THE EFFECT OF INFLATION RATE ON INTEREST RATE SPREAD IN COMMERCIAL BANKS IN KENYA

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DECLARATION

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

Signature: .... Date: ....

CATHERINE WAITHIRA KAMANU

D63/71534/2014

This research project work has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

I dedicate this work to my family, The Kamanu's.

Thank you for being always there for me and supporting me in each and every way. I am whom I am today because of your continuous support and love.

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ABBREVIATIONS

CBK	Central Bank of Kenya
GDP	Gross Domestic Product
IRS	Interest Rate Spread
CRR	Cash Requirement Reserve

ABSTRACT

The objective of the study was to examine the determinants of commercial bank interest rate spreads in Kenya. The research was carried out among the 42 commercial banks in Kenya. This research was necessitated by the fact that interest rate spreads are relatively high even after the liberalization of the interest rates in July 1990.The aim of this study was to investigate the levels and trends in interest rate spreads, to document the key macroeconomic and market determinants of interest rate spreads and to provide policy options that would help to narrow the interest rate spreads so as to enhance the efficiency of the Banking Sector and hence economic growth and development of Kenya. In particular, the study investigated the effects of inflation rate, cash requirement reserve and the central bank discount rate on interest rate spreads. Since the number of banks is not so large, all the 42 commercial banks were targeted in the study. Secondary data was used in this study which was collected from annual reports (monthly) of the 42 commercial banks for the 8 year period between 2007 and 2014. The study found that the model accounted for 66.59% of the variance in interest rate spread of the commercial banks $R^2= 0.6659$. The *F*-statistic of 60.4579 was significant at 5% level of significance, $p = 1.37E-21$. This shows that the model was fit to explain the effect of inflation rate on the interest rate spread. The results showed that inflation rate had a weak positive effect on interest rate spread of the commercial banks which was insignificant at 5% significance level while cash requirement reserve and discount rate had positive effects which were significant at 5% significance level. The study therefore concludes that inflation rate does but insignificantly influence the interest rate spread of the commercial banks. The study recommends that other factors that influence the interest rates of commercial banks be used in order to ensure that commercial banks set optimal interest rate spreads.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Financial intermediation is essential for economic development as it has implication for effective mobilization of investible resources. Banks as financial intermediaries, plays a crucial role in the operation of most economies and the major indicator of their efficiency is the interest rate spreads. Research shows that the interest rate spread is higher in Africa, Latin America and the Caribbean countries than in Organization for Economic Co-operation and Development (OECD) countries. (Randall, 1998; Brock and Rojas-Suarez, 2000; Chirwa and Mlachila, 2004; Gelos, 2006; Crowley, 2007). A higher bank interest rate spread is not only indicative of the inefficiency of the banking sector but also a reflection of the level of development of financial sector.

Results of studies strongly suggest that the determinants of bank interest rate margins vary across countries. In the developed countries, the research have shown that net interest margin have a significant positive relationship with a bank's level of capital, loan loss provisions, reserve requirements, implicit interest payments, and interest rate volatility (Ho and Saunders, 1981; Saundera and Schumacher, 2000). A study of Latin American bank spreads by Brock and Suarez, 2000 on the other hand rarely confirmed and even contradicted some of the results for developed countries. Loan losses and bank capital were instead shown to have significant negative relationships with bank spreads in some Latin American countries.

The interest rate spread, which is the difference between the deposit rates and the lending rates of the bank, in an economy, has important implications for the growth and development of such economy. Quaden (2004), puts forward that a more efficient banking system benefits the real economy by allowing higher expected returns for savers with financial surplus, and lower borrowing costs for investing in new projects that need external finance. Therefore, if the banking sector's interest rate spread is large, the potential savers will be discouraged due to the low returns on deposits and thus limit the financing for potential borrowers (Ndung'u and Ngugi, 2000).

The Central Bank of Kenya supports the determination of interest rates by market forces but it also expects the interest spread to be narrowed by market discipline especially given the relative macroeconomic stability since 2000, drop in level of nonperforming loans and reduced cash requirement. With these improvements, the banks are expected to respond by reducing their interest rate spreads; but the spreads have remained relatively high.

As a result, one way the Central Bank of Kenya is addressing this is by Communication of bank charges, interest rates and lending rates for all banks as a means of promoting market discipline and competition among players. This is done by carrying out a quarterly survey on bank charges, interest rates and lending rates and holding a launch of the same. This is aimed at educating the public to afford them an opportunity of making informed banking decisions.

1.1.1 Interest Rate Spread

Interest Rate Spread has been defined in several ways by different authors. It has been defined as a key variable in the financial system and when it is too large, it is generally regarded as a considerable impediment to the expansion and development of financial intermediation, as it

discourages potential savers with low returns on deposits and limits financing for potential borrowers, thereby reducing feasible investment opportunities and therefore the growth potential of the economy (Barajas, Steiner, and Salaza, 1999). Robinson (2002) highlights that loan rates charged by commercial banks can be separated into two major components. One is the interest rate paid to depositors and the other rate is risk premium. That difference between the deposit rate and the loan rate is commonly referred to as the spread. Interest Rate Spread has also been defined as the difference between average interest rate earned on interest earning assets (loans) and average interest rate paid on deposits (Jayaraman and Sharma, 2003).

