

**THE RELATIONSHIP BETWEEN INTEREST RATE SPREAD
AND PROFITABILITY OF COMMERCIAL BANKS IN KENYA**

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DECLARATION

This Research Project is my original work and has not been submitted for degree in any other University.

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This Research Project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

This project is dedicated to my fiancée, Winnie G . Thank you for your love and support.

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All that we have and all that we are cannot be without the Graces and Blessings from our heavenly Father, The Almighty God. To Him be Glory and Honour and Praise.

TABLE OF CONTENTS

	Page
Declaration.....	i
Dedication.....	ii
Acknowledgement.....	iii
Table of contents.....	iv
List of Tables.....	vii
List of Abbreviations.....	viii
Abstract.....	ix
CHAPTER ONE.....	1
1.0 INTRODUCTION.....	1
1.1 Background.....	1
1.2 Problem Statement.....	5
1.3 Objectives of the Study.....	7
1.4 Significance of the study.....	7
CHAPTER TWO.....	8
2.0 LITERATURE REVIEW.....	8
2.1 Interest Rate Spread.....	8
2.2 Unique Characteristics of Commercial Banks.....	8
2.3 The Importance of Managing Interest Rates.....	9
2.4 Managing the Spread.....	11
2.5 Other Factors that Influence the Profitability of Commercial Banks.....	12
2.6 Measure of Commercial Banks' Profitability.....	13
2.7 Interest Rate Spread and Profitability.....	15

CHAPTER THREE.....	17
3.0 RESEARCH METHODOLOGY.....	17
3.1 Population and Sample.....	17
3.2 Data Collection.....	17
3.3 Data Analysis.....	17
3.3.1 Definition of Variables.....	18
3.3.2 Measuring Dependent Variable.....	18
3.3.3 Measuring Independent Variable.....	18
CHAPTER FOUR.....	20
4.0 DATA ANALYSIS AND FINDINGS.....	20
4.1 Introduction.....	20
4.2 Interest Rate Spread Range.....	21
4.3 Regression Results.....	21
4.4 Discussion of the Results of Estimation.....	21
CHAPTER FIVE.....	26
5.0 SUMMARY OF FINDINGS AND CONCLUSIONS.....	26
5.1 Summary of Findings and Conclusions.....	26
5.1.1 Summary of Findings	26
5.1.2 Conclusion.....	27
5.2Recommendations.....	28
5.3Limitations of the Study.....	29
5.4Suggestions for Further Research.....	30

REFERENCES.....	32
APPENDICES.....	35
Appendix 1 List of Commercial Banks.....	35
Appendix 2 Regression Tables.....	39
Appendix 3 Research Data.....	62

LIST OF TABLES

Table		Page
1.0	Regression Results for the whole industry-NIM.....	39
2.0	Regression Results for the whole industry-ROTA.....	40
3.0	Regression Results for the whole industry-ROE.....	42
4.0	Regression Results for Peer group 1- NIM.....	43
5.0	Regression Results for Peer group 1- ROTA.....	45
6.0	Regression Results for Peer group 1- ROE.....	46
7.0	Regression Results for Peer group 2- NIM.....	48
8.0	Regression Results for Peer group 2- ROTA.....	49
9.0	Regression Results for Peer group 2- ROE.....	51
10.0	Regression Results for Peer group 3- NIM.....	52
11.0	Regression Results for Peer group 3- ROTA.....	54
12.0	Regression Results for Peer group 3- ROE.....	55
13.0	Regression Results for Peer group 4- NIM.....	57
14.0	Regression Results for Peer group 4- ROTA.....	58
15.0	Regression Results for Peer group 1- ROE.....	60
16.0	Research Data.....	62

LIST OF ABBREVIATIONS

NIM:	Net Interest Margin
ROTA:	Return on Total Assets
ROE:	Return on Equity
SPSS:	Statistical Package of Social Sciences
TA:	Total Assets
NA:	Net Assets
TII:	Total Interest Income
TIE:	Total Interest Expense
PAT:	Profit After Tax
DIFFINT:	Interest Rate Spread

ABSTRACT

This research project sought out to determine the relationship between interest rate spread and profitability of commercial banks in Kenya.

To achieve this objective, three regression models were developed using interest rates and profitability data for the period between 1996 and 2002.

Interest Rate Spread was measured by the difference between lending and deposit rates. The profitability indicators used were the Return on Total Assets (ROTA), Return on Equity (ROE) and the Net Interest Margin (NIM).

The study found out that interest rate spread contributes less than 50% towards the profitability of commercial banks in Kenya. Interest rate spread explains 38.4% of profitability as measured by NIM, 40.1% when measured by ROTA and 43.3% when measured by ROE.

Variations in interest rate spread explain 14.7% of the total variations in the profitability of commercial banks when measured by NIM, 16.1% when measured by ROTA and 18.7% when measured by ROE.

For peer group 1, interest rate spread contributes less than 50% towards the profitability of commercial banks in Kenya when measured using ROTA and ROE while it contributes 77.9% when measured using NIM.

For peer group 2, interest rate spread contributes less than 50% towards the profitability of commercial banks in Kenya when measured using NIM while it contributes to more than 50% when measured using ROTA and ROE.

For peer group 3, interest rate spread contributes less than 50% towards the profitability of commercial banks in Kenya when measured using NIM and ROTA while it contributes to slightly more than 50% when measured using ROE.

For peer group 4, interest rate spread contributes less than 50% towards the profitability of commercial banks in Kenya when measured using ROTA and ROE while it contributes to more than 50% when measured using NIM.

This implies that commercial banks will no longer rely on interest rate spread as their main source of profitability. Commercial banks will in the long run rely less and less on their traditional intermediation role and instead move towards other innovative ways of raising fee income.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Commercial banks are depository financial institutions. They perform the important role of wealth creation through the intermediation process and other services that they render. According to Kashyap, Rajan and Stein (2002), commercial banks are institutions that engage in two distinct types of activities, one on each side of the balance sheet; deposit taking and lending. One of the critical concerns in the operations of a commercial bank is the management of the spread.

