management of credit risk is a very critical exercise for any commercial bank. Credit risk management is the practice of mitigating losses by understanding the borrowers risk profile, adequacy of bank's capital and loan loss reserves at any given time. Inefficient credit risk management systems may have a profound effect on solvency and sustainable profitability for commercial banks. Inefficient credit risk management is characterized by lax credit standards for borrowers, poor portfolio risk management, or lack of attention to changes in economic conditions (Marrison, 2002)

Financial institutions should manage credit risk due to the following reasons: First, the default of a small number of important customers can generate large losses not only due to loss of funds but also erosion of customer confidence. This may potentially lead to insolvency and ultimately affect profitability in the long run (Bessis 2004). Secondly, demand and supply for funds are in most cases mismatched. Generally, deposits received by commercial banks are held on short notice while credits extended to customers are long term. In this regard, commercial banks perpetually face liquidity risk and may incur considerable intermediation costs to ensure they pay up their depositors demand and maturing obligations.

There are various techniques used by the financial institutions to manage credit risk. One of the most common techniques used is the credit scoring where a borrower is assigned a score depending on their credit history obtained from CRB report. This score helps the bank estimate the amount of credit risk is associated with lending to a particular borrower then they can either

make decision on to lend to the borrower at high or low rates or not to lend to the borrower at all. Effective management of credit risk usually reduces the ratio of NPLs to total loans.

1.1.2 Interest Rate Spread

Interest rate is the price a borrower pays for the use of money they borrow from lender or financial institutions or fee paid on borrowed assets for example depositors funds (Crowley, 2007).When banks lend they charge interest on funds borrowed as cost of capital and in order to attract deposits they offer interest on deposit as compensation for their customers funds held. Interest rate spread is the difference between the interest charged to borrowers and the rate paid to depositors. The lending rate charged by banks is always higher than the deposit rate paid to customers' deposits because commercial banks charge a price for the intermediation services offered under uncertainty. Therefore, interest rate spread represents the risk assumed and intermediary costs which include information costs, transaction costs, administration and default costs and operational costs. (Ngugi, 2001; Ryne, 2002).

The magnitude of interest rate spread is an important indicator of the financial system performance and competitive environment. According to Jayaraman and Sharma (2003), interest rate spread captures the level of growth and efficiency of the financial maturity and therefore varies across the world. Narrow interest rate spread is an indicator of high level of competition, maturity of financial systems and efficient credit risk management. On the other hand, Ngugi (2001) noted that economies with weak financial sector are characterized by widening interest rate spread due to high levels of intermediation costs.

Other factors that may explain high interest rate spread include time, level and nature competition in the financial sector, size of the economy, size of the banking sector, operating costs, loan quality, capitalization, inflation, interest rates, exchange rates, public sector involvement, foreign involvement and governance (Crowley, 2007 Beck and Hesse 2006, Were and Wambua 2013).

According to Ngugi (2001), Were and Wambua (2013), commercial banks in developing economies charge a higher risk premium on loans to compensate for high risks prompted by lack of adequate information about borrowers, poor macroeconomic conditions. Therefore, widening interest rate spread indicates inefficiency and high cost of financial intermediation process in a given economy.

1.1.3 Effect of Credit Risk on Interest Rate Spread

The factors that affect interest rate spread vary across country due to different level of financial maturity. One of the most important aspects of financial maturity is access to information. Ngugi (2001) explained that banks are exposed to credit risk because of information asymmetry. Banks do not know ex ante the proportion of loans that will perform and even when they carry out appraisals, credit losses are not fully eliminated. To cover credit risk, banks charge premium whose size depends on the banks credit policy, interest on alternative assets, amount borrowed, and type of client and size of collateral. Given the risk averse behavior, banks facing higher credit risk are likely to pass the risk premium to the borrowers leading to higher interest rate spreads (Were and Wambua, 2013).

Effective credit risk management usually seeks to improve the efficiency of the banking sector by ensuring the banks lend to non-defaulters but charge them fair rates and also build a culture of saving through competitive deposit rates. Bessis (2004) terms banks as 'risk machines' since commercial banks take, transform and repackage risk into banking products and services. Therefore it is important for commercial banks to adopt sound risk management strategies in order to improve competitive advantage.

Previous studies have shown that there positive relationship between the level of credit risk and interest rate spread in the financial sector. High levels of credit risk create an incentive for commercial banks to increase lending rates as a provision of default risk. Ultimately, this increases the cost of capital and reduces the demand for loans leading to underdevelopment of financial sector. Therefore, there is need to understand, the effect of credit risk on interest rate spread in an economy in order to foster growth of financial sector and the economy as a whole.

1.1.4   Commercial Banks in Kenya

The power of supervision was first vested with CBK in the year 1968. By then there were only 10 banks two of which were subsidiaries of commercial banks (CBK, 1994). In the late 1980s weaknesses in the Kenyan banking system became inherent and were manifest in the relatively controlled and fragmented financial system. Differences in regulations governing banking and non-banking intermediaries, lack of autonomy and weak supervisory capacities to carry out the Central Bank Supervisor role and enforce banking regulations, inappropriate government policies which contributed to accumulation of non-performing loans and non-compliance of financial institutions to regulatory requirement of the Banking Act among others posed challenges in the banking sector (CBK, 2005).

From the year 1988 to 1990, the CBK with the assistance of World Bank funded Financial Sector Reform Programme, employed the services of three top local audit firms and a number of senior officers from Barclays Bank PLC as consultants to assist in designing and documenting comprehensive inspection programmes and other returns for use both in on-site inspections as well as in collecting data required for off-site surveillance. Many Banks that collapsed in the late 1990's were as a result of poor management of credit risks which was portrayed in the high levels of non-performing loans. In 1992 the Kenyan Banking Industry was liberalized which marked the beginning of competition among commercial banks through advancement of huge amounts of low quality credit in order to become more profitable. This low quality loans eventually became non-performing and eroded profits from banks through loan provisioning.

The Basel I accord was adopted by huge banks in the strong economies in the year 1988 as a way to shield banks from collapse due to the excessive credit risk they are exposed to. In Kenya it was up to September 2004 when CBK carried out a risk management survey on the banking sector. The survey was necessitated by the drive to fully adopt Risk Based Supervision and incorporate the international risk management best practices envisioned in the 25 Basel Core Principles for effective Banking Supervision (Ogilo, 2012). In 2005 CBK came up with Risk Management Guidelines which it determined their effectiveness through the Risk Management survey in 2010. Their finding was that generally the institutions revealed that the Risk Management Guidelines issued in 2005 had, for the majority of them; enhanced risk awareness and risk management at the institutions, increased efficiency and effectiveness of risk management, helped reduce financial losses, led to the establishment of effective and better resourced risk management functions and enhanced the overall decision making processes in their institutions (CBK, 2010).

The Finance Act, 2011 amended the banking act and the microfinance act to allow for the sharing of credit information between DTMs and institutions licensed under the banking act. The objective is to facilitate comprehensive and robust information sharing to enhance information symmetry within the financial sector. (CBK, 2011). Credit Reference Bureaus was an important step in the Kenyan financial system as the financial institutions could more effectively use credit scoring as a tool for determining the amount of credit risk posed by a particular customer. Currently there are 43 commercial banks in Kenya which are divided into three groups using a weighted composite index depending on their assets, deposits, capital, number of deposit accounts and loan accounts. A bank with a composite average index of 5 percent is grouped as large bank, medium bank has a weighted composite index of between 1 percent and 5 percent while a small bank has weighted composite index of less than 1 percent (CBK, 2013).

Kenya has been grappling with the effects of wide bank interest rate spread for a long time. In 2001 there was a debate on capping the interest rates which failed to bear any fruits but then again in 2010 the interest rate spread was so high that there was a motion in parliament on financial bill to cap the interest rate. December 2013 was another point in time when capping of interest rate became an important topic of discussion in both the private and public gatherings. The government was keen on ensuring the interest rate spread would be reducing by the beginning of 2014. In March 2014 the debate continued and this time the central bank was against the idea and recommended to set up a committee made up of treasury, central bank, private sector and Kenya bankers association to look into the issue of high interest spreads among commercial banks. This committee was to investigate ways of narrowing down the interest rate spread and make the recommendations to the government. In recent times, stiff competition from SACCOs and microfinance institutions is setting in. There is also the pressure

7

to cap interest rates spread. Commercial banks have to weigh between the return they give to their shareholders and the fair pricing of their products to their customers. The Kenyan commercial banks have concentrated on satisfying the shareholders while over pricing their products. Commercial banks need to look ahead and look for ways they would still achieve set targets while maintaining lean interest rate spreads.