In Kenya, the liberalization of the interest rates took place in July 1991. Financial theories suggest that after liberalization, the financial system gains efficiency in the intermediation process i.e. the gap between the lending rate and deposit rate reduces and the positive real interest rates realized as nominal interest rates increases from the government set low levels when price stability is achieved. However, in Kenya, the minimum saving rate declined from 13.5% in 1990 to 6.9% in 1995, while the maximum lending rate increased to a peak of 38.6% in 1993. As a result, the interest spread assumed a rising trend. Banks explained that the huge spread was due to macroeconomic instability characterized by high inflation, unstable foreign exchange rates, high cash reserve requirement and slow economic growth leading to high incidences of nonperforming loans.

The magnitude of this spread is said to be dependent on the determinants which determine it. Jayaraman and Sharma (2003) recognized the reasons for high interest rate spread as lack of adequate competition, scale diseconomies due to small size of markets, high fixed and operating costs, and high transportation costs of funds perceived market risks and the risk profile of the

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bankers. The central bank influences the yield on treasury bills of a country which in return affects the deposit and lending rates.

1.1.2 Inflation Rate

Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly (World Development Indicators). Higher inflation rates are associated with high interest rate spread (Demirguc-Kunt and Huizinga, 1998).

Inflation, which erodes the real value of interest margins prompts the banks to raise the spreads. Higher inflation may also be an indicator of broader economic uncertainty, for which the banks seek compensation. While the quantitative impact of inflation on spreads is found to be small, the notable decline in inflation in the region in the last few years may explain a broad reduction in spreads observed during that period.

1.1.3 Relationship between Interest Rate Spread and Inflation Rate

The theoretical relationship between interest rate spread and inflation rate could be observed through reading articles regarding monetary policy. According to Calcagnini et al. (2012a) who studied the link between inflation rate, interest rates, and guarantees found that inflation was positively related with bank interest rate spread Moore & Craigwell (2013) examined the relationship between interest rates and inflation rate in Barbado and found that interest rate was positively related with inflation.

Further, Yusoff, Rahman, & Alias (2001) examined the relationship between interest rate and inflation rate of Islamic and Conventional banking system in Malaysia and found positive relationship between inflation and interest rates. Akinlo & Owoyemi (2012) examined the

determinants of interest rate spreads in Nigeria and found a positive relationship between interest rate spread and inflation rate. Theoretically therefore, inflation rate should be positively related with interest rates.

1.1.4 Commercial Banks in Kenya

The Central Bank of Kenya Regulates the Commercial Banks and Mortgage Finance Institutions in Kenya pursuant to the provisions of the Banking Act and the Regulations and Prudential Guidelines issued thereunder. They are the dominant players in the Kenyan Banking system and closer attention is paid to them while conducting off-site and on-site surveillance to ensure that they are in compliance with the laws and regulations. There are 43 licensed commercial banks and 1 mortgage finance company. Out of the 44 institutions, 31 are locally owned and 13 are foreign owned. The locally owned financial institutions comprise 3 banks with significant shareholding by the Government and State Corporations, 27 commercial banks and 1mortgage finance institution.

Commercial banks, as financial intermediaries, play a key role in transforming deposits into financial assets. They channel funds from entities with surplus liquidity to those with deficient funds hence facilitating capital formation and trade. On the other hand, banks play a role in filtering information by screening borrowers and monitoring their activities on financial systems characterized by incomplete and asymmetric information. This in return ensures success of the financial liberalization. The banking efficiency is characterized by the level of intermediation spreads, that is, the difference between the lending and the deposit rates. These intermediation spreads have significantly being high and persistent in the developing countries despite the financial liberalization in those countries (Fry, 1995; Barajas and others, 2000; Randall, 1998).

1.2 Research Problem

Interest rate spread is a key variable in the financial system in an economy. It's considered to be a hindrance to the expansion and development of financial intermediation as it discourages potential savers with low returns on deposits and limits potential borrowers on borrowing thus reducing feasible investment opportunities and therefore the potential growth of the economy. According to Hanson and de Rezende Rocha, 1986, financial systems have shown significantly larger intermediation spreads on average compared to those in developed countries. These high interest rate spreads have been attributed to factors such as lack of bank competition, high operating costs, high inflation rates, high financial taxation and high rate of bank uncertainty which is due to the intermediate timing of loan demand and the supply of loans.

The Commercial Bank of Kenya supports the determination of the interest rates by the market forces. During the post-liberalization period, we expected the interest rate spread to narrow to reflect efficiency in gains and reduced transaction costs with the removal of distortionary policies and the strengthening of the institutional arrangements. Although this macroeconomic stability exists since 2000, the interest rate spread has remained relatively high in Kenya. This research will tend to explain some of the factors that have resulted to these high interest rate spread.

The interest of the Central Bank of Kenya to reduce the interest rate spread has to begin with the evaluation of the determinants of this spread. It therefore has to find solutions on how to control the determinants which would then be reflected in the interest rate spread.

Studies have been carried out locally on the interest rate. These studies include, Kilongosi (2005), where a study on the net bank interest margin and interest risk among commercial banks

in Kenya was done, Kilonzo (2003), did a study on the effects of changes in interest rates on credit granted by commercial banks in Kenya, Kimutai (2003) did an empirical analysis of factors contributing to high interest rates spread in Kenya lastly Njuguna & Ngugi (2000) did a study on banking Sector Interest Rate Spread in Kenya: Macroeconomic and Econometric Modeling. This study therefore seeks to fill the existing knowledge gap by seeking to establish the relationship between interest rate spread and the inflation rate in Kenya.