Like the other sectors of the Kenyan economy, performance of the banking sector has been adversely affected by the economic slump experienced in the country in the past decade. In addition to this, commercial banks have encountered stiff competition and a tighter regulatory framework. This has led to an increase in non-performing loans, increased provisions for bad loans and a sharp drop in profit margins of lending and deposit intermediation. Thygerson (1995) observes that in the past, certain regulations facilitated banks to earn interest rate on loans at market rate, while, on the other hand, paying depositors at rates below the market rate, due to interest rate ceilings. This, to some extent, guaranteed positive net interest margins. There has been the introduction of financial sector reforms that brought about liberalisation. Heavy capital requirements by the financial sector regulators have also been introduced. As a result of these factors,

commercial banks have been exposed to intense competition even from non-banking financial institutions leading to reduced intermediation profit margins.

There have been attempts at controlling the interest rates through an act of Parliament. On 6 August 2001, the Central Bank of Kenya, 2000 (Amendment) Bill received presidential assent, thus becoming law.

However, the Act has remained inoperative since then but in the 2003 budget, the Finance Minister has re-introduced the Act in various aspects. These include such stipulations as a requirement that a borrower stops repayments once it is clear that the loan is not performing and the interest charges equal the principal and the publication of minimum and maximum lending rates in the local press by the Central Bank of Kenya.

The immediate consequence of this legislation if implemented, will be a drastic reduction in the profitability of commercial banks in Kenya.

According to the initiator of the Amendment Bill, Honourable Joe Donde, it was a mistake on the part of the Government to liberalize the interest rate regime in its attempt at liberalizing the economy. It has been argued that the economic liberalization process started on a wrong footing since it was based on a need to satisfy donor conditions, which included both political and economic reforms for continued assistance.

Kenya's experience with the financial reform process shows a widening interest rate spread following interest rate liberalisation. This seems to be the response adopted by commercial banks in Kenya in an effort to sustain their intermediation profit margins.

According to Cooperman, Mills and Gardner (2000), and Mishkin (1998), the following are other factors that influence the profitability of commercial banks which include;

interest rate risk management, which is the exposure to the bank resulting from unexpected variations in interest rates;

credit risk management, which is the risk that advances given to a commercial bank's customers may never be repaid;

liquidity management; A commercial bank has to maintain sufficient levels of liquid assets so as to satisfy the needs of customers (both borrowers and depositors) and at the same time these liquid assets have to be invested so as to earn returns.

A commercial bank has also to manage its non-interest revenues as fee income provides diversification and greater stability for commercial banks' profits.

The question is, are the commercial banks in Kenya with the highest interest rate spreads necessarily the most profitable ones?

Definition of terms

Bank:

According to the Banking Act Chapter 488, a bank is any company, which carries on banking business in Kenya and includes Co-operative Bank of Kenya, but does not include Central Bank of Kenya.

Banking Business:

Any business which includes the accepting of deposits of money from the public repayable on demand or after a fixed period or after a notice, the

employing of those deposits in whole or in part by lending or any other means for the account and the risk of the person accepting the deposits and the paying and collection of cheques.

Financial Institution

A company other than a bank which in Kenya accepts deposits of money from the public payable on demand or after a fixed period or after a notice and employs these deposits in whole or in part by lending or any other means for the account and risk of the person accepting the deposits and other company carrying out financial business which the Minister of Finance by notice in the Kenya Gazette, declares to be a financial institution.

Interest Income

Interest income refers to the revenue that commercial banks earn from their core intermediation business of taking deposits and making loans.

Interest Rate Risk

The uncertainty of returns on an investment due to possible changes in interest rates over time.

Interest Rate Spread

Interest rate spread is defined by market microstructure characteristics of the banking sector and the policy environment. Ho and Saunders (1981) differentiate between the pure spread and the actual spread and observe that pure spread is a microstructure phenomenon, influenced by the degree of bank risk management, the size of bank transactions, interest rate elasticity and interest rate variability. Zarruk (1989), considering risk management by

the bank, found that risk-averse banks operate with a smaller spread than risk-neutral banks. Paroush (1994) explains that risk aversion raises the bank's optimal interest rate and reduces the amount of credit supplied. Actual spread, which incorporates the pure spread, is in addition influenced by macroeconomic variables including monetary and 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.

Risk

The uncertainty that an investment will earn its expected rate of return.

Risk Averse

The assumption about investors that they will choose the least risky alternative, all else being equal.

1.2 Problem Statement

In Kenya, in the last decade or so, the high interest rates issue has remained one of the endemic macro-economic problems that the relevant authorities have been unable to adequately deal with. Some time in 1997, economic observers and academics in Kenya pointed out that the high interest rates were regressive to the economic development of the country. Pressure mounted on the Central Bank of Kenya to act. The Central bank's response to this was that:

“ There was no quick solution to lowering interest rates unless the country was ready to accept high levels of inflation and heavily depreciated currency

with their consequences to the health of the domestic economy.”

(Opiyo, 2001).

The Central Bank therefore pursued price stability and maintained inflation at a single digit. The Central Bank's argument was that by containing inflation through reducing the amount of money in circulation, interest rates would come down of their own accord *(Opiyo, 2001)*. However, this strategy by the Central Bank failed to spur economic growth in the various sectors of the economy. In 2000, Kenya's GDP grew by a meagre 0.1 percent. High interest rates have a tendency of keeping investible funds from the private sector as commercial banks rush for the high yielding and secure government securities.

Commercial banks derive income primarily from lending and the securities portfolio. Because loans are a larger proportion of assets for large banks, interest and fees on loans are a more important source of their income. When the profit margin is threatened, banks sustain a widening spread. Faced with a rising credit risk due to distress borrowing and poor macroeconomic conditions, banks charge a higher risk premium on their lending rate.

Commercial banks in addition need to manage their operating costs as well as other non-interest income and expenses, so as to realize profits.

In Kenya, commercial banks charge relatively high interest rates on loans and pay low interest rates on deposits. This has not however saved commercial banks from banking crisis.

1.3 Objective of the Study

To determine the relationship between interest rate spread and profitability of commercial banks in Kenya.

1.4 Significance of the Study

This study will be of great importance to academicians, as it will provide a basis for further research in interest rate spread of commercial banks in Kenya. This area has not been researched on extensively in the past. The study will also add to the existing body of knowledge in commercial banks research.