1.2 Research Problem

Commercial banks' core business is issuing credit yet credit poses the greatest risks to this financial institutions. Credit risk management helps the banks to control the amount of credit risk they face through the reduction of the number of defaults they suffer in a period of time (Islam, Shil and Mannan, 2005). When banks price their loans there is a premium that is included in the interest charged on loans. Banks also receive deposits from its customers paying them interest which is usually determined by the return they get when loaning the money to investors. When customers loaned money default then it becomes hard for the banks to repay their creditors forcing them to acquire expensive debt which in turn impacts on the rate charged on loans issued. Interest rate Spread has been examined by many researchers in many countries for so many years (Crowley, 2007, Chirwa and Mlachila, 2004, Beck and Hesse, 2006, Ngugi 2001). There are many determinants of interest rate spreads depending on the period and the country. Bank specific factors play a significant role in the determination of interest rate spread in the banking sector. This bank specific include ratio of non-performing loans to the total loans, bank size, operating costs, liquidity risk and return on average assets (Wambua and Were, 2013). Variations in interest rate spread are attributable to bank efforts to maintain threatened profit margins. For example banks that faced increasing credit risk as the proportion of nonperforming loans went up responded by charging a high risk premium on the lending rate (Ngugi, 2001)

8

In all the countries, the body charged with the responsibility of regulating the credit risk management procedures used by banks is the central bank. CBK has issued various risk management guidelines starting with the year 2005 in a bid to reduce bank failures that were being experienced due to exposure to excessive credit risk and lack of effective management of the same. The Risk Management Guidelines incorporated the regulations given by Basel II on the capital structure that a commercial bank should maintain in terms of core capital and earning assets. (CBK, 2005) In 2011 the supervisory body enhanced information sharing among financial institutions in Kenya through the use of CRBs. This was also a big step towards efficient credit risk management. Kenya has experienced banking problems since 1986 culminating into major bank failures. 37 bank failures had been experienced as at 1998 following the crises of 1986-1989, 1993/1994 and 1998. The failures were mainly attributed to high NPLs. The banks that resulted to failure due to high NPLs included Continental Bank, Trade Bank, Pan African Bank (Brownbridge, 1998). Daima Bank was placed under statutory management for failing to meet core capital requirement among as well poor management of loan portfolios. Trust Bank also collapsed in 2001 due to the same problem of high NPLs (Mullei and Masai, 2006). Efforts of CBK to supervise how commercial banks manage their credit risk since the establishment of the Risk Management Guidelines in 2005 has reduced the risk of bank failures tremendously.

Studies on determinants of interest rate spread have been done extensively and this is the first step towards understanding the factors a bank should concentrate on when trying to reduce their interest rate spreads. The study of these determinants separately can help in understanding the extent to which they affect interest rate spread. There is no study that has effectively analyzed the effect of credit risk on interest rate spread in Kenya. Concentration on the effects of credit

9

risk on interest rate spread is bound to shed more light on just how much credit risk affects the interest rates charged and offered by banks. This study therefore seeks to answer the question: What is the effect of credit risk on interest rate spreads among commercial banks in Kenya?

1.3 Objective of the Study

To establish the effect of credit risk on interest rate spreads among commercial banks in Kenya.

1.4 Value of the Study

Kenyan commercial banks are well aware of how much credit risk affects their business. Most of the banks engage in effective credit risk management to reduce their non-performing loans to total loans ratio and to ensure compliance with set guidelines and regulations by the policy makers. Very few view effective management of credit risk as a way to manage the interest rate spreads they maintain. Commercial banks in Kenya usually choose to maintain high interest rate spreads to meet their performance targets without a care of the repercussions. A research showing the effects of credit risk with respect to interest rate spread can sensitize commercial banks on how to run banks on lean interest rate spreads while still meeting their performance targets. This research can also help the supervisory body determine whether advancements in credit risk management techniques is expected to result to a change in the interest rate spreads in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter looks at the theoretical review on credit risk and interest rate spread. It also discusses the determinants of interest rate spread giving empirical review of effects of credit risk on interest rate spreads. The chapter also gives both international and local evidence how credit risk has affected interest rate spread.

2.2 Theoretical Review

Commercial banks are generally faced with various risks in their day to day business which they cannot avoid but have to learn to live with. The only way for banks to live with these risks is by making sure their effects are minimized through managing the risks. Credit risk is one such risk that requires management or else has a high potential to cause devastating effects to any commercial bank. This study is conducted against a back drop of three main theories on credit risk and interest rate spreads.

2.2.1 The Bank Dealership Theory

Ho and Saunders (1981) developed the bank dealership theory which looked at the bank as a dealer in the credit market acting as an intermediary between the demanders and suppliers of funds. The bank has three components to its wealth portfolio. The first component is its initial or base wealth denoted by Y, which is invested in a diversified portfolio. The second is net credit inventory, I. It is assumed that both Deposits (D) and Loans (L) mature at the end of the decision period. The difference between the market values of bank deposit and loans defines the bank's credit inventory, I. The third component is the bank's short term net cash or money market position, C, which is defined as the difference between Money market loans and borrowings

11

both of which mature at the end of decision period. The bank can either be short or long in the money market. If for example it is short then it is financing some of its credit inventory by short term money market debt. Because of the long term maturities of deposits and loans and the uncertainty on transaction arrivals, the bank will face an interest rate risk whenever it holds unmatched portfolios of deposits and loans at the end of the decision period and the short term rate of interest changes. The larger the net credit inventory, I the greater the interest rate risk the bank faces hence the bank's decision problem is to determine the optimal, expected utility maximizing deposit and loan rates or deposit-loan interest rate spread. This helps us relate how banks set the interest rates they charge on loans and they give on deposits with the market conditions they face. If a bank faces relatively inelastic demand and supply functions in the markets in which it operates, it may be able to exercise monopoly power by demanding a greater spread than it could get if the banking markets were competitive. (Ho and Saunders, 1981).

Therefore we can see that there is a positive correlation between credit risk or loan quality and interest rate spreads. 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 and or lowering the deposit rate.

This model has been extended in several studies: Allen (1988) widens it to permit the existence of different types of deposits and credit. Angbazo (1997) extends the model to take into account credit risk as well as interest rate risk. Carbo and Rodriguez (2007) extended the model to incorporate different factors that explain interest rate spreads maintained by banks. The theory

was used to come up with the model used to analyze the effects of credit risk on interest rate spread in this study.

2.2.2 Asset Pricing Theory.

Sharpe (1964), Lintner (1965) and Mossin (1966) mark the beginning of the asset pricing theory. They came up with the CAPM model which suggests that price or expected return of an asset is related to its risk free rate, the systematic risk and the expected risky market's risk premium. When this model is applied to a portfolio of bank loans, bank managers may be said to maintain a combination of loans with varying risk levels. The portfolio of bank loans would be such that an overall risk of the loans is diversified given the covariance of returns from each pair of loans is likely to be such that the correlation coefficient is closer to 0 rather than +1. For risky loans bank managers would charge a premium equal to the difference between the overall risk premiums applicable in the market for all loans in order for the banks to compensate themselves for the additional risk of a particular loan (Fama and French, 2004). The CAPM infers that the required rate of return demanded by banks is equal to a risk free rate plus a premium as determined in the market for the total loan holding. Therefore, banks will price their loans according to the risk a loan will attract (Ahmad and Ariff, 2007). A high risk loan will attract a higher price for lending and a low risk loan will attract a low risk of lending. A bank is a highly levered firm and hence needs to incorporate in its loan pricing other risk related costs such as tax, bankruptcy costs, interest costs and other operating costs.

This theory brings out the interaction between risk and interest rate which proves that the element of risk faced by banks is considered when pricing loans therefore depending on the

13

amount of risk faced by a bank on a portfolio of loans the price, that is, the interest rate charged on a particular portfolio will either be high or low. The two major risks that would affect the pricing of a loan are the credit risk and liquidity risk. Operating costs that a bank faces in terms of interest costs also is included when pricing loans.

2.2.3 Capital Structure and Risk Theory

Hamada (1972) developed the capital structure and risk theory that shows a firm's cost of capital increases as it uses additional financial leverage and incurs additional risk. Hamada based his study on the CAPM and Modigliani-Miller theorem. It is used to determine the levered beta, and through this the optimal capital structure of firms. The bank is looked at as being concerned with market risk and price of risk. Since a bank is a highly levered firm it has to incorporate in its loan pricing other risk related costs. Thus, risk increases if debt to equity ratio increases for a bank. incorporating the leverage effect. A banking firm's risk tends to increase with increases in leverage. Therefore, Capital structure is likely to affect credit risk. The capital structure is used to determine the bank size which is an important variable that has to be considered when looking at credit risk in banks (Ahmad and Ariff, 2007).

2.3 Determinants of Interest Rate Spread

Interest rate spread is affected by both bank specific factors and macroeconomic factors. According to Were and Wambua (2013) the most significant determinants of interest rate spread in Kenya are the bank specific factors which are the bank size, credit risk, operating costs and

liquidity risk. Though, this study concentrated mainly on the effects of credit risk on interest rate spread, effects of the other variables was also considered to reduce error in estimation.