1.3 Research Objective

The objective of this study is to examine the effect of inflation rate on the interest rate spread in the Kenyan Commercial banks.

1.4 Significance of the Study

This study aims at giving an overview of the determinants of commercial banks interest rate spread. The information will be used by the Banking sector to better understand the impact of inflation rate on the interest rate spread. The bank management can use this information to some up with policies on how the interest rate spread can be minimized with less dependency on the macroeconomic factors determining the interest rate spreads.

This information will be useful to foreign investors who would be willing to invest in the Kenyan Commercial banks. The best time to invest would be when the interest rate spreads are very minimum as this would result in better returns.

The Central Bank of Kenya may also find the information contained herein useful in deciding which factors to control to improve the overall interest spread in the Kenyan commercial banks.

The findings from this study are very relevant to other academicians as it will add to the body of existing knowledge in finance. The findings will give the relationship between interest rate

spread and the inflation rate hence similar or related studies in the future could you this research as a reference material.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature review provides the reader with an explanation of the theoretical rationale of the problem being studied as well as what other researchers have already done and how their findings relate to the problem at hand. The main aim of conducting a literature review is to avoid duplication of information already covered by other scholars. The literature in this study was reviewed from books, working papers, journals, internet sources and periodicals. This chapter is organized as follows, in section 2.1, a brief introduction is given, section 2.2, a review of the various researchers that have been done is analyzed, section 2.3 gives the history of the interest rate spread in Kenya and section 2.4 gives the overall summary of the chapter.

2.2 Review of Theoretical Literature

The main theoretical frameworks used in interest rate literature that have provided arguments in favor of the interest rates include the loanable funds theory, the classical theory, the Keynesian liquidity preference theory

2.2.1 The Loanable Funds Theory

The proponents of this theory have been derived from the studies done by writers like Thornton (1802), Wicksell (1936) and Ohlin (1937) from Swedish school and Robertson (1937) from English school who considered the role of monetary factors and incorporated the demand for and supply of money in the theory of interest. The theory attempts to identify the approximate cause of interest rate variations by analyzing the supply of and demand for credit. It derives from the notion that savers makes a decision between consumption now consumption in the future.

The model is formulated in terms of the flow demand for and supply of loanable funds, i.e., new bonds. The flow demand for bonds constitutes planned saving plus increase in the stock of money over time. The demand for loanable funds, or flow supply of bonds, is subject to demand for investment in capital goods plus demand for loans from ones wishing to build up stock of money balances. The equilibrium interest is where investment and saving are equal (Inayat, 1993).

The theory involves the linking of the interest rate with non-saving, investment and hoarding of funds sourced from government, businessmen and consumers, on the demand side with saving, dishoarding and bank money on the supply side from private individuals and corporate bodies. Hansen asserted that the loanable funds theory like the classical and the Keynesian theories of interest are indeterminate unless the income level is already known.

2.2.2 The Classical Theory

The classical theory of interest rates, otherwise called the supply and demand theory of saving maintained that the rate of interest is determined by the supply of capital by businessmen and demand for capital by house hold. The supply of capital is governed by the time preference and the demand for capital by the expected productivity of capital.

This theory of interest rates applies the classical theory of economics in determining interest rates. It compares the supply of savings with the demand for borrowing (Oost, 2002). Using supply and demand curves the equilibrium rate is calculated by determining the curves intersection point. Thus if savings are greater than investments the interest rate drops until they reach equilibrium and vice versa, if savings are less than investment the interest rate increases

until the reward for savings encourages increased savings rates causing the market to again reach equilibrium (Rogers, 1985).

However the classical theory of interest rates fails to account for factors besides supply and demand that may affect interest rates such as the creation of funds, the importance of income and wealth and changes in the primary borrowers in an economy.

2.2.3 The Keynesian Liquidity Preference Theory

The Keynesian liquidity preference theory was proposed by the Keynes (1936). The theory originates from the Keynesian analysis of the determinant of the interest rate in money market. The main difference between this liquidity theory and the loanable fund theory is that the liquidity preference theory is expressed in terms of stock while loanable theory is expressed in terms of flow. Liquidity theory postulates that the interest rate changes, if there is excess demand or supply in the money market irrespective of the situation in the bond market (Inayat, 1993).

Keynes assumed that the excess demand for money always equals the excess demand for bonds, therefore, envisaging an equilibrium in the money and bond market. Another major assumption in the model refers to supplies of money and of bonds as exogenous. The liquidity preference theory is formulated in terms of the demand for money as a desired stock of money and the supply of money being the existing stock of money.

2.3 Determinants of Interest Rate Spreads

Interest rate spread is usually defined by the banking sector structure characteristics (bank specific) and the macroeconomic characteristics (industry specific) with some of the bank specific characteristics that have an impact on the banks spreads include; the size of the bank,

ownership pattern, the quality of the loan portfolio, capital adequacy, overhead costs, operating expenses, and shares of liquid and fixed assets (Demirguc-Kunt and Huizinga (1998), Moore and Craigwell (2000), Brock and Rojas-Suarez (2000), Gelos (2006), Sologoub (2006), and Crowley (2007).According to Chirwa and Mlachila (2004), some of the industry specific factors included; lack of adequate competition in the banking sector and consequent market power of commercial banks, the degree of development of the banking sector, and explicit and implicit taxation.