Commercial banks main business is to buy and sell money. Proper bank management entails buying money and selling it for more than you bought it. According to Ritter, Silber and Udell (1997), the success or failure of a commercial bank depends on how well it buys and sells money. This study will make available to commercial bank managers useful information that will enable them make better investment and product mix decisions. The study will help to show them whether there is any relationship between profitability of commercial banks and interest rate spread. This will then help them to determine if they need to concentrate on managing the various components of interest rate spread better or they will need to diversify their attention to other factors that may impact on commercial banks profitability. This study will also provide vital information to investors and shareholders in the banking industry. It will help them evaluate how sound their investments are by looking at the investment and product mix strategies adopted by those commercial banks.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Interest Rate Spread

Empirical results show that market imperfections widen the interest rate spread. Ho and Saunders (1981) carried out a study approximating market power with bank size and found a significant difference in spread between large and small banks, where smaller banks had higher spreads than the large banks. Barajas et al. (1996) also show a significant influence of loan market power on the interest rate spread. Elkayam (1996), observes that in a competitive banking system, the interest rate spread derives solely from Central Bank variables (including the discount window loans, reserve requirement and interest on liquid assets on deposit with the Central Bank), while under a monopolistic (or oligopolistic) structure, the interest rate spread is in addition affected by elasticities of demand for credit and deposits. He also found that there was more market power in the credit market than in the deposit market. In addition, considering monetary policy, Elkayam (1996) found that an increase in money supply under elastic demand reduces the spread more in a monopolistic than in a competitive market.

2.2 Unique Characteristics of Commercial Banks:

In the management of commercial banks, there is the predominance of financial assets and liabilities, and this gives rise to an emphasis on the net interest margin.

According to Cooperman, Mills & Gardner (2000), the interest rate environment is one of the most important influences on asset /liability decisions of commercial banks.

Key determinants of success for a commercial bank include management's abilities to understand movements in interest rates and inflation, and to interpret forecasts with regard to interest rates. While all managers must respond to interest rate changes, growing globalization of financial markets creates additional requirements, e.g., they must make asset/liability decisions in reaction to changes in the value of the currency in use against other currencies.

Commercial banks derive income primarily from lending and the securities portfolio.

Because loans are a larger proportion of assets of commercial banks, interest and fees on loans are a more important source of their income.

Other sources of income include service charges on deposits and income from various non-deposit activities. On the other hand, interest expenses, especially interest on deposits, dominate total expenses.

2.3 The Importance of Managing Interest Rates

One of the most significant risks faced by financial institutions is the interest rate risk.

This is the potential variation in returns caused by unexpected changes in interest rates. Analysis of income and expense data of commercial banks shows that the largest single source of revenue is loan interest and discount. This is income from the core intermediation role of a bank (taking deposits and making loans). According to a study conducted by Bond (1971) on deposit composition and earnings of commercial banks in the United States

of America, commercial banks earn a return on their deposits and capital by investing deposit funds and capital funds in assets, a process that involves costs. Regulation of the commercial banking industry affects the returns which commercial banks realise on their deposits and capital.

In Kenya today, commercial bank managers are wary of what interest rates regulations could mean for their business. The Central Bank of Kenya (Amendment) Bill , 2000 was enacted by the parliament of Kenya and was to become effective on the 1st January 2001. Among the provisions of this bill was that the commercial banks were to ensure that the maximum interest rate charged on loans and advances is the 91-day treasury bill rate published by the Central Bank of Kenya on the last Friday of each month, plus 3%.

Although the bill never became operational, this shows that the interest rates issue is very important to bank managers. Any interest rates ceilings put by the regulators would impact heavily on commercial banks profitability. Unal (1989) analyzed two theories of interest rates ceilings and how they impact on bank stock returns. The traditional view hypothesizes that ceilings eliminate competition for deposit, decrease bank risk, and increase bank soundness. An opposing view claims that ceilings, during times of high interest rates, cause dis-intermediation, which is ultimately costly to banks. An indifference view claims that ceilings do not have any impact on bank risk since banks would be forced to pay implicit interest rates to make up for the difference between market and ceiling rates.

Jegadeesh and Pennacchi (1996) observed that management of interest rate risk is a critical factor for the success of financial institutions and corporations. Prompted by the increased volatility and deregulation of

interest rates in 1980s in Europe, a wide array of financial instruments were introduced to cater for the growing risk management needs.

2.4 Managing the Spread

Because banks interact in the financial markets by issuing financial liabilities and purchasing financial assets, one critical component of the financial management of commercial banks is managing the spread.

Spread has been defined as the shilling difference between the interest earned on assets and the interest cost of liabilities.

This spread expressed as a percentage of total assets, is called the Net Interest Margin(NIM):

$$\text{NIM} = \frac{\text{Interest on assets} - \text{Interest cost of liabilities}}{\text{Total assets}}$$

If the NIM is high enough, the bank may use it to offset the non-interest costs of the intermediation and brokerage services it provides. Most banks charge fees for these services, but unless the fees are competitive, investors may find it more economical to switch to another bank or engage in direct investment. When the spread is negative for an extended period of time, and interest costs actually exceed interest earned on assets, few banks can make up the difference with other sources of income, and many have failed as a result.

The NIM is an important indicator of the quality of asset/liability management.

2.5 Other factors that influence the profitability of commercial banks

A commercial bank's profits will be affected by the strategies that management will adopt in managing the following factors:

Interest rate risk management: This is the exposure to the bank resulting from unexpected variations in interest rates. The magnitude of the risk depends on the type of asset, maturity and timing of expected cashflows. In commercial banks, interest rate risk arises when assets and liabilities have different maturities. Losses will occur to the commercial banks when liabilities reprice more or in greater proportion than assets, resulting in a negative interest rate sensitivity gap.

Credit risk management: This is the risk of default, that is, the risk that advances given to a commercial bank's customers may never be repaid. The economic concepts of adverse selection and moral hazard provide a framework for understanding the issues that managers of commercial banks need to consider in order to reduce credit risk and make successful lending. Commercial banks in Kenya have been victims of large portfolios of non-performing loans and they result to making provisions for bad debts and bad debt write-offs and thus reducing their profits.