2.3.1 Credit Risk

Credit risk is usually associated with non-performing loans versus total loans ratio. When the ratio goes down then it is seen as credit risk management has contributed to this decrease. Holstrom and Tirole (1997) also points out that when information about a borrower is not symmetric between a bank that monitors borrower's projects and individual investors who are incapable of monitoring her project, a decrease in a bank's capital adequacy leads to an increase in the bank's lending rates. Information symmetry among banks has been seen to increase through the use of credit reference bureaus.

Credit risk within banks is measured using the ratio of non-performing loans to the total loans. Credit risk management techniques usually seek to reduce this ratio so as to increase the profitability of a financial institution. When this ratio goes up banks tend to protect their profitability standing by increasing their interest rate spread.

2.3.2 Bank Size

Bigger banks are thought to have more resources and can therefore be able to venture into ways to work more efficiently given that efficiency in banks is measured by the interest spread they maintain. In Kenya bigger banks maintain higher interest spreads compared to smaller banks. This has been attributed to the fact that the big banks enjoy a monopoly status due to being viewed as too big to fail; hence they can be able to mobilize deposits at a lower percentage of interest while still giving out loans at very high interest. However, to the extent that bank size

15

connotes control of the market in the deposit and loans market, positive relationship between interest spread and bank size should not be surprising (Were and Wambua, 2013).

Bank size greatly depends on the market size structure. Berger, Rosen and Udell (2001) points out that banking market size structure refers to the distribution market shares of different size classes of local banks, whether or not that size is achieved entirely in that market. This allows us to account for possibility that large regional or nationwide banking organizations may compete in different ways than small local institutions. The competition within the sizes of the bank has been seen to play a big role when it comes to influencing the interest spread that a bank maintains.

When a market is dominated by big banks the interest rate charged tend to be lower than when a market has very many small banks but a few big banks. That is, the interest rates small banks charge do not depend on the market they are located but large banks charge higher interest rates in markets with high proportions of small banks than they do in markets dominated by large banks (Berger, Rosen and Udell, 2001). This greatly explain the Kenyan situation where the market has 6 big banks but very many small and medium sized banks therefore the big banks tend to charge higher rates than even the smaller banks. This shows how bank size is a very important factor when it comes to the determination of interest rate spread maintained in the banking sector.

2.3.3 Operating Costs.

Higher operating costs are not favorable in the banking industry as it shows how inefficient a bank is in its internal processes therefore banks always work towards minimizing their operating costs so as to improve their operating income. A bank that has very high operating costs is bound

to maintain higher interest rate spread to cover the costs incurred. An increase in operating costs is expected to have positive influence on interest rate spreads (Were and Wambua, 2013). In Kenya, overhead costs are largely reflected in high employee payments and highly automated and well designed and furnished bank branches. Interest rate spread increases due to yet to be gained efficiency and high intermediation costs. Both implicit and explicit taxes widen the interest spread as they increase the intermediation costs (Ngugi, 2001).

2.3.4 Liquidity Risk.

Banks which are highly liquid usually have access to funds at a cheaper rate therefore does not incur huge interest compared to the banks which are not properly liquid. Emergency borrowing is usually expensive and this expense is usually escalated to the customer through a bank maintaining wide interest rate spread. Watanabe (2012) shows that a banks weaker (stronger) balance sheet such as poorer (greater) capital adequacy and lower (higher) liquidity has a positive effect on the bank's lending rate when a borrowers inherent credit quality and loan security are adequately controlled.

Short- term liquidity in banks can be controlled through asset and liability management but long term liquidity requires a bank to come up with strategies of how to get financing at cheaper costs. If a bank is not able to sort out their liquidity problems in due time then the situation escalates to credit risk position of the bank to increase since the bank is unable to pay its creditors. On the other hand, if credit risk is not properly managed by a bank then it might experience liquidity problems since it has not been able to recover the repayments from its debtors. Credit risk and liquidity risk are quite related and if the effects of credit risk on interest rate spread is to be established then the effects of liquidity has to be controlled to get accurate results.

2.4 Empirical Review

This section analyses various studies that have been done on interest rate spread and credit risk both at an international level and locally.

2.4.1 International Evidence

Ho and Saunders (1981) looked at the determinants of bank interest margins and spreads in USA between the years 1976 to 1979. They looked at big banks and small banks separately since the large banks maintained narrower spreads compared to the smaller banks. They developed a model to establish the factors that allowed the large banks to maintain narrower spreads. They concluded that pure spread depended on four factors the degree of managerial risk aversion, the size of transactions undertaken by a bank, bank market structure and the variance of interest rates.

Chirwa and Mlachila (2004) analyzed financial reforms and interest rate spreads in the commercial banking system in Malawi. They used Panel data regression to analyze different determinants on the interest rate spreads for the period 1989 to 1999. The determinants analyzed included Provision for doubtful debts, non-financial costs, average market share, market concentration, liquidity reserve requirement, discount rate, inflation rate and industrial production growth. They showed that market concentration and discount rate resulted to high elasticity of interest rate spreads. Spreads were found to be relatively inelastic with respect to liquidity reserve requirement, inflation, non-financial costs, market share and loan quality.

Beck and Hesse (2006) explored the factors behind consistently high interest rate spreads and margins win the Ugandan Banking system for the period 1999 to 2005. They used quarterly interest rate spreads of each bank and compared them to balance sheet figures of overhead costs, loan loss provisions, liquidity ratios, market share for deposits and loans. Other variables they considered were inflation rate, GDP growth rate T-bill rate and the change in nominal exchange rate. Using panel data regression they found out that the economic effect of overhead costs and market size was large and that ROA, loan loss provisions and liquidity ratio were not significant at 5%. They concluded if larger banks enjoy scale economies they pass only part of the savings to their clients.

Crowley (2007) analyzed interest rate spreads in English speaking African countries and he considered various factors that were known to affect the interest rate spreads in this countries. The results were unclear as to whether loan quality had a significant direct effect on spreads. In a regression of adjusted interest rate spreads loan quality was insignificant while in a regression of adjusted net interest rate margins it was significant. Barajas, Steiner and Salazar (1998) examined the determinants of high intermediation spread observed in the Colombian banking sector for the periods 1974 to 1988 and 1991 to 1996 which represented the pre-liberalization period and the post-liberalization period. The variables they examined included market power, real loans, real wage rate and non-performing loans. Panel data analysis was used to analyze the effects of the variables on interest rate spread and the results showed that non-performing loans was a significant factor that contributed to the widening of interest rate spreads in both periods. Banks sensitivity to changes in non-performing loans appears to have increased considerably from the pre to the post liberalization period: the estimated coefficient increased from 0.16 to

about 1. They concluded that a significant portion of the wide interest rate spread was used to cover intermediation costs and the remaining portion reflected a compensation for non-performing loans and the prevalence of market power to capitalize and strengthen the banking system

Mugendawala (2010) studied credit risk and interest rate spreads in Uganda for the period 1981-2008. He looked at the same variables as Beck and Hesse (2006) but used time series models and controlled the effects of macroeconomic factors that is inflation and T-bill rate. He found out that the variable capturing credit risk was negatively related to interest rate spread and was its effects were significant at 10% level.

2.4.2 Local Evidence

Ngugi (2001) examined interest rate spreads in Kenya for the period 1991 to 1999. The variables she considered in her analysis included Treasury bill rate, liquidity ratio, cash ratio, bad debt provision as a percentage of loans and interbank rate. She used time series models to examine the effects of these variables on interest rate spreads. She observed that the coefficient of bad debt ratio was 0.2760 which was higher compared to the other variables. She explained that this was as a result of banks' attempt to maintain profit margins faced with high levels of non-performing loans and declining earnings from alternative sources. The positive relationship between the spread and bad debt provision supports the fact that faced with rising credit risk, banks kept lending rates high as they charge higher risk premiums to maintain their profits. She concluded that the high interest rate spreads experienced in Kenya was as a result of yet to be gained efficiency and intermediation costs.

20

Many studies have also concentrated in establishing the effects of credit risk management. Ogilo (2012) studied the impact of credit risk management on financial performance of commercial banks in Kenya for the period 2006 to 2010. He used the CAMEL ratings as the credit risk management determinants. Using the Pearson correlation analysis and multiple regression models that is, regression model for each year, he was able to observe the effects of CAMEL indicators on the financial performance of commercial banks. Looking at the R^2 statistic, his results showed that in the years studied CAMEL indicators explained a great percentage of financial performance variation. He concluded that credit risk management by use of CAMEL indicators has a strong impact on the financial performance of commercial banks in Kenya.

Were and Wambua (2013) studied the determinants of interest rate spread of commercial banks in Kenya between the years of 2002 to 2011. They used panel data analysis to establish the effects of the variables. The variables they studied included credit risk, bank size, market concentration, liquidity risk, operating costs, return on average assets, real GDP growth and inflation rate. The results from the regression analysis showed that all the coefficients of bank variables were highly significant at 1% in all the estimated equations except operating costs ratio which was significant at 5% level. They observed that there is a positive relationship between credit risk associated with non-performing loans ratio and interest rate spreads. Banks are tempted to shift the risk premium associated with non-performing loans to the borrowers which may be coupled with squeezing the rates offered to the depositors. They concluded that bank specific factors play a significant role in the determination of interest rate spreads in the banking sector in Kenya.