2.3.1 Inflation Rate

Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly (World Development Indicators). Higher inflation rates are associated with low interest rate spread (Demirguc-Kunt and Huizinga, 1998).

According to Cukierman and Hercowitz (1990), he found out that when the number of banking firms is finite, an increase in anticipated inflation leads to an increase in interest rate spread and when these banking firms approach infinity which is the competitive case, there is no correlation between interest rate spread and inflation because the spread tends towards marginal cost of intermediation as the number of banks increases.

2.3.2 The Discount Rate

The central bank's tool known as the discount rate is the interest rate that commercial banks pay to borrow funds from Reserve Banks. By raising or lowering the discount rate, the central bank can promote or discourage borrowing and thus alter the amount of revenue available to banks for

making loans. Commercial banks usually respond to changes in the discount rate with proportionate changes in their Prime Lending Rate.

The discount rate therefore serves as an important indicator of the condition of credit in an economy. Because raising or lowering the discount rate alters the banks' borrowing costs and hence the rates that they charge on loans, adjustments of the discount rate is considered a tool to combat recession or inflation. According to Folawewo and Tennant (2008), the discount rate is positively correlated with banking sector spreads, and is one of the largest coefficients.

2.3.3 Cash Reserve Requirements

The reserve requirement in the banking sector may constrain credit supply. Navneet et. al. (2009), observed that increase in non-interest bearing reserve requirements result in a widening of banking spread as banks face reduced liquidity.

According to Sarpong et al. (2011) and Kwakye (2010), commercial banks respond to increases in reserve requirements by increasing the margin between lending and deposit rates.

2.4 Empirical Review

Different scholars have researched on the determinants of spreads recently. For instance, Ito (2007) explored the determinants of swap spreads in Japan, Marshall and Ho (2006) investigates the determinants of swap spreads in the United Kingdom, Rockerbie (1993) examined the determinants of interest rate spreads on sovereign Eurodollar loans, and D'Amato and Pistoresi (2001) researched on the determinants of long-term yield spreads between Italian and German bonds. However, in this research, we will focus more on the determinants of commercial bank interest rate spreads.

Interest rate spread is usually defined by the banking sector structure characteristics (bank specific) and the macroeconomic characteristics (industry specific) with some of the bank specific characteristics that have an impact on the banks spreads include; the size of the bank, ownership pattern, the quality of the loan portfolio, capital adequacy, overhead costs, operating expenses, and shares of liquid and fixed assets (Demirguc-Kunt and Huizinga (1998), Moore and Craigwell (2000), Brock and Rojas-Suarez (2000), Gelos (2006), Sologoub (2006), and Crowley (2007). These studies show that the bank specific factors have a significant impact on the commercial banks' interest rate spread. In contradiction to this, Brock and Franken (2002) argues that the results of many other studies suggest that the bank specific factors are often not tightly correlated with the interest rate spreads. They implore that these could as a result of large determination of spreads at the industry level, thus making bank specific factors more relevant to other variables, such as bank profitability.

According to Valverde, *et al* (2004), only a fraction of the savings mobilized by banks can be put into investments because of the costs of intermediating between the depositors and the borrowers. Thus, an increase in the inefficiency of banks increases the costs of intermediation process hence reducing lending, investment and economic growth. These implications of the banking sector inefficiency have led to many discussions about the determinants of the banking sector interest rate spreads. Some stakeholders argue that high interest rate spreads are caused by the internal characteristics of the banks while others say that the interest rate spreads are caused by the macroeconomic, regulatory and institutional environment in which the banks operate.

Ho and Saunders (1981) while differentiating between the pure spread and the actual spread reported that pure spread was a microstructure phenomenon that was influenced by the degree of bank management risk aversion, the size of the transactions undertaken by the bank, the interest

rate elasticity and the interest rate variability. In considering the risk management by banks, risk-averse banks were found to operate with smaller spreads than the risk-neutral banks (Zarrik, 1989). Paroush (1994) further explained that risk aversion raised the bank's optimal interest rate and reduced the amount of credit supplied. Actual spread, which incorporates the pure spread, is in addition influenced by macroeconomic variables which include the monetary and the fiscal policy activities. Hanson and Rocha (1986) emphasize the role of direct taxes, reserve requirements, cost of transactions and forced investment in defining interest rate spread.

Chirwa and Mlachila (2004), in an argument to explain the failure of spreads in developing countries to converge to international levels after financial liberalization suggest that high interest rate spreads in developing countries will persist if financial sector reforms 'do not significantly alter the structure within which the banks operate'. The structure in this context refers to the industry and macroeconomic environment in the developing countries. According to Chirwa and Mlachila (2004), some of the industry specific factors included; lack of adequate competition in the banking sector and consequent market power of commercial banks, the degree of development of the banking sector, and explicit and implicit taxation.

Other studies have shown that the interest spreads tend to fall as factors such as efficiency of the legal system increases and the levels of corruption decrease. Macroeconomic factors have been shown to explain significant variation in the commercial bank interest rate spreads. Brock and Franken (2003) quote from a Moody,s report which argues that, 'macroeconomic factors are certainly among the most influential sources for variations in credit spreads.' Chirwa and Mlachila (2004) agree with Mood'y report and argue that macroeconomic instability and the policy environment have important impacts on the pricing behavior of the commercial banks.