Liquidity management : Access to cash for commercial banks is paramount to its operations since providing liquidity to customers (both borrowers and depositors) is a primary function of the bank. Because of this, investment and financing decisions in banks are closely linked, that is, the deposit mobilization and investment/lending decisions. When a commercial bank

has substantial amounts of liquid assets, such liquid assets contribute little to Net Interest Margin (NIM) since returns of such liquid assets tend to be low. The conflict between the risk of illiquidity and a desire to have a high NIM is really the heart of liquidity management.

Managing non-interest revenues : Non-interest revenues, also called fee income is gaining more importance in commercial banks. With the net interest margin heavily dependent on interest income, fee income provides diversification and greater stability for bank profits and could also lead to higher market capitalization.

2.6 Measure of Commercial Bank's Profitability

Several measures of performance are customarily computed and analyzed for commercial banks. According to Cooperman, Mills and Gardner (2000), Cornett, Ors and Tehranian (2002), Rose (1994) and Dziobek and Parzabasioglu (1998), the following are performance measures for commercial banks;

- Operating efficiency measures

These measures comprise the following.

Net Interest Margin (NIM)

$$\text{NIM} = \frac{\text{Interest on assets} - \text{Interest cost of liabilities}}{\text{Total assets}}$$

NIM has been defined as the net interest income as a percentage of investment securities and loans. It is an important indicator of the quality of asset/liability management. The higher the NIM the more profitable the bank could be said to be. For large banks operating in very competitive markets in which they must attract funds and make investments, this competition may contribute to their lower NIM compared to smaller banks. However, if loan demands are very strong, then the banks can be in a position to raise their loan rates faster than the rates they pay on deposits and other liabilities.

Non-interest expense to non-interest revenue

$$= \frac{\text{Non-interest expense}}{\text{Non-interest income}}$$

This has been defined as non-interest expenses as a percentage of non-interest revenue.

- Profitability indicators

These indicators include the following.

Return on total assets (ROTA)

$$\text{ROTA} = \frac{\text{Net Income after Tax}}{\text{Total Assets}}$$

This has been defined as net income after taxes as a percentage of book value of total assets. It compares a measure of income to revenues and average total assets. It is viewed as a comprehensive measure of

profitability, indicating the shilling return per shilling of assets held by the bank. ROTA is determined by asset utilisation and profit margin.

Return on equity (ROE)

$$\text{ROE} = \frac{\text{Net Income After Tax}}{\text{Equity}}$$

This has been defined as net income after taxes as a percentage of book value of total equity capital.

2.7 Interest Rate Spread and Profitability

In general terms, commercial banks make profits by selling certain liabilities with certain characteristics, (e.g. liquidity, risk, duration, return) and applying the proceeds to acquire assets with a different set of characteristics. One of the critical aspects of management of commercial banks is the management of the interest rate spread. Interest rate spread is the difference between interest income and interest expense. The magnitude of a commercial bank's interest rate spread influences its profitability.

Oloo (2001) observes that commercial banks in Kenya had done extremely well in the past few years, compared with other sectors in the economy in terms of profit margins. In other words, the commercial banks were enjoying good profits in a period of economic decline. On average, interest income constitutes 70% of the total income of commercial banks in Kenya.

According to the survey, a few very profitable banks and a few heavy loss-makers dominate the financial sector in Kenya. To illustrate this point, an analysis was made of profit before tax for three commercial banks in Kenya quoted at the Nairobi Stock Exchange. For the year 2000, Barclays Bank of

Kenya made a profit before tax of Ksh 3.035 billion, Standard Chartered Bank Ksh 3.147 billion while Kenya Commercial Bank made a loss before tax of Ksh 0.733 billion. (Banking Survey, 2001).

To have funds to lend, banks must attract them in a competitive interest rate environment. They compete for funds against other banks and against other investment vehicles, from bonds to common stocks. The success of a bank is primarily due to its ability to generate returns in excess of its cost of funds. A bank tries to maintain a positive spread between its cost of funds and its returns on assets. If banks anticipate falling interest rates, they will try to invest in longer-term assets to lock in the returns while seeking short-term deposits, whose interest cost is expected to fall. When banks expect rising rates, they will try to lock in longer-term deposits with fixed-interest costs, while investing in short-term securities to capture rising interest rates.

According to Reilly and Brown (1997), the risk of such strategies is that losses may occur if a bank incorrectly forecasts the direction of interest rates. The aggressiveness of a commercial bank's strategy will be related to the size of its capital ratio and the oversight of regulators.

Commercial banks need substantial liquidity to meet withdrawals and loan demands. Banks have a short time horizon for several reasons. First, they have a strong need for liquidity. Second, because they want to maintain an adequate interest revenue-interest expense spread, they generally focus on shorter-term investments to avoid interest rate risk and to avoid getting "locked in" to a long-term revenue source. Third, since banks typically offer short-term deposit accounts, they need to closely match the maturity of their assets and liabilities to avoid taking undue risks.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

This study investigated the relationship between interest rate spread and profitability of commercial banks in Kenya.

3.1 Population and Sample

The population of study covered all commercial banks registered and licensed under the banking act and were in existence as at 31 December 2002. The period of study was from 1996 to 2002. The choice of a period of twelve years was considered reasonable because average ratios shift over time (Altman, 1968) and also due to availability of necessary data.

3.2 Data Collection

This study made use of secondary data, which was obtained from the financial statements of individual commercial banks in Kenya. These were supplemented with data from various government publications such as Central Bank of Kenya publications (Annual Bank Supervision Reports) and the Central Bureau of Statistics data (Economic Surveys).

3.3 Data Analysis

The study used financial ratio analysis. The study established the link between interest rates spread and profitability.

Correlation analysis was used to determine the nature of the relationship, while the coefficient of determination (r^2) was used to determine the strength of the relationship.

3.3.1 Definition of Variables

The general functional relationship model was expressed as:

$$\text{Profitability} = a+b(\text{spread}) \text{ or } y=a+b(x)$$

Profitability was measured using the following financial ratios;

$$\text{NIM} = \frac{\text{Interest on assets} - \text{Interest cost of liabilities}}{\text{Total assets}}$$

$$\text{ROTA} = \frac{\text{Net Income After Tax}}{\text{Total Assets}}$$

$$\text{ROE} = \frac{\text{Net Income After Tax}}{\text{Equity}}$$

3.3.2 Measuring Dependent Variable

Commercial banks profitability, denoted by y, is the dependent variable.

Profit was taken as profit after tax.