Kwambai and Wandera (2013) in their study of credit information sharing effects on Non-performing loans, they considered the case of Kenya Commercial Bank for the year 2007 to 2012. They used a sample of 149 employees of the bank as respondents and by the use of a structured questionnaire they obtained informed opinions from their respondents. They also analyzed the trend of bad loans using the financial statements of the bank. The results showed that there was a reduction of non-performing loans from 2008 to 2011 which was attributed to the information sharing.

2.5 Summary of Literature Review

Interest rate spreads is an area that has been extensively researched especially in countries where the wide interest rate spreads have been witnessed. Various determinants have been established when we move from one country to the next. Credit risk, measured as a ratio of non-performing loans to total loans ratio has been examined as a factor determining interest rate spread in all the studies. Beck and Hesse (2006, Mugendawala (2010, Chirwa and Mlachila (2004) found that the effect of credit risk on interest rate spread was not significant while Ho and Saunders (1981), Barajas, et al. (1998) found that the effect of credit risk on interest rate spread was quite significant. Crowley (2007) found credit risk to be almost insignificant on interest rate spread in most African English speaking countries. It is evident that the determinants of interest rate spreads differ from one country to the next. In Kenya, Ngugi (2001, Were and Wambua, (2013) clearly indicate that credit risk is significant in the determination of interest rate spread. Ogilo (2012), Kwambai and Wandera (2013) have established that credit risk management techniques are known to bring down the ratio of non-performing loans to total loans ratio and improve performance of commercial banks. The development of information sharing system was aimed at

22

providing information symmetry which was expected to narrow down the interest rate spreads in the Kenyan banking sector (CBK, 2013). However, no study in Kenya has been done to single out the effects of credit risk on interest rate spreads and to establish to what extent it affects interest rate spread.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section is involved with the necessary steps that were taken to show the relationship between credit risk and interest rate spread through the identification of an appropriate model, variable definitions, variable measurements, data estimation and testing procedures.

3.2 Research Design

A descriptive and diagnostic research design was adopted in this study. According to Kothari (2004), a descriptive research design involves studies that are concerned with describing the characteristics of a particular variable whereas diagnostic research studies determine the frequency something occurs or its relationship with something else. In descriptive as well as diagnostic research, one must be able to define clearly what he wants to measure and must find adequate methods for measuring it along with definitions of the population he wants to study. In this study, interest rate spread and credit risk were the two variables of interest whereby measurements of the two variables were taken and relationships between the two variables was to be established. The population under study was clearly defined to be the commercial banks fully in operation for the entire period under study.

3.3 Population

The study took into consideration all the 42 commercial banks in Kenya that were fully operational for all the years under study that is from 2009 to 2013 (Appendix 1)

3.4 Data Source

Data on the weighted average rate of deposits and weighted average rate of lending maintained by each bank in the period under study was sourced out from financial statements of respective banks. Interest expense on deposits versus total deposits for the year was used to deduce the weighted average rate of deposits for each bank. Interest income on loans verses the total number of loans was used to determine the weighted average rate of lending. Data on Non-performing loans, Operating assets, liquid assets, total assets and total loans for each bank in each year for the period under study was sourced from Central Bank Supervision reports for the last five years that is, from 2009 to 2013. This data had panel data characteristics with cross sectional component consisting of 42 commercial banks and time component represented by 5 year time period from 2009 to 2013.

3.5 Data Analysis

Panel data regression analysis was used to estimate the regression model. The following procedure was used in analyzing panel data. First, all the three panel data models namely fixed effect model, random effect model and the classical (pooled) OLS model was estimated. Thereafter, Haussmann test was used to determine the most suitable model between fixed effect model and random effect model. Haussmann test was primarily used to test whether fixed effects or correlation between unobserved effect and independent variables is present or not. Haussmann test null hypothesis holds that random effect model was the preferred model against the alternate hypothesis that fixed effect is the preferred model. If null is not rejected then random model is appropriate but if rejected, then fixed effect model is to be deemed appropriate. In the event random effect model is preferred, Breusch-pagan test is used to determine whether random effect model or pooled OLS is most suitable (Wooldridge, 2010).

25

3.5.1 Analytical Model

Bank dealership model of Ho and Sanders(1981) was used with the extension of the factors that determine interest rate spread in Kenya as documented by Were and Wambua (2013) . The modified model depicts that interest rate spread is as a result of credit risk, liquidity risk, bank size and operating costs.

The regression model used was

$$Z_{it} = \beta_0 + \beta_1 V_{it} + \beta_2 W_{it} + \beta_3 X_{it} + \beta_4 Y_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots(3.1)$$

Where:

β_0 Denotes the fixed effects for bank i

β_i Are the coefficients of respective independent variables with i = 1, 2, 3, 4.

ε Is the statistical disturbance term

Z_{it} Is the interest rate spread for bank i in period t, measured by the difference between Weighted Average Lending Rate (WALR) and Weighted Average Deposit Rate (WADR)

V_{it} Is the credit risk for bank i in period t, measured by a ratio of NPLs to total loans.

W_{it} Is the liquidity risk for bank i in period t, measured by ratio of bank liquid assets to total assets.

X_{it} Is the bank size of bank i in period t, measured by log of total bank assets.

Y_{it} Is the operating costs of bank i in period t, measured by ratio of operating costs to total operating income.

3.5.2 Test of Significance

The model was estimated using adjusted R-square and F-statistics to assess the overall strength and reliability of the models. Student t-tests will be used to evaluate the significance of individual coefficients. Haussmann test, Breusch-Pagan test, F-statistics and students t-tests will be evaluated at 95% level of confidence or 0.05 significance level.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results and findings of the study. Stationarity test was done and co integration analysis was conducted in the event that at least one of the variables is non stationary. Panel regression analysis was then conducted and the results presented thematically based on the objective. Secondary data utilized for the study composed of strongly balanced panel data. Cross sectional dimension (N) encompassed 42 Commercial banks based in Kenya, one bank was excluded due to lack of data. Time series dimension included annual data for 5 years from 2009 to 2013.

4.2. Findings

This section presented the study findings based on descriptive statistics and panel data regression. Relevant diagnostic tests are discussed in order to show choice and the reliability of the model. Thereafter, the discussion is structured thematically based on study objective.

4.2.1. Descriptive Statistics

Descriptive statistics showing the mean interest rates spread maintained by commercial banks over the year under study was conducted and the results shown in Figure 4.1. The mean credit risk experienced by commercial banks over the years under study was also conducted and the findings shown in Figure 4.2.

Figure 4.1: Line Graph showing the mean Credit risk for the period 2009 to 2013
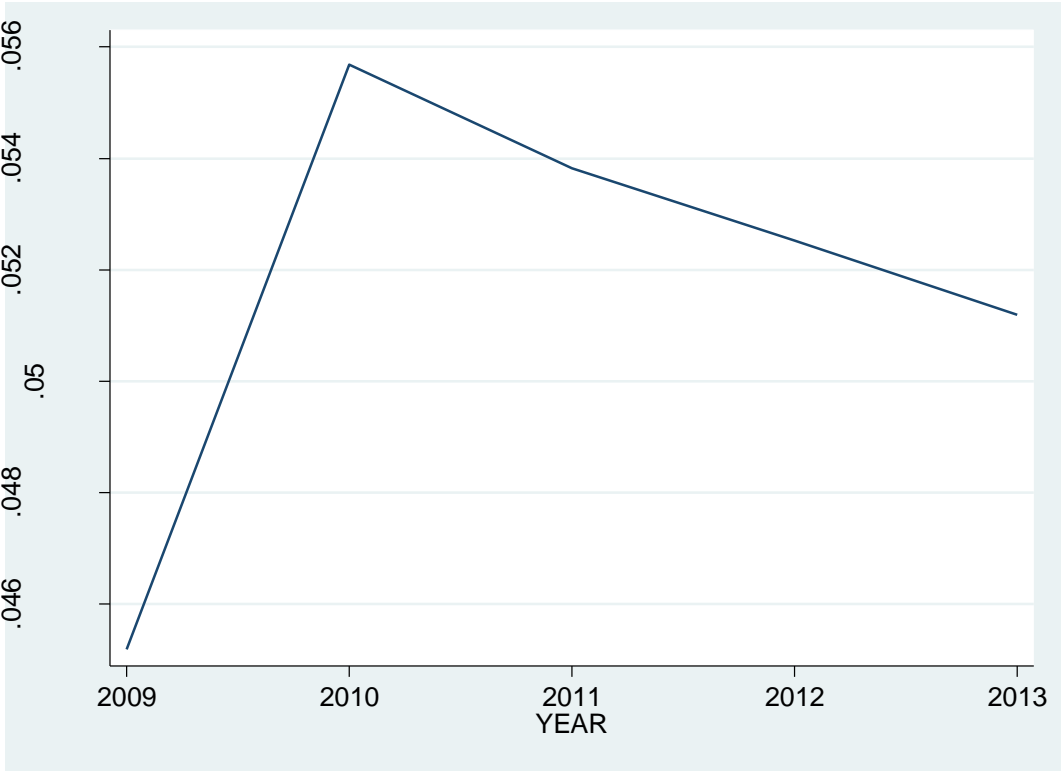
Source: Research Findings

Figure 4.1 shows a line graph plot of mean credit risk experienced by banks for the years 2009 to 2013. It shows there was a huge increase in mean of non-performing loans to total loans ratio from year 2009 to year 2010 from 0.044 to 0.055 after which there was a relatively sharp decline from 2010 to 2011 then a gradual decline from 2011 to the year 2013. The figure generally shows that on average the mean credit risk experienced by commercial banks is on the decline.