They report that some of the macroeconomic factors that determine commercial bank interest rate spread includes; inflation, growth of output, and money market real interest rates. In the study of interest rate spreads in the Carridean, Randall (1998) includes the share of commercial bank public sector loans to her list of determinants while Brock and Franken (2002) includes interest rate uncertainty and exchange rate volatility. Tenant (2006), showed that macro-policy variables, such as public sector domestic borrowing, discount rates and Treasury Bill rates were commonly perceived to impact on commercial bank spreads as it was suggested by the stake holders in Jamaica. Crowley (2007) in his study of English-speaking African countries, he added the macro-policy variables to include broad money growth and the fiscal balance.

Many scholars have attempted to conduct a quantitative analysis of the determinants of banking sector interest rate spreads in the developing countries but due to the dearth of actual loan and deposit interest data from individual commercial banks, most have resorted to using the banks' net interest margin (NIM) as a proxy for the interest rate spread. The use of these proxies have been justified by Demirguc-Kunt and Huizinga (1998), by noting that both the ex-ant and ex post spreads can be used in the studies of bank efficiency. Ex-ante spreads are calculated from the contractual rates charged on loans and paid on deposits while ex post spreads measure the difference between banks' interest revenues and actual interest expenses. Demirguc-Kunt chose to use an ex post proxy for which individual bank data are widely available, i.e net interest margin. The isolation use of the ex post proxy is cautioned by Brock and Franken (2003), arguing that misinterpretation of interest rate spread regressions are likely to occur.

Demirguc-Kunt and Huizinga (1998) agrees to that by arguing that 'while net interest margin can be interpreted as a rough index of bank (in) efficiency, this does not mean that a reduction in the net interest margins always signals improved bank efficiency'. Suggestions were therefore put in

place by Brock and Fraken (2003) to use loan and deposit rate data from individual commercial banks in the study of interest rate spreads. However, due to unavailability of data, interest rates have been examined by use of data agglomerated by the type of operation but not by individual commercial banks.

Ho and Saunders (1981) advocate a two-step procedure to explain the determinants of bank interest spreads. A regression for the bank interest margin is run against a set of bank specific variables such as the capital asset ratio, operating expenses, non-performing loans, etc. plus time dummies in the first step. The time dummy coefficients are interpreted as a measure of the pure bank spread. These time dummy coefficients are then used as the dependent variable in the second step. In the second step, the regressors include interest rate volatility, inflation, GDP growth rate and other macroeconomic variables.

The two-step approach have been applied to various banks data by Ho and Saunders (1981) and Angbazo (1997) for US banks, by McShane and Shape (1985) for Australian banks, by Brock and Rojas-Suarez (2000) for Latin America banks (Argentina, Bolivia, Chile, Colombia, Mexico, Peru, and Uruguay) and by Saunders and Schumacher (2000) for a bank sample for US and six European countries (Germany, Spain, France, Great Britain, Italy, and Switzerland).

2.5 Summary of the Literature Review

The key findings in the literature suggests that inflation rate, interest rate volatility, bank size, the degree of managerial risk aversion, the GDP growth rate are some of the determinants of the interest rate spread. According to Demirguc-Kunt and Huizinga (1998), Moore and Craigwell (2000), Brock and Rojas-Suarez (2000), Gelos (2006), Sologoub (2006), and Crowley (2007), some of the determinants that have a significant impact on the interest rate spread are the size of

the bank, ownership pattern, the quality of the loan portfolio, capital adequacy, overhead costs, operating expenses and shares of liquid and fixed assets.

Ho and Saunders (1981) while differentiating between the pure spread and the actual spread reported that pure spread was a microstructure phenomenon that was influenced by the degree of bank management risk aversion, the size of the transactions undertaken by the bank, the interest rate elasticity and the interest rate variability. Paroush (1994) further explained that risk aversion raised the bank's optimal interest rate and reduced the amount of credit supplied.

According to Chirwa and Mlachila (2004), some of the industry specific factors included; lack of adequate competition in the banking sector and consequent market power of commercial banks, the degree of development of the banking sector, and explicit and implicit taxation.

Carridean, Randall (1998) includes the share of commercial bank public sector loans to her list of determinants while Brock and Franken (2002) includes interest rate uncertainty and exchange rate volatility. The interest rate spread in Kenya was recorded highest in 1996 (16.2%) and since then, the spread has gradually decreased with only a slit increase in 2008.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology which will be used to carry out the study. It further describes the research design, the target population and the sources of data to be used. The empirical model used is also elaborated.

3.2 Research Design

Given that the purpose of this study was to examine the relationship between interest rate spreads and inflation rate, the appropriate design was causal research design. A causal research explores the effect of one thing on another and more specifically, the effect of one variable on another (Dooley, 2007). According to Kumar (2009), causal-comparative research attempts to identify a causative relationship between an independent variable and a dependent variable.

According to Cooper & Schindler (2014), a causal-predictive study attempts to predict an effect on one variable by manipulating another variable while holding all other variables constant. A cause-effect research design (causal) is chosen because it enables the researcher to generalize the findings to a larger population. This study therefore was able to generalize the findings to all the commercial banks in Kenya. This design was appropriate in investigating the relationship between interest rate spread and financial performance of commercial banks in Kenya.