3.3.3 Measuring Independent Variable

$$x = \text{Interest rate spread}$$

Interest rate spread for the various banks was used as the independent variable in the model, which was estimated by the difference between average lending rate and average borrowing rate.

The study used the regression analysis statistical tool for data analysis. The regression function was used to establish the relationship between the dependent variable and the predictor variable including the direction of the impact. The variables used were financial ratios extracted from financial

statements. The profit indicator used was Return on Total Assets (ROTA), Return on Equity (ROE), and Net Interest Margin (NIM).

The study used the t-values to assess the significance of the relationship. The independent variable was considered to have a significant relationship with commercial bank's profitability if it had a t-value of at least ± 2 , ceteris paribus. F-statistic measured the significance of the overall functional relationship. The coefficient of determination, R squared indicated the proportion of changes in commercial banks profitability accounted for by interest rate spread.

CHAPTER FOUR

4.0 DATA ANALYSIS AND FINDINGS

4.1 Introduction

The data analysis was guided by the research objectives presented in chapter one. The body of the report only contains information that directly relates to the study objectives. The appendices however contain the other useful statistics. The main method used for data analysis is regression analysis.

This study heavily relies on the Statistical Package for Social Sciences (SPSS). The package has been used for regressing Profitability (Y) as the dependent variable and Interest Rate Spread (X) as the independent variable (Tables 1a to 15c). Regression analysis was conducted for the entire industry first and then for each of the peer groups of the banks. Correlation tests were carried out between dependent variable (Y) and the independent variable, (X) to determine the relevance of each of the variables. The analysis further carries out tests of significance on each of the variables.

Earnings ratios were computed for each institution in each year and an industry average obtained for the period under study. The earnings ratios used were; Return on Total Assets, Return on Equity and the Net-Interest Margin.

4.2 Interest Rate Spread Range

The interest rate spread for the industry ranged from 7.67% in 1996 to 18.94% in 1998. Due to data limitations, this study could not establish the range for the various peer groups.

4.3 Regression Results

The Interest Rate Spread of commercial banks was regressed against the three earnings ratios namely Return on Total Assets, Return on Equity and the Net-Interest Margin using the Statistical Package for Social Sciences (SPSS). Correlation and hypothesis testing were also estimated using the same package.

The regression model was specified in logarithmic form and as a consequence the data was also transformed into logarithmic form. This was done so as to linearise the data.

Regression analysis was conducted on the whole industry and also for each of the four peer groups. Fifteen regressions were hence estimated. Tables 1a to 15c present the results of ROTA, ROE and NIM regressions along the lines of equations (i) to (iii) in chapter three. The independent variable (Interest Rate Spread) is the same across all specifications.

4.4 Discussion of the Results of Estimation

Having established that the models are correctly specified, following the outcomes of correlation tests and tests of significance, the results obtained from regression analysis (Tables 1a to 15c) can now be fully analysed. The following relationship was yielded for the industry:

$$\text{ROTA} = \ln Y = -0.557 - 1.266X$$

$$\text{ROE} = \ln Y = 0.441 - 1.365X$$

$$\text{NIM} = \ln Y = -1.048 - 0.096X$$

The relationships shown above indicate that for all the three profitability measures, ROTA, ROE and NIM, commercial banks incurred losses. If we assume an interest rate spread that is in between the range observed in this study of 7.6% and 18.94% like 10%, then profit will be -13.217 as predicted by ROTA, -13.209 as predicted by ROE and -0.088 as predicted by NIM.

Table 1 a of regression results on Net Interest Margin indicates that the determinant identified in this model, Interest Rate Spread, accounts for 38.4% of the total variations in profitability of commercial banks, while other factors not considered in the model account for the remaining 61.6% of the total variations.

Variations in Interest Rate Spread explain 14.7% of the total variations in the profitability of commercial banks. Variations in other factors not considered in this model explain the remaining 85.3% of the total variations in the profitability of commercial banks.

Interest Rate Spread was found to be significant at 5% level, with a t-value of -0.831 compared to critical t-value of -0.8194.

Table 2 a of regression results on Return On Total Assets indicates that the determinant identified in this model, Interest Rate Spread, accounts for 40.1% of the total variations in profitability of commercial banks, while

other factors not considered in the model account for the remaining 59.9% of the total variations.

Variations in Interest Rate Spread explain 16.1% of the total variations in the profitability of commercial banks. Variations in other factors not considered in this model explain the remaining 83.9% of the total variations in the profitability of commercial banks.

Interest Rate Spread was found to be significant at 5% level, with a t-value of -0.877 compared to critical t-value of -0.348 .

Table 3 a of regression results on Return on Equity indicates that the determinant identified in this model, Interest Rate Spread, accounts for 43.3% of the total variations in profitability of commercial banks, while other factors not considered in the model account for the remaining 56.7% of the total variations.

Variations in Interest Rate Spread explain 18.7% of the total variations in the profitability of commercial banks. Variations in other factors not considered in this model explain the remaining 81.3% of the total variations in the profitability of commercial banks.

Interest Rate Spread was found to be significant at 5% level with a t-value of -0.960 compared to critical t-value of -0.280 .

Regressing the peer group data produced the following results :

Peer group 1

Tables 4, 5 and 6 of regression results on Net Interest Margin, Return on Total Assets and Return on Equity indicate that the determinant identified in this model, Interest Rate Spread, accounts for 77.9%, 36.7% and 39.2%, respectively, of the total variations in profitability of commercial banks.

Tables 4, 5 and 6 indicate that Interest Rate Spread was found to be significant at 5% level with t-values of -2.485, -0.789 and -0.853 for regressions on Net Interest Margin, Return on Total Assets and Return on Equity respectively.

Peer group 2

Tables 7, 8 and 9 of regression results on Net Interest Margin, Return on Total Assets and Return on Equity indicate that the determinant identified in this model, Interest Rate Spread, accounts for 36.5%, 61.6% and 63.5%, respectively, of the total variations in profitability of commercial banks.

Tables 7, 8 and 9 indicate that Interest Rate Spread was found to be significant at 5% level with t-values of -0.785, -1.566 and -1.645 for regressions on Net Interest Margin, Return on Total Assets and Return on Equity respectively.