Figure 4.2: Scatter diagram showing the mean IRS for the period 2009 to 2013
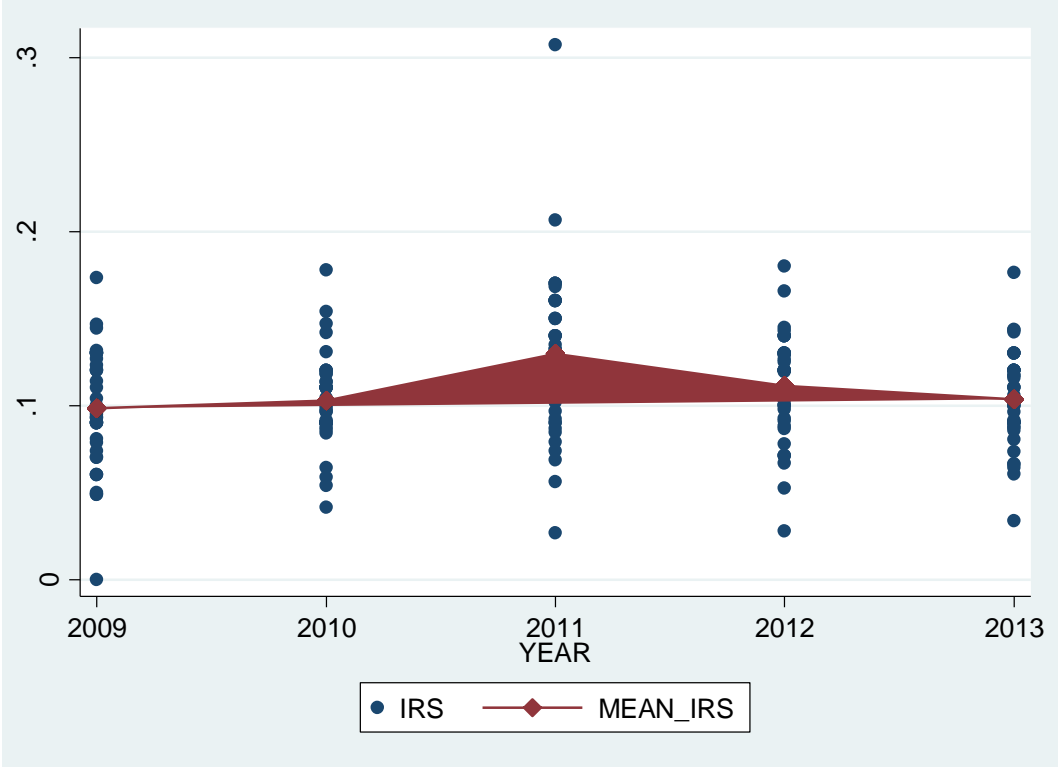
Source: Research Findings

Figure 4.2 shows the distribution of interest rate spread for the period 2009. The scatter diagram shows that variation in interest rate spread across banks was significant ranging with minimum banks having a spread of approximately 5 percent while others having spreads as high as 20 percent. The figure also shows that on average interest rate spread was 10 percent for the period under study. However, the graph shows that there was a slight increase in interest spread during the year 2011.

4.2.2. Empirical Results

Stationarity test was first done to evaluate the stationarity conditions of the Panel data used. Among the panel unit root tests, Im-Pesaran-Shin was used for analysis and the results presented in table 4.1

Table 4.1: Panel Unit root Test

	Im-Pesaran-Shin Test		
	Test statistic	**Critical Value ($\alpha = 0.05$)**	**Remark**
IRS	-2.1028	-1.950	Stationary at level *I(0)*
Credit Risk	-2.200	-1.950	Stationary at level *I(0)*
Liquidity Risk	-2.367	-1.950	Stationary at level *I(0)*
Bank Size	-2.5810	-1.950	Stationary at level *I(0)*
Operating Costs	-3.6988	-1.950	Stationary at level *I(0)*

Source: Research Findings

Results in table 4.1 show that at 5 percent significance level, the test statistics was less than critical value of -1.950. This implies that at 5 percent significance level all variables were stationary. This implies that either fixed effect model or random effect model maybe used for analysis. Hausman test was then conducted to establish whether fixed effect or random effect was appropriate. The hausman coefficient is 4.61 with a probability value of 0.7979 which is less than 0.05. This implies that at 5 percent level of significance, there is no difference between random estimator and fixed estimator and random estimator could be used for analysis. Secondly, the Wald statistic of 101 with p-value of 0.000 was significant at 5 percent level. This implied that the independent variables jointly explain the dependent variable.

Table 4.2: Table showing Diagnostics test of the regression model

Diagnostics			
	Coef		**Prob>Chi^2**
Wald Chi^2(8)	101.59		0.000
Hausman	4.61		0.7979

Source: Research Findings

Since, the stationary test showed that either the fixed effect model and random effect model could be used for analysis and Hausman and Wald Chi^2 tests both proved that there was no difference between the random estimator and fixed estimator, the random effect was used for the analysis. The regression analysis was done using the random effect model and the results shown in table 4.3

Table 4.3: Table showing regression of the variables using random effect model.

REGRESSION MODEL: RANDOM EFECT MODEL			
Dependent variable = IRS	**Coef**	**Z-Stat**	**P>|z|**
Credit Risk	0.1737	1.27	0.205
Liquidity Risk	0.0095	1.07	0.283
Bank Size	0.0075	4.79	0.000***
Operating Cost	0.0108	2.72	0.007**
Constant	0.0047	0.34	0.738
Sigma_u	0.019		
Sigma_e	0.024		
Rho	0.36		

Source: Research Findings

It is important to mention that further tests showed that the model was suffering from heteroskedasticity and autocorrelation. In this regard cluster standard errors were used to estimate Z statistics to avoid biased results (Wooldridge, 2003).

The statistics 'rho' of 0.36 implies that up to 36 percent of variation can be attributed to difference across panels. The results shows that the coefficients of credit risk and liquidity risk

had p-values of more than 0.025. This means that the aforementioned coefficients were insignificant at 5 percent level and therefore not significantly different from zero.

Bank size and operating cost had a coefficient of 0.075 and 0.0108 with p-value of 0.000 and 0.007 respectively. These results affirm that bank size and operating costs were significant factors in determining interest rates spread. These results imply that one percentage increase in operating costs as a ratio of operating income increases interest rate spread by approximately 1 percent. In addition, proportional increase in bank size by a unit, as measured by log of total assets, increases interest rate spread by approximately 0.7 percentage points.

4.3 Interpretation of the Findings

The sharp increase of the ratio of non-performing loans to total loans ratio as per figure 4.1 is attributed to the fact that in the years preceding 2010 the commercial banks had excess liquidity which they were willing to reduce through the disbursement of loans (CBK, 2010). In the rush to use their excess liquidity to make more profits, they lent out to even not so good debtors. In the year 2011, the issue of excess liquidity had been dealt with through monetary policy and the commercial banks were once again back to strict lending while aiming to reduce the non-performing loans acquired during the year 2010. The steady decline of the ratio beyond 2011 shows that there is a sign of stable and better credit risk management this might be attributed to the introduction of CRBs to help in the screening of borrowers therefore helping the banks to avoid lending to borrowers with a history of default hence reducing the ratio of non-performing loans to total loans ratio gradually.

According to figure 4.2 the sharp increase in interest rate spread could be attributed to the reaction of commercial banks towards increase in their non-performing loans to total loans ratio

experienced in the year 2010. There is a decline in the interest rate spread after the year 2011 which cannot be termed as stable compared to the stable decrease in non-performing loans to total loans ratio exhibited in figure 4.1 for this reason the regression analysis sheds more light on the relationship between the two variables.