3.3 Target Population

Target population in statistics is the specific population about which information is desired. According to Ngechu (2008), a population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. Mugenda and Mugenda, (2003), explain that the target population should have some observable characteristics, to which the researcher intends to generalize the results of the study. This definition ensures that the population of interest is homogeneous.

The target population of the study was all the commercial banks in Kenya. The total number of commercial banks in Kenya has been continuously increasing with the number closing at 44 as at December 2014.

3.4 Data Collection

Secondary data was used in this study. This data will be drawn from the data and statistics of banks from World Bank and the Central Bank of Kenya. The specific information was derived from the banks' balance sheets as well as the income statements. The statistics on the lending interest rates and borrowing rates were also sought from the banks, from the Central Bank of Kenya, and from other published information in newspapers. The study covered a eight year period from 2007 through to 2014.

3.5 Data Analysis

The determinants of interest rate spread of the banks were identified using Multiple Regression Model Pearson's Correlation with the help of Microsoft Excel Spreadsheet. Interest Rate Spread was taken as the dependent variable while the independent variables which influence interest rate spread were taken as inflation rate, growth domestic product and cash requirement reserve.

The empirical estimation of equation is carried out using Pearson Correlation which was used in determining the relationship between the dependent variable and independent variables.

The relations between interest rate spread and the various determinants can be expressed by the below Model;

Interest Rate Spread = α + β1 Inflation Rate +β2 Discount Rate + β3 Cash Reserve Requirements + ε

Where;

α is the intercept (constant)

ε is the error term

β are the coefficients

Table 3.1   **Measurement of the variables**

Variable	**Measure**
Interest rate spread	The difference between interest charged on loans and the interest charged on deposits in banks = (Interest rate on Loans – Interest Rate on Deposits)
Inflation Rate	Change in the Consumer Price Index (CPI). = {(Previous CPI – Current CPI) / (Previous CPI)} * 100
Discount Rate	This is the cost faced by commercial banks when borrowing from the Central Banks. The rate is provided by the Central Bank.

Cash Requirements Reserve	This rate is provided by the Central banks

Furthermore, a correlation analysis was carried out to test the serial correlations among the independent variables.

ANOVA (Analysis of Variance) test and F-test were also carried out to show the fitness of the model used in the study.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the data analysis results and the discussion of findings. The results are

shown in terms of the descriptive analysis, correlation analysis and regression analysis.

4.2 Descriptive Statistics

The table below shows the a summary of the descriptive results for all the variables used in the

study where;

N is the number of observations,

Min is the minimum

Max is the maximum

Mean is the average value

SD is the standard deviation

Table 4.1: Summary Descriptive Statistics

	N	Min	Max	Mean	SD
Interest Rate Spread	96	8.53	13.05	10.22	0.98
Inflation Rate	96	1.85	19.72	8.76	5.22
Discount Rate	96	5.75	18.00	9.23	3.17
Cash Requirement Reserve	96	4.50	6.00	5.20	0.54

Source: Central Bank of Kenya

The results presented in Table 4.1 show that interest rate spread ranged from 8.53 to 13.05 with a mean of 10.22 and a standard deviation of 0.98. Inflation rate ranged from 1.85 to 19.72 with a mean of 8.76 and a standard deviation of 5.22. Discount rate recorded a minimum of 5.75 and a maximum of 18.00 with a standard deviation of 3.17. The ratio of cash requirement reserves ranged from 4.50 to 6.00 with a mean of 5.20 and standard deviation of 0.54.

4.3 Regression Analysis

Table 4.2 shows the regression model summary results. The results show the values of Multiple R, R Square, Adjusted R Square, and the standard error of estimate.

Table 4.2: Regression Model Summary

Regression Statistics	
Multiple R	0.8160
R Square	0.6659
Adjusted R Square	0.6548
Standard Error	0.5778
Observations	95

Source: Central Bank of Kenya

The results in Table 4.2 show that the independent variables had a high correlation with the interest rate spread (R = 0.816). The model accounted for 66.59% of the variance in interest rate spread of the commercial banks (R2 = 0.6659).

The results in Table 4.3 present the ANOVA from the regression analysis showing the significance of F-statistic.

Table 4.3 ANOVA

	df	Sum of Squares	Mean Square	F	Significance F
Regression	3	60.5697	20.1899	60.4579	1.37E-21
Residual	91	30.3894	0.3339		

		Total		94		90.9592	

Table 4.3 shows that the *F*-statistic of 60.45 was significant at 5% level of significance, *p* = 1.37E-21. This shows that the model was fit to explain the relationship between interest rate spread and Inflation rate.

Table 4.4 shows the results of the regression coefficients. The significance is shown in terms of t-values and the p-values.

Table 4.4 Regression Coefficients

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Constant	13.02891207	0.57614226	22.61405382	4.05E-39
Inflation Rate	0.007793765	0.011935478	-0.652991473	0.515408
Discount Rate	0.244905004	0.020168707	12.1428214	9.72E-21
Cash Requirement Reserve	0.962937616	0.115445517	-8.341056816	7.5E-13

The results presented in Table 4.4 show that inflation had a negative effect on interest rate spread ((β = 0.0077, p = 0.51) and this effect was insignificant at 5% level. The results also show that cash requirement reserve had a positive effect on interest rate spread (β = 0.96, p = 7.5E-13) and this effect was significant at 5% level. The results show that discount rate had a positive effect on interest rate spread (β = 0.244, p = 9.72E-21) and this effect was significant at 5% level.