Peer group 3

Tables 10, 11 and 12 of regression results on Net Interest Margin, Return on Total Assets and Return on Equity indicate that the determinant identified in this model, Interest Rate Spread, accounts for 40.9%, 22.7% and 53.2%, respectively, of the total variations in profitability of commercial banks.

Tables 10, 11 and 12 indicate that Interest Rate Spread was found to be significant at 5% level for regression results on Net Interest Margin and Return on Equity but insignificant at 5% level for regression results on Return on Total Assets. The regression results resulted to t-values of 0.896, -0.330 and -0.887 for regressions on Net Interest Margin, Return on Total Assets and Return on Equity respectively.

Peer group 4

Tables 13, 14 and 15 of regression results on Net Interest Margin, Return on Total Assets and Return on Equity indicate that the determinant identified in this model, Interest Rate Spread, accounts for 69.9%, 4.6% and 35.8%, respectively, of the total variations in profitability of commercial banks.

Tables 13, 14 and 15 indicate that Interest Rate Spread was found to be significant at 5% level for regression results on Net Interest Margin but insignificant at 5% level for regression results on Return on Total Assets and Return on Equity. The regression results resulted to t-values of 1.956, 0.065 and -0.543 for regressions on Net Interest Margin, Return on Total Assets and Return on Equity respectively.

CHAPTER FIVE

5.0 SUMMARY OF FINDINGS AND CONCLUSIONS, RECOMMENDATIONS, LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

5.1 Summary of Findings and Conclusions

5.1.1 Summary of Findings

The principal focus of this study was to determine the relationship between interest rate spread and profitability of commercial banks in Kenya. These objectives were achieved through regression analysis.

Overall, the results of the analysis discussed in the preceding chapter revealed that the Interest Rate Spread ranged from 7.67% to 18.94% for the period studied.

The determinant identified in this model, Interest Rate Spread, accounts for about 40% of the total variations in profitability of commercial banks in Kenya implying that about 60% of variations in profitability is explained by non-interest related factors. This determinant was also found to be significant at 5% level with t-values of -0.831, -0.877 and -0.960 for regression results on Net Interest Margin, Return on Total Assets and Return on Equity respectively. The coefficient of determination was 0.147, 0.161 and 0.187 for regression results on NIM, ROTA and ROE respectively, an indication that interest rate spread explains a very small proportion of profitability as indicated by 14.7%, 16.1% and 18.7% respectively. Generally, less than 20% of the commercial banks' profitability is explained by the interest rate spread leaving 80% for non-interest related factors.

The determinant identified in this model, Interest Rate Spread, accounts for 77.9% of the total variations in profitability of commercial banks in Kenya for peer group 1 while regressing NIM while it was 61.6% and 63.5% for peer group 2 for regressions on ROTA and ROE. For peer group 3 the determinant accounts for 53.2% for regression on ROE and 69.9% for regression on NIM for peer group 4.

This determinant was also found to be insignificant at 5% level for peer group 3 for regression on ROTA and for peer group 4 for regression on ROTA and ROE.

5.1.2 Conclusion

Over the past decade, interest rate spread has been diminishing as a growth area for profitability of commercial banks in Kenya. Even though there is no sufficient evidence, it is believed that this trend is likely to reduce profitability of commercial banks based on the assumption that the interest rates spread is unstable as compared to other factors, that is, non-interest factors, that contribute to commercial banks' profitability.

The results of this study give a similar view.

In the regression model specified, the profitability of commercial banks is a function of an independent component, the interest rate spread. Interest rates on which the independent component is based are determined by market forces exogenous to the bank while other factors are largely determined by the banks' internal policies.

Applying this theoretical framework to the data set collected, we find that interest rate spread does not contribute significantly to the profitability of commercial banks. The high coefficients of other factors not considered in the model indicate that those other factors other than interest rate spread, contribute more to commercial banks' profitability as compared to interest rate spread. This means that as the proportion of interest rate spread increases, the profitability of commercial banks is likely to reduce. Conversely, a greater proportion of other factors is likely to increase the profitability of commercial banks.

5.2 Recommendations

The findings of this research paper have implications on all stakeholders in the banking industry. As the other factors other than interest rate spread continue to influence profitability of commercial banks, the results of this study imply that the profitability of commercial banks will become more dependent on those other factors. Management of commercial banks may therefore need to strategize on ways of developing income-earning products that do not rely on interest rates.

Shareholders of commercial banks need to ensure management diversify the commercial banks' source of profitability from the traditional over reliance on the interest rate spread and explore other avenues of achieving high profitability.

Small banks will need to merge in order to exploit their management and production synergies, and thereby increase their other profitability sources so as to remain competitive. The results of this study indicate that profitability

of commercial banks and other factors contributing to profitability are positively related.

Decline in interest rate spread is an indicator of low borrowing leading to falling levels of investments in the economy. It is also an indicator of loan defaulters leading commercial banks having large portfolios of non-performing loans. The government will need to put in place measures and policies that enhance the spirit of borrowing among the citizens without defaulting. For example, the government may legislate laws that deal severely with loan defaulters and also enhance efficiency and effectiveness of the judicial system.

5.3 Limitations of the Study

The study was conducted using financial data derived from financial statements of commercial banks. Such data has got some obvious limitations since it is subject to manipulation by management to suit their own needs.

Data availability was a major shortcoming of this study. This was due to the fact that commercial banks started reporting interest and non-interest income separately in their financial statements in 1996 (a requirement of the Central Bank of Kenya). For this, the period of study was limited to only six years. The study would have been more comprehensive if a longer period was covered.

The study was conducted within the constraint of time and resources and therefore, other issues inherent in such a broad study could not be addressed adequately.

The financial ratios used in the study are generated from financial statements, which have been prepared under different accounting policies. This means that the consistency of the data could not be ascertained. Most banks disclose only that information that enables them to meet the minimum statutory reporting requirements and this means it is not possible to calculate certain ratios. The study was thus limited by such public information.

The study made use of data that was not adjusted for any price (inflationary) changes.

Data obtained for commercial banks' lending rates was highly summarised as an industry average for each year. It was therefore not possible to determine interest rate spread for each bank.

5.4 Suggestions for Further Research

A study on other factors that influence commercial banks' profitability other than interest rate spread remains a largely unexplored territory. In the course of this study, several gaps were identified for further research.