Credit risk was found to be insignificant at 5% in determination of interest rate spread among commercial banks in Kenya. Commercial banks in Kenya are seen to take into consideration the ratio of non-performing loans to total loans ratio while deciding on the interest rate spread but the change is not significant. This is attributed to the fact that lending rates are usually sticky downwards that is, commercial banks in Kenya adjust lending rates more easily upwards compared to adjusting them downwards (Were and Wambua, 2013). Commercial Banks in Kenya tend to compete on the grounds of profit making and would therefore tend to be slow in reduction of lending rates so as to continue reaping more profits than their competitors.

Bank size is highly significant when it comes to determination of interest rate spreads because the kenya's banking system is domineered by a few big banks which are at the liberty to set up interest rates the way they deem fit as they do not face enough competition from the rest of the banks. Large banks have a lot of assets and a big capital base to lend more compared to middle and small banks. The middle and smaller banks have no capacity to satisfy the lending need of the population and therefore a huge number of borrowers are forced to turn to big banks for a loan irrespective of the interest rates they are charging. The huge asset base also helps the banks not to be in desperate need of deposits compared to middle and small banks hence the poor rates offered to depositors by big banks.

Operating costs is an important aspect considered by commercial banks when they are setting the interest rates spreads so as to avoid making a loss or less profit due to increased costs. Banks tend to shift increased costs to the customer through widening of interest rate spreads. Liquidity risk was found to be insignificant as the commercial banks in Kenya tend to be highly liquid therefore it is rare for them to encourage depositors through offering high deposit rates.

The current study confirms and at the same time differs with some earlier studies. The current study coefficient of the variable capturing credit risk bears consistency with results obtained by Chirwa and Mlachila (2004), Beck and Hesse (2006), Crowley (2007) and Mugendawala (2010). All these studies found out that the effects of credit risk on interest rate spreads maintained by commercial banks was insignificant. On the other hand, Ngugi (2001) and Were and Wambua (2013) were studies done in Kenya and the results of the effects of credit risk on interest rate spread differ with the ones documented by the current study. The two studies found out that the effect of Credit risk on interest rate spread is significant as opposed to the current study that established that it is insignificant. The difference can be attributed to the fact that the studies looked at different years therefore the difference can be attributed to the changing environment in which the commercial banks in Kenya operate in. It seems in the earlier years credit risk was a factor that was considered by commercial banks while setting the interest rate spread maintained while in the later years this seems to have changed.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the study and draws conclusions from the findings. The chapter also includes the limitations of the study while giving recommendations to policy.

5.2 Summary

Credit risk is an important aspect of commercial banks which influences how they do business. Management of credit risk by commercial banks is a strong back bone to the industry but whether or not it influences the determination of interest rate spreads maintained in Kenya, was the one question sort to be answered by this study. Data was collected on credit risk, operating costs, bank size, liquidity risk and interest rate spread. This data was analyzed through descriptive analysis of credit risk and IRS. Regression analysis of all the variables was also done to clarify the results from the descriptive analysis. Bank size was found to be highly significant in determination of interest rate spread. Operating costs was also found to be significant while credit risk and liquidity risk were found to be insignificant.

5.3 Conclusion

Credit risk was found not to be one of the factors that explain the wide interest rate spread maintained by commercial banks in Kenya given the insignificant effect towards interest rate spread in the regression analysis. Bank size was found to be an important factor that influences the interest rate spreads given the high level of significance shown in the regression analysis. It is evident that commercial banks consider operating costs rather than liquidity when deciding on the interest rate spread to be maintained.

5.4 Recommendations for Policy

The improvement of credit risk management techniques is prime in the improvement of stability of commercial banks in Kenya. The results show that credit risk does not form the basis for banks' decision to charge higher spreads. Nevertheless, this may reflect deficiencies in assessing credit risk due to lack of capacity in the local banks. This therefore implies the need for capacity building within the individual bank's human and technology resources for better credit risk assessment and management. It is therefore recommended that commercial banks move from their traditional mechanisms used to control credit risk, to loan portfolio restructuring while including modern techniques such debt-equity swaps and credit derivatives to manage their credit risk.

Defined and accurate credit risk management techniques have a tendency to bring control to the ratio of non-performing loans to total loans ratio thereby avoiding unexpected upsurges in interest rate spreads due to sudden increase in non-performing loans as witnessed in the year 2009 to 2011. Central Bank of Kenya should continue implementing policies that will improve credit risk management among banks which will bring further decline in the non-performing loans thereby making commercial banks more confident to lend at lower rates and even offer high deposit rates.

Bank size is a very important aspect of interest rate spreads in Kenya. Improvement of competition through emergence of bigger stable banks would level out the playing field in the banking industry. It is therefore, recommended that the Government of Kenya and the Central Bank of Kenya device ways of boosting the small and medium banks so as to be better

competitors to the big banks. Encouragement of mergers to form big banks could be one way to go. Improved competition in the banking industry holds the key to reduced interest rate spreads and this can only be done by empowering the weaker banks to be better competitors.

5.5 Limitations of the Study

The study did not look at the effect of macroeconomic factors on interest rate spreads on the assumption that it is a weak determinant according to Were and Wambua (2013) and Ngugi (2001). In the year 2010 the banks had excess liquidity and the central bank attempted to stabilize the economy through strict monetary policy, this might have helped in explaining the sudden increase and decrease in non-performing loans to total loans ratio for the years between 2009 to 2011.

The trend of credit risk and interest rate spread for a longer period would help in understanding the behavior of interest rate spread corresponding to credit risk. This limitation was counteracted by the use of scattered plot of the interest rate spread while looking at the mean interest rate spread maintained by commercial banks for the five years. Line graph of the mean credit risk experienced by commercial banks was also used to attempt to understand the trend of credit risk.

There was a challenge in obtaining data for multinational commercial banks as some displayed their financials in other currencies such as Dubai Bank used rupees which called for conversion to Kenya Shillings. This might have affected the results represented in this study to a small

extent. This limitation was counteracted by comparing the data obtained by comparisons with other aspects of the banks documented by Central Bank of Kenya.

5.6 Areas for Further Research

Interest rate spreads maintained by banks is a very critical issue in our country and therefore there are always many attempts to implement policies and action that would attempt to narrow down the interest rate spread. There are undesirable factors to the economy that would narrow down the interest rate spread such as capping of interest rates. Before making a negative judgments about high spreads in Kenya it would be important to explore the reasons for high spreads. Further studies attempting to explain the high interest rate spreads in Kenya would therefore be beneficial in understanding of the positive policies and action that would bring down the interest rate spread.

This study concentrated on effects of credit risk on interest rate spread which on its own cannot help in narrowing down the interest rate spread. More research needs to be done on each and every variable that affect interest rate spread among commercial banks in Kenya with an aim to identify how they can be used to narrow down interest rate spreads in the long run.

Studies should be done on modern ways of credit risk management that could be implemented by commercial banks in Kenya to help in reducing the non-performing loans even further so as to make the banks more stable and confident enough to work with narrower interest rate spreads.

REFERENCES

Ahmad N. H. and Ariff M. (2007). Multi-country study of bank credit risk determinants. *International Journal of Banking and Finance, 5 (1/6)*

Angbanzo, L. (1997). Commercial Bank Net Interest Margins, Default risk, Interest rate risk, and Off-Balance sheet Banking. *Journal of Banking and Finance, 21*, 55-87

Barajas A., Steiner R., & Salazar N. (1998). Interest spreads in Banking: Financial taxes, Market power, and Loan quality in Columbia 1974-1996. *IMF Staff Papers, 46 (2)*

Berger A. N, 1995. The Relationship between Capital and Earnings in banking. *Journal of money, credit and banking, Ohio state university press, 27(2), 436-56*

Beck, T., & Hesse, H. (2006). Bank Efficiency, Ownership and Market Structure; why interest Spreads are high in Uganda *Washington D.C: The World Bank.*

Bessis J. (2004). Risk management in Banking. *Second Edition. John Wiley & Sons Ltd, England.*

Brownbridge M., (1998) The Causes of Financial Distress in Local Banks in Africa and Implications for Prudential Policy. *UNACTAD OSG/DP/132.*

Central Bank of Kenya (1994) Bank Supervision Annual Reports. *CBK, Nairobi*

Central Bank of Kenya (2005) Bank Supervision Annual Reports. *CBK, Nairobi*

Central Bank of Kenya (2010) Bank Supervision Annual Reports. *CBK, Nairobi*

Central Bank of Kenya (2011) Bank Supervision Annual Reports. *CBK, Nairobi*

Central Bank of Kenya (2013) Bank Supervision Annual Reports. *CBK, Nairobi*

Crowley, J. (2007). Interest Rate Spreads in English-Speaking African Countries. *IMF Working Paper, Wp/07/101*

Fama E. F. and French K. R.(2004) The Capital Asset Pricing Model: Theory and evidence. *Journal of economic perspectives, 18(3), 25-46.*

Gizycki, M. 2001. *Effect of Macroeconomic conditions on banks risk and profitability. Reserve bank of Australia*. September 2001. Available from *www.rba.gov.au/publications/rdp/2001/pdf/rdp2001-06.pdf.*

Hamada R. S., (1972) The effect of the firm's Capital Structure on the Systematic Risks of common Stocks. *The journal of finance, 27(2), 435-452*

Ho, T. S. Y., & Saunders, A. (1981). The determinants of bank interest margin s: Theory and Empirical evidence. *Journal of Financial and Quantitative Analysis, 16*, 581-600.