The model thus becomes; Interest Rate Spread = 13.0289 + 0.00779 Inflation Rate + 0.9629 Cash Requirement Reserve + 0.244 Discount Rat

4.4 Summary and Interpretation of Findings

The study examined the effect of inflation rate on interest rate spreads. Inflation rate was measured by the change in the consumer price index. The study found that inflation rate had a weak positive effect on interest rate spread ($\beta = 0.0077$, $p = 0.51$. This means that interest rate spread is not greatly influenced by the inflation rate.

The results also show that cash requirement reserve and discount rate have a positive effect on the interest rate spread of the commercial banks. These results therefore show that inflation rate have a minimal influence on the interest rate spread of the commercial banks.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The objective of this study was to examine the effect of inflation rate on the interest rate spread in commercial banks. This chapter presents the summary of findings, conclusion, recommendations, and suggestions for further research.

5.2 Summary and Interpretation of Findings

The study sought to establish the effect of inflation rate on the interest rate spread in commercial banks in Kenya. Interest rate spread was measured as the difference between interest charged on loans and that charged on deposits. The regression results show that the model accounted for 66.59% of the variance in interest rate spread of the commercial banks (R^2= 0.6659). The ANOVA results show that the *F*-statistic of 60.4579 was significant at 5% level of significance, p = 1.37E-21, thus the model was fit to explain the effect of inflation rate on the interest rate spread.

The study found that inflation rate had a weak positive effect on interest rate spread (β = 0.00779, p = 0.5154. This means that interest rate spread is not significantly influenced by the inflation rate in the economy.

The study examined the effect cash requirement reserve on interest rate spreads. The study found that cash requirement reserve had a positive effect on interest rate spread (β = 0.9629, p = 7.5E-13). This means that interest rate spread is influenced by the cash requirement reserve ratio.

The study examined the effect discount rate on interest rate spreads. The study found that discount rate had a positive effect on interest rate spread ($\beta = 0.2449$, $p = 9.72E-21$). This means that commercial banks interest rate spread is influenced by the discount rate given by the central bank.

5.3 Conclusions of the Study

The study found that inflation rate had a positive but insignificant effect on interest rate spread. This leads to the conclusion that the interest rate spreads of commercial banks in Kenya are not significantly influenced by the inflation rate of the economy. This is consistent with some of the past studies on interest rate spreads.

The study found that cash requirement reserve had a positive effect on interest rate spread. This is also consistent with past studies which concludes that interest rate spreads of commercial banks are significantly influenced by the cash requirement reserve ratio.

The study found that discount rate had a positive and significant effect on interest rate spread. The study therefore concludes that interest rate spreads of commercial banks in Kenya are influenced by the discount rate offered by the central bank. This is consistent with the results of some of the past studies on interest rate spreads.

5.4 Limitations of the Study

The study greatly relied on secondary data. Secondary data is a reliable source of data but it is quantitative in nature and therefore it was not possible to fully interrogate the factors that influence the interest rate spreads of commercial banks as may have been the case if interviews

were conducted. To make the results more accurate, it would be good to use both the primary and secondary data in the data collection.

The study covered 8 year period beginning 2007 to 2014. The period is not long enough to show the long run effect of inflation rate on interest rate spread in Kenyan commercial banks. The variables examined in this study as control variables were are macroeconomic factors and most of the firm specific factors have not been factored in. Thus, the study may be limited in its application as the factors were not exhaustive in explaining interest rate spread.

5.5 Recommendations of the Study

5.5.1 Recommendations for Policy and Practice

The independent variables used in the study did not significantly influence the interest rate spreads of the commercial banks. The study therefore recommends that other factors that influence the interest rates of commercial banks be used in order to ensure that commercial banks set optimal interest rate spreads and thus improve their performance.

The study also recommends that the Government, through the Central Bank of Kenya should be instrumental in developing policies and regulations to guide commercial banks in setting up of optimal interest rate spreads in order to promote loan uptake as well as improve performance of these commercial banks. Increased loan uptake will lead to growth in the economy of the country.

5.5.2 Areas for Further Research

The following areas have been recommended for further reading on the project;

Firstly, a deep analysis on the effect of the economy size on the interest rate spread. Few studies have been done on the subject leaving a room for variations of the results put forward. Secondly, a study on the effect of banks competition within the specific country on the interest rate spread. Not enough studies have been conducted on the effect thus creating an opportunity for the researchers to carry out more studies as far as determinants of interest rates are concerned.

As much as the study has tried to capture all aspects of the determinants of interest rate spread, it could not fully exhaust them due to time limit, resource constraints as well as regards to the wide scope of our study.