A researcher can conduct the same study using current cost accounting or price adjusted data. This will enable the behaviour of historical data to be compared to those of inflation-adjusted.

Given the fact that risk management is an integral area of commercial banks' operations, a research can be conducted to find out whether commercial

banks in Kenya have managed to diversify away risk through other sources of profitability other than interest rate spread. Such a study will look at the implications of other factors that influence commercial banks' profitability, other than the interest rate spread, on the different bank risks.

A study can be done on the determinants of profitability and the practice of interest risk management among commercial banks in Kenya.

REFERENCES

- Altman E (1968). "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy". *The Journal of Finance*, September Issue.
- Banking Survey, 2001. Market Intelligence. *The Business and Finance Journal*.
- Barajas, A., R. Steiner and N. Salazar. (1996). "Interest Spread in Banking: Costs, Financial Taxation, Market Power and Loan Quality in the Colombian Case, 1974-1988". *IMF Working Paper* No. 110 Washington, DC.
- Bond, R.E. (1971). "Deposit Composition and Commercial Banks Earnings". *The Journal of Finance*, vol. XXVI (1): 39-50.
- Cooperman, E., D. Mills and J. Gardner (2000). "Managing Financial Institutions: An Asset/Liability Approach". The Dryden Press Harcourt College Publishers, Orlando, FL.
- Cornett, M.M., E. Ors and H. Tehranian. (2002). "Bank Performance Around the Introduction of a Section 20 Subsidiary". *The Journal of Finance*, vol. LVII (1): 501-521.
- Dziobek, C. and C. Parzabasioglu. (1998). "Lessons from Systematic Bank Restructuring". *Economic Issue* No. 14, IMF, May.
- Elkayam ,D. (1996). "The Effect of Monetary Policy on Local-Currency Segment in Israel 1986-2000". *Bank of Israel Economic Review*, 68: 1-22.
- Hanson, J.A. and R.R. Rocha. (1986). "High Interest Rates, Spreads, and the Costs of Intermediation". *Industrial and Finance Series*, vol. 18. The World Bank.
- Ho, T.S.Y. and A.Saunders. (1981). "The Determinants of Bank Interest Margin: Theory and Empirical Evidence". *Journal of Financial and Quantitative Analysis*, XVI (4): 581-599.

- Jegadeesh, N. and G.G.Pennacchi. (1996). "The Behaviour of Interest Rates Implied by the Term Structure of Eurodollar Futures". *Journal of Money, Credit and Banking*,: 426-446.
- Kashyap, A.K. R.Rajan. and J.C.Stein. (2002). "Banks as Liquidity Providers: An Explanation for the Coexistence of Lending and Deposit Taking". *The Journal of Finance*, LVII (1): 33-74.
- Mishkin, F.S. (1998). "The Economics of Money, Banking, and Financial Markets". Addison-Wesley. 5th Edition.
- Mugendi, P.K. (2002). "The Impact of Non-interest Income on the Earnings Volatility of Commercial Banks in Kenya". MBA Unpublished Research Paper.
- Ngugi, R.W. (2001). "An Empirical Analysis of Interest Rate Spread In Kenya". Research Paper No. 106, African Economic Research Consortium.
- Oloo, O. (2001). "Are Banks Making 'Obscene' Profits?". *Market Intelligence. The Business and Finance Journal*, September: 10-16.
- Opiyo, V. (2001). "The Interest Rate Puzzle". *Market Intelligence. The Business and Finance Journal*, April/May: 37-38.
- Paroush, J. (1994). "The Effect of Uncertainty, Market Structure and Collateral Policy on the Interest Rate Spread". *Bank of Israel Banking Review*, 4: 79-94.
- Reilly, F. K. and K. C. Brown. (1997). "Investment Analysis and Portfolio Management". The Dryden Press. Fifth Edition.
- Ritter, S., W. Silber and G. Udell. (1997). "Principles of Money, Banking and Financial Markets". Addison Wesley Longman, Inc. New York.
- Roberts, G.S. (1980). "Term Premiums in the Term Structure of Interest Rates". *Journal of Money, Credit and Banking*, (1): 184-197.

- Rose, P. S. (1994). "The Rescue of Troubled Banks. Consequences for Corporate Strategies to Deal with Financial and Operating Stress". *Journal of Financial and Strategic Decisions*, vol.7., No.2 Summer.
- Thygeron J and Kenneth (1995). "Management of Financial Institutions". Harper Collins College Publishers, New York, N. Y.
- Unal, H. (1989). "Impact of Deposit Rate Ceiling Changes on Bank Stock Returns". *Journal of Money, Credit and Banking*: 206-220.
- Zarruk, R.E. (1989). "Bank Spread with Uncertainty Deposit Level and Risk Aversion". *Journal of Banking and Finance*, 13: 797-810.

APPENDICES

Appendix 1 List of Commercial Banks Operating in Kenya as at 31 December 2002

1. African Banking Corporation
2. Akiba Bank Limited
3. Bank of Baroda Limited
4. Bank of India Limited
5. Barclays Bank of Kenya Limited
6. Biashara Bank Kenya Limited
7. Bullion Bank Limited (Under statutory management)
8. CFC Bank Limited
9. Chase Bank Limited
10. Charterhouse Bank (K) Limited
11. Citibank, NA
12. City Finance Bank Limited
13. Commerce Bank Limited
14. Commercial Bank of Kenya Limited
15. Consolidated Bank of Kenya Limited
16. Co-operative Bank of Kenya Limited
17. Co-operative Merchant Bank Limited

18. Credit Agricole Indosuez
19. Credit Bank Limited
20. Daima Bank Limited
21. Development Bank Limited
22. Diamond Trust Bank Limited
23. Equatorial Bank Limited
24. Euro Bank Limited (Under statutory management)
25. Fidelity Commercial Bank Limited
26. Fina Bank Limited
27. First National Finance Bank Limited
28. First American Bank
29. Guardian Bank Limited
30. Giro Bank Limited
31. Guilders Bank Limited
32. Habib Africa
33. Habib AG Zurich
34. Habib Bank Limited
35. Imperial Bank Limited
36. Industrial Development Bank Limited
37. Investment and Mortgage Bank Limited