Islam M. S, Shil N. C and Mannan M. A (2005) Non-performing Loans its causes, consequences and some learning. *MPRA paper no.7708 posted 12 MARCH 2008 16:15 utc*

Jayaraman, T. K and Sharma, R. (2003) Why is interest rate spread high in Fiji? Results from a preliminary study. *Fijian studies, 1 (1), 45-67*

Kothari C. R., (2004). Research Methodology: methods and techniques. *New Age International Publishers, New Delhi, India.*

Marrison C., (2002). The Fundamentals of Risk Measurement. *McGraw Hill Companies, United States Of America*

Mlachila, M., & Chirwa, E. (2002). Financial Reforms and Interest rate spreads in the Commercial banking system of Malawi. *IMF working paper, Wp/02/06.*

Mullei A. K. and Masai W. Improving Financial Sector Performance in Kenya. *African Centre for Economic Growth. Nairobi. Kenya September 2006*

Ngugi R. W (2001) An empirical Analysis of Interest Spread in Kenya. *African Economic Research Consortium (AERC) research paper 106.*

Ogilo F. (2012). The Impact of Credit Risk Management on Financial Performance of

      Commercial Banks in Kenya. *DBA Africa Management Review 2012, 3(1), 22-37*

Ryne E, (2002). The Yin and Yang of microfinance: Reaching the poor and sustainability.

      Microbanking bulletin, 45

Vincent O. O and Gemechu B. K.2013. Determinants of Financial Performance of Commercial

      Banks in Kenya*. International Journal of Economical and Financial Issues*. Vol. 3(1) pp.

      237 – 252. Available from

      http://www.rba.gov.au/publications/rdp/2001/pdf/rdp2001-06.pdf

Were M. and Wambua J., (2013). Assessing the determinants of interest rate spread of

      commercial banks in Kenya: An empirical investigation. *KBA centre for research on*

      financial markets and policy, working paper series.

Wooldridge J.M. 2003. *Introductory Econometrics: A Modern Approach*. 2nd Ed. Cambridge,

      Massachusetts: MIT Press. (Modelling Book with application of VIF, Heteroskedasticity,

      multicolinearity, serial correlation, OLS)

Wooldridge, Jeffrey M. 2010. *Econometric Analysis of Cross Section and Panel Data*. 2nd Ed

      Cambridge, Massachusetts: MIT Press. (Book with details of Panel data analysis,

      haussman, Breusch Pagan, OLS, Fixed effect and random effect)

.

LIST OF COMMERCIAL BANKS IN KENYA FULLY OPERATIONAL FOR THE PERIOD 2009 TO 2013

1. African Banking Corporation Limited
2. Bank of Africa Kenya Limited
3. Bank of Baroda (k) Limited
4. Bank of India
5. Barclays Bank of Kenya Limited
6. Cfc Stanbic Bank Limited
7. Chase Bank (K) Limited
8. Citibank N. A. Kenya
9. Commercial Bank of Africa Limited
10. Consolidated Bank of Kenya Limited
11. Co-operative Bank of Kenya Limited
12. Credit Bank Limited
13. Development Bank of Kenya Limited
14. Diamond Trust Bank Kenya Limited
15. Dubai Bank Kenya Limited
16. Ecobank Kenya Limited
17. Equatorial Commercial Bank Limited
18. Equity Bank Limited
19. Family Bank Limited
20. Fidelity Commercial Bank Limited
21. Guaranty Trust Bank (K) Limited (Formerly Fina Bank Limited)
22. First Community Bank Limited
23. Giro Commercial Bank Limited
24. Guardian Bank Limited
25. Gulf African Bank Limited
26. Habib Bank A. G. Zurich
27. Habib Bank Limited

28. Imperial Bank Limited

29. I & M Bank Limited

30. Jamii Bora Bank Limited

31. Kenya Commercial Bank Limited

32. K-Rep Bank Limited

33. Middle East Bank (K) Limited

34. National Bank of Kenya Limited

35. NIC Bank Limited

36. Oriental Commercial Bank Limited

37. Paramount Universal Bank Limited

38. Prime Bank Limited

39. Standard Chartered Bank Kenya Limited

40. Trans-National Bank Limited

41. UBA Kenya Bank Limited

42. Victoria Commercial Bank Limited

Source: Central Bank of Kenya (2013) Bank Supervision Annual Reports. CBK, Nairobi

APPENDIX II

Raw Data

YEAR	ID	IRS	CREDIT RISK	LIQUIDITY RISK	BANK SIZE	OPERATING COSTS
2013	1	0.09	0.042	0.312	10.293	0.629
2013	2	0.06	0.005	0.359	10.722	0.647
2013	3	0.09	0.022	0.517	10.716	0.245
2013	4	0.12	0.043	0.287	10.487	0.842
2013	5	0.12	0.030	0.558	11.315	0.057
2013	6	0.09	0.030	0.338	11.257	0.345
2013	7	0.14	0.025	0.169	10.884	0.638
2013	8	0.11	0.043	0.287	10.853	0.842
2013	9	0.12	0.043	0.287	11.164	0.842
2013	10	0.10	0.473	0.263	10.225	0.826
2013	11	0.12	0.038	0.311	11.364	0.595
2013	12	0.10	0.054	0.323	9.864	0.889
2013	13	0.03	0.111	0.358	10.193	0.578
2013	14	0.09	0.032	0.203	11.057	0.368
2013	15	0.11	0.043	0.287	9.466	0.842
2013	16	0.12	0.043	0.287	10.567	1.188
2013	17	0.10	0.050	0.306	10.192	0.806
2013	18	0.14	0.034	0.230	11.377	0.438
2013	19	0.14	0.034	0.280	10.638	0.667
2013	20	0.13	0.043	0.287	10.106	0.842
2013	21	0.18	0.039	0.502	10.409	0.807
2013	22	0.11	0.069	0.283	10.053	0.909
2013	23	0.09	0.041	0.464	10.134	0.541

2013	24	0.07	0.057	0.302	10.108	0.566
2013	25	0.09	0.043	0.287	10.206	0.842
2013	26	0.09	0.043	0.287	9.907	0.842
2013	27	0.07	0.021	0.656	10.042	0.609
2013	28	0.09	0.043	0.287	10.634	0.842
2013	29	0.07	0.023	0.246	11.043	0.301
2013	30	0.08	0.062	0.237	9.846	0.848
2013	31	0.12	0.035	0.320	11.509	0.488
2013	32	0.12	0.043	0.287	10.121	0.842
2013	33	0.12	0.043	0.287	9.761	0.842
2013	34	0.09	0.045	0.487	10.966	0.755
2013	35	0.10	0.051	0.149	11.083	0.415
2013	36	0.09	0.031	0.341	9.846	0.618
2013	37	0.13	0.043	0.287	9.905	0.842
2013	38	0.06	0.018	0.383	10.694	0.444
2013	39	0.10	0.017	0.320	11.343	0.396
2013	40	0.11	0.059	0.424	9.985	0.658
2013	41	0.13	0.043	0.287	9.569	1.188
2013	42	0.13	0.043	0.287	10.135	0.842
2012	1	0.09	0.033	0.380	10.280	0.597
2012	2	0.05	0.009	0.343	10.690	0.736
2012	3	0.09	0.023	0.504	10.664	0.324
2012	4	0.13	0.038	0.349	10.396	0.569
2012	5	0.12	0.036	0.609	11.267	0.525
2012	6	0.10	0.020	0.345	11.156	0.431
2012	7	0.09	0.038	0.315	10.691	0.596

2012	8	0.10	0.038	0.349	10.842	0.569
2012	9	0.10	0.038	0.349	11.073	0.569
2012	10	0.11	0.258	0.358	10.257	0.904
2012	11	0.13	0.038	0.322	11.302	0.554
2012	12	0.14	0.085	0.417	9.807	0.849
2012	13	0.03	0.128	0.354	10.128	0.730
2012	14	0.07	0.033	0.226	10.975	0.351
2012	15	0.13	0.038	0.349	9.412	1.758
2012	16	0.14	0.038	0.349	10.502	1.758
2012	17	0.11	0.047	0.330	10.149	2.059
2012	18	0.18	0.033	0.316	11.334	0.450
2012	19	0.17	0.090	0.301	10.491	0.683
2012	20	0.09	0.094	0.381	10.071	0.841
2012	21	0.13	0.048	0.402	10.234	0.700
2012	22	0.10	0.139	0.390	9.998	0.908
2012	23	0.13	0.018	0.518	10.089	0.663
2012	24	0.12	0.038	0.349	10.070	0.569
2012	25	0.11	0.038	0.349	10.132	0.569
2012	26	0.12	0.038	0.349	9.846	0.569
2012	27	0.12	0.038	0.349	9.987	0.569
2012	28	0.12	0.038	0.349	10.539	0.569
2012	29	0.07	0.022	0.301	10.962	0.338
2012	30	0.08	0.115	0.161	9.542	0.845
2012	31	0.12	0.039	0.309	11.484	0.518
2012	32	0.13	0.106	0.159	9.980	0.821
2012	33	0.13	0.038	1.998	9.769	0.569