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Appendix 1: List of Commercial Banks in Kenya

1. African Banking Corporation Limited
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
8. Chase Bank Ltd
9. Citibank N.A. Kenya
10. Co-operative Bank of Kenya Ltd
11. Commercial Bank of Africa Ltd
12. Consolidated Bank of Kenya
13. Credit Bank
14. Development Bank of Kenya
15. Diamond Trust Bank Ltd
16. Eco Bank Ltd
17. Equatorial Commercial Bank Ltd
18. Equity Bank
19. Family Bank Ltd
20. First Community Bank Ltd
21. Fidelity Commercial Bank Ltd
22. Giro Commercial Bank Ltd
23. Guaranty Trust Bank Ltd formerly Fina Bank
24. Guardian Bank Ltd
25. Gulf African Bank Ltd
26. Habib Bank A.G. Zurich
27. Habib Bank Ltd
28. Housing Finance Bank
29. Investments& Mortgages Bank Ltd
30. Jamii Bora Bank Ltd
31. K-Rep Bank Ltd
32. Kenya Commercial Bank Limited
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 (K) Ltd
40. Transnational Bank Ltd
41. UBA Kenya Ltd
42. Victoria Commercial Bank Ltd
Source: Central Bank of Kenya
Appendix 2: Research Data

YEAR	MONTH	Interest Rate Spread	Inflation Rate	Discount Rate	Cash Reserve Requirement
2007	JAN	9.43	4.63	10	6
	FEB	9.43	3.02	10	6
	MAR	9.37	2.19	10	6
	APR	9.22	1.85	10	6
	MAY	9.24	1.96	10	6
	JUN	8.96	4.07	8.5	6
	JUL	8.96	5.48	8.5	6
	AUG	8.73	5.3	8.75	6
	SEP	8.53	5.53	8.75	6
	OCT	8.97	5.38	8.75	6
	NOV	9.06	6.08	8.75	6
	DEC	9	5.7	8.75	6
2008	JAN	9.41	9.4	8.75	6
	FEB	9.47	10.58	8.75	6
	MAR	9.63	11.9	8.75	6
	APR	9.5	16.12	8.75	6
	MAY	9.56	18.61	8.75	6
	JUN	9.58	17.87	9	6
	JUL	9.36	17.12	9	6
	AUG	9.01	18.33	9	6
	SEP	9.04	18.73	9	6
	OCT	9.47	18.74	9	6

	NOV	9.47	19.54	9	6
	DEC	9.98	17.83	8.5	5
2009	JAN	9.59	13.22	8.5	5
	FEB	9.44	14.69	8.5	5
	MAR	9.78	14.6	8.25	5
	APR	9.59	12.42	8.25	5
	MAY	9.75	9.61	8	5
	JUN	9.81	8.6	8	4.5
	JUL	9.7	8.44	7.75	4.5
	AUG	9.76	7.36	7.75	4.5
	SEP	9.69	6.74	7.75	4.5
	OCT	9.75	6.62	7.75	4.5
	NOV	9.79	5	7	4.5
	DEC	9.92	5.32	7	4.5
2010	JAN	9.98	5.95	7	4.5
	FEB	10.09	5.18	7	4.5
	MAR	10.06	3.97	6.75	4.5
	APR	10.09	3.66	6.75	4.5
	MAY	9.88	3.88	6.75	4.5
	JUN	9.94	3.49	6.75	4.5
	JUL	10.44	3.57	6	4.5
	AUG	10.44	3.22	6	4.5
	SEP	10.45	3.21	6	4.5
	OCT	10.27	3.18	6	4.5
	NOV	10.41	3.84	6	4.5
	DEC	10.28	4.51	6	4.5
2011	JAN	10.6	5.42	5.75	4.5
	FEB	10.51	6.54	5.75	4.5
	MAR	10.45	9.19	6	4.5

	APR	10.45	12.05	6	4.5
	MAY	10.37	12.95	6	4.5
	JUN	10.23	14.48	6.25	4.75
	JULY	10.29	15.53	6.25	4.75
	AUG	10.25	16.67	6.25	4.75
	SEP	10.58	17.32	7	4.75
	OCT	10.38	18.91	11	4.75
	NOV	12.76	19.72	16.5	4.75
	DEC	13.05	18.93	18	5.25
2012	JAN	11.88	18.31	18	5.25
	FEB	12.27	16.69	18	5.25
	MAR	12.33	15.61	18	5.25
	APR	11.18	13.06	18	5.25
	MAY	11.7	12.22	18	5.25
	JUN	12.42	10.05	18	5.25
	JULY	11.9	7.74	16.5	5.25
	AUG	12.28	6.09	16.5	5.25
	SEP	12.33	5.32	13	5.25
	OCT	12.18	4.14	13	5.25
	NOV	9.07	3.25	11	5.25
	DEC	11.35	3.2	11	5.25
2013	JAN	11.62	3.67	9.5	5.25
	FEB	11.55	4.45	9.5	5.25
	MAR	11.19	4.11	9.5	5.25
	APR	11.48	4.14	9.5	5.25
	MAY	10.92	4.05	8.5	5.25
	JUNE	10.32	4.91	8.5	5.25
	JULY	10.43	6.03	8.5	5.25
	AUG	10.6	6.67	8.5	5.25

	SEP	10.31	8.29	8.5	5.25
	OCT	10.57	7.76	8.5	5.25
	NOV	10.28	7.36	8.5	5.25
	DEC	10.34	7.15	8.5	5.25
2014	JAN	10.48	7.21	8.5	5.25
	FEB	10.49	6.86	8.5	5.25
	MAR	10.3	6.27	8.5	5.25
	APR	10.22	6.41	8.5	5.25
	MAY	10.55	7.3	8.5	5.25
	JUN	9.8	7.39	8.5	5.25
	JUL	10.32	7.67	8.5	5.25
	AUG	9.75	8.36	8.5	5.25
	SEP	9.4	6.6	8.5	5.25
	OCT	9.36	6.43	8.5	5.25
	NOV	9.22	6.09	8.5	5.25
	DEC	9.18	6.02	8.5	5.25

Source: Central Bank of Kenya