2012	34	0.13	0.053	0.500	10.827	0.754
2012	35	0.10	0.032	0.171	11.035	0.421
2012	36	0.07	0.045	0.347	9.794	0.695
2012	37	0.14	0.038	0.869	9.861	0.569
2012	38	0.07	0.027	0.416	10.638	0.530
2012	39	0.10	0.016	0.306	11.291	0.406
2012	40	0.14	0.051	0.483	9.945	0.614
2012	41	0.14	0.038	0.349	9.466	1.758
2012	42	0.14	0.038	0.349	10.014	1.000
2011	1	0.09	0.029	0.346	10.097	0.576
2011	2	0.08	0.010	0.387	10.588	0.709
2011	3	0.07	0.031	0.450	10.565	0.236
2011	4	0.17	0.037	0.313	10.368	0.569
2011	5	0.13	0.033	0.330	11.224	0.516
2011	6	0.06	0.030	0.217	11.177	0.684
2011	7	0.09	0.033	0.397	10.562	0.612
2011	8	0.15	0.037	0.313	10.873	0.569
2011	9	0.14	0.037	0.313	10.977	0.569
2011	10	0.11	0.119	0.301	10.185	0.779
2011	11	0.09	0.040	0.261	11.226	0.659
2011	12	0.10	0.099	0.386	9.732	0.899
2011	13	0.03	0.152	0.446	10.062	0.653
2011	14	0.12	0.026	0.116	11.032	0.479
2011	15	0.16	0.037	0.313	9.365	0.569
2011	16	0.17	0.037	0.313	10.435	0.569
2011	17	0.13	0.033	0.369	10.111	0.916

2011	18	0.13	0.021	0.279	11.248	0.465
2011	19	0.13	0.065	0.246	10.415	0.772
2011	20	0.10	0.038	0.361	10.033	0.600
2011	21	0.21	0.132	0.449	10.165	0.695
2011	22	0.16	0.037	0.313	9.942	0.569
2011	23	0.13	0.017	0.433	10.074	0.557
2011	24	0.17	0.037	0.313	9.946	0.569
2011	25	0.15	0.037	0.313	10.111	0.569
2011	26	0.14	0.037	0.313	9.768	0.569
2011	27	0.14	0.037	0.313	9.941	0.569
2011	28	0.15	0.037	0.313	10.409	0.569
2011	29	0.10	0.029	0.258	10.886	0.302
2011	30	0.31	0.414	0.283	9.316	1.077
2011	31	0.12	0.049	0.288	11.451	0.578
2011	32	0.17	0.103	0.144	9.969	0.842
2011	33	0.16	0.037	0.313	9.666	0.569
2011	34	0.13	0.030	0.519	10.837	0.598
2011	35	0.09	0.033	0.095	10.898	0.415
2011	36	0.07	0.054	0.327	9.702	0.576
2011	37	0.16	0.037	0.313	9.675	0.569
2011	38	0.08	0.035	0.414	10.546	0.528
2011	39	0.12	0.014	0.228	11.215	0.455
2011	40	0.13	0.037	0.313	9.863	0.569
2011	41	0.14	0.037	0.313	9.506	1.758
2011	42	0.16	0.037	0.313	9.883	1.758
2010	1	0.12	0.043	0.407	10.013	0.558

2010	2	0.10	0.021	0.419	10.426	0.794
2010	3	0.09	0.029	0.564	10.510	0.227
2010	4	0.11	0.050	0.375	10.294	0.582
2010	5	0.15	0.042	0.425	11.237	0.540
2010	6	0.05	0.014	0.196	11.146	0.718
2010	7	0.09	0.050	0.375	10.340	0.582
2010	8	0.11	0.050	0.375	10.793	0.582
2010	9	0.10	0.050	0.375	10.878	0.582
2010	10	0.11	0.113	0.294	10.009	0.700
2010	11	0.08	0.050	0.357	11.188	0.639
2010	12	0.12	0.162	0.515	9.656	0.929
2010	13	0.09	0.050	0.375	10.027	0.582
2010	14	0.11	0.026	0.154	10.922	0.473
2010	15	0.09	0.050	0.375	9.273	0.582
2010	16	0.11	0.050	0.375	10.430	0.582
2010	17	0.10	0.060	0.415	10.017	1.159
2010	18	0.13	0.023	0.326	11.127	0.462
2010	19	0.14	0.066	0.358	10.303	0.730
2010	20	0.11	0.050	0.375	9.914	0.582
2010	21	0.15	0.201	0.473	10.150	0.707
2010	22	0.09	0.050	0.375	9.805	1.719
2010	23	0.09	0.027	0.496	10.010	0.365
2010	24	0.09	0.050	0.375	9.905	0.582
2010	25	0.09	0.050	0.375	9.982	0.582
2010	26	0.09	0.050	0.375	9.734	0.582
2010	27	0.09	0.050	0.375	9.910	0.582

2010	28	0.09	0.050	0.375	10.288	0.582
2010	29	0.06	0.033	0.338	10.796	0.316
2010	30	0.11	0.050	0.375	9.236	1.719
2010	31	0.10	0.076	0.298	11.348	0.594
2010	32	0.18	0.167	0.218	9.885	0.912
2010	33	0.12	0.050	0.375	9.604	0.582
2010	34	0.10	0.032	0.597	10.778	0.571
2010	35	0.10	0.037	0.086	10.771	0.439
2010	36	0.04	0.062	0.303	9.659	0.655
2010	37	0.12	0.050	0.375	9.645	0.582
2010	38	0.06	0.035	0.465	10.501	0.574
2010	39	0.09	0.020	0.447	11.155	0.424
2010	40	0.11	0.050	0.375	9.678	0.582
2010	41	0.11	0.050	0.375	9.373	1.719
2010	42	0.12	0.050	0.375	9.793	0.582
2009	1	0.11	0.031	0.347	9.960	0.552
2009	2	0.10	0.032	0.398	10.228	0.759
2009	3	0.13	0.031	0.347	10.350	0.552
2009	4	0.13	0.031	0.347	10.193	0.552
2009	5	0.13	0.038	0.369	11.217	0.593
2009	6	0.05	0.050	0.269	11.106	0.742
2009	7	0.13	0.031	0.347	10.120	0.460
2009	8	0.13	0.031	0.347	10.712	0.552
2009	9	0.13	0.031	0.347	10.817	0.552
2009	10	0.15	0.153	0.321	9.839	0.759
2009	11	0.09	0.070	0.359	11.044	0.681

2009	12	0.11	0.083	0.455	9.564	0.759
2009	13	0.09	0.031	0.347	9.919	0.552
2009	14	0.10	0.019	0.175	10.673	0.544
2009	15	0.09	0.031	0.347	9.332	0.552
2009	16	0.09	0.031	0.347	10.208	1.861
2009	17	0.09	0.024	0.348	9.649	0.760
2009	18	0.13	0.035	0.133	10.985	0.610
2009	19	0.14	0.052	0.266	10.124	0.844
2009	20	0.09	0.031	0.347	9.743	0.537
2009	21	0.17	0.203	0.467	10.089	0.781
2009	22	0.12	0.031	0.347	9.649	1.861
2009	23	0.09	0.029	0.994	9.840	0.619
2009	24	0.09	0.031	0.347	9.864	0.537
2009	25	0.13	0.031	0.347	9.889	1.861
2009	26	0.06	0.031	0.347	9.675	0.537
2009	27	0.05	0.031	0.347	9.871	0.537
2009	28	0.07	0.031	0.347	10.197	0.537
2009	29	0.08	0.033	0.318	10.644	0.457
2009	30	-	-	-	-	-
2009	31	0.10	0.084	0.260	11.236	0.655
2009	32	0.12	0.031	0.347	9.886	1.861
2009	33	0.06	0.031	0.347	9.502	0.537
2009	34	0.12	0.064	0.694	10.711	0.599
2009	35	0.10	0.045	0.091	10.677	0.482
2009	36	0.05	0.130	0.297	9.485	0.782
2009	37	0.07	0.031	0.347	9.534	0.537

2009	38	0.07	0.049	0.496	10.375	0.574
2009	39	0.08	0.023	0.433	11.093	0.412
2009	40	0.10	0.031	0.347	9.569	0.537
2009	41	0.06	0.031	0.347	9.085	1.861
2009	42	0.12	0.031	0.347	9.710	0.537

Source: Research Findings