38. Kenya Commercial Bank Limited
39. Mashreq Bank Limited
40. Middle East Bank Limited
41. National Bank of Kenya Limited
42. National Industrial Credit Bank Limited
43. Paramount Bank Limited
44. Prime Bank Limited
45. Prudential Bank Limited (Under statutory management)
46. Reliance Bank Limited (Under statutory management)
47. Southern Credit Banking Corporation
48. Stanbic Bank Limited
49. Standard Chartered Bank Limited
50. The Delphis Bank (Under statutory management)
51. Transnational Bank Limited
52. Trust Bank (Under statutory management)
53. Universal Bank Limited
54. Victoria Commercial Bank Limited

REGRESSION RESULTS FOR THE WHOLE INDUSTRY

Regression-NIM

Table 1a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.384 ^a	.147	-.066	.03344	.147	.690	1	4	.453	1.083

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Net interest margin

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.001	1	.001	.690	.453 ^a
	Residual	.004	4	.001		
	Total	.005	5			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Net interest margin

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1.048	.128		-8.194	.001
	Difference between Borrowing and Lending Rates	-.096	.115	-.384	-.831	.453

a. Dependent Variable: Net interest margin

Regression-ROTA

Table 2a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.401 ^a	.161	-.049	.41872	.161	.769	1	4	.430	.674

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Assets

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.135	1	.135	.769	.430 ^a
	Residual	.701	4	.175		
	Total	.836	5			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Assets

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.557	1.602		-.348	.746
	Difference between Borrowing and Lending Rates	-1.266	1.444	-.401	-.877	.430

a. Dependent Variable: Return On Assets

Regression-ROE

Table 3a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.433 ^a	.187	-.016	.41213	.187	.922	1	4	.391	.717

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Equity

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.157	1	.157	.922	.391 ^a
	Residual	.679	4	.170		
	Total	.836	5			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Equity

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.441	1.576		.280	.794
	Difference between Borrowing and Lending Rates	-1.365	1.421	-.433	-.960	.391

a. Dependent Variable: Return On Equity

PEER GROUP 1-Assets Base Kshs 50 Billion and above

Regression-NIM

Table 4a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.779 ^a	.607	.508	.02583	.607	6.173	1	4	.068

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Net interest margin

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.004	1	.004	6.173	.068 ^a
	Residual	.003	4	.001		
	Total	.007	5			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Net interest margin

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	-.819	.099		-8.296	.001			
	Difference between Borrowing and Lending Rates	-.221	.089	-.779	-2.485	.068	-.779	-.779	-.779

a. Dependent Variable: Net interest margin

Regression-ROTA

Table 5a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.367 ^a	.135	-.082	.38478	.135	.622	1	4	.474

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Assets

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.092	1	.092	.622	.474 ^a
	Residual	.592	4	.148		
	Total	.684	5			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Assets

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	-.588	1.472		-.400	.710			
	Difference between Borrowing and Lending Rates	-1.047	1.327	-.367	-.789	.474	-.367	-.367	-.367

a. Dependent Variable: Return On Assets

Regression-ROE

Table 6a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-atson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.392 ^a	.154	-.058	.38215	.154	.728	1	4	.442	1.58

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Equity

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.106	1	.106	.728	.442 ^a
	Residual	.584	4	.146		
	Total	.690	5			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Equity

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.415	1.462		.284	.791			
	Difference between Borrowing and Lending Rates	-1.124	1.318	-.392	-.853	.442	-.392	-.392	-.392

a. Dependent Variable: Return On Equity

Regression-NIM

Table 7a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-atson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.365 ^a	.134	-.083	.05215	.134	.617	1	4	.476	.63

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Net interest margin

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.002	1	.002	.617	.476 ^a
	Residual	.011	4	.003		
	Total	.013	5			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Net interest margin

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	-1.041	.199		-5.218	.006			
	Difference between Borrowing and Lending Rates	-.141	.180	-.365	-.785	.476	-.365	-.365	-.365

a. Dependent Variable: Net interest margin

Regression-ROTA

Table 8a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-atson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.616 ^a	.380	.225	.39368	.380	2.452	1	4	.192	1.34

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Assets

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.380	1	.380	2.452	.192 ^a
	Residual	.620	4	.155		
	Total	1.000	5			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Assets

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.257	1.506		.171	.873			
	Difference between Borrowing and Lending Rates	-2.126	1.358	-.616	-1.566	.192	-.616	-.616	-.616

a. Dependent Variable: Return On Assets

Regression-ROE

Table 9a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-atson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.635 ^a	.403	.254	.37008	.403	2.706	1	4	.175	1.63

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Equity

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.371	1	.371	2.706	.175 ^a
	Residual	.548	4	.137		
	Total	.918	5			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Equity

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	1.177	1.416		.832	.452			
	Difference between Borrowing and Lending Rates	-2.099	1.276	-.635	-1.645	.175	-.635	-.635	-.635

a. Dependent Variable: Return On Equity

PEER GROUP 3 – Asset Base KShs 1 to 10 billion

Regression-NIM

Table 10a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.409 ^a	.167	-.041	.04435	.167	.804	1	4	.421	2.80

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Net interest margin

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.002	1	.002	.804	.421 ^a
	Residual	.008	4	.002		
	Total	.009	5			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Net interest margin

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	-1.364	.170		-8.042	.001			
	Difference between Borrowing and Lending Rates	.137	.153	.409	.896	.421	.409	.409	.409

a. Dependent Variable: Net interest margin

Regression-ROTA

Table 11a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				Durbin-atson	
					R Square Change	F Change	df1	df2		Sig. F Change
1	.227 ^a	.052	-.423	.11745	.052	.109	1	2	.773	1.44

a Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Assets

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.002	1	.002	.109	.773 ^a
	Residual	.028	2	.014		
	Total	.029	3			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Assets

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	-1.629	.459		-3.549	.071			
	Difference between Borrowing and Lending Rates	-.138	.418	-.227	-.330	.773	-.227	-.227	-.227

a. Dependent Variable: Return On Assets

Regression-ROE

Table 12a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-atson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.532 ^a	.283	-.076	.14443	.283	.788	1	2	.468	1.47

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Equity

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.016	1	.016	.788	.468 ^a
	Residual	.042	2	.021		
	Total	.058	3			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Equity

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	-.500	.565		-.885	.470			
	Difference between Borrowing and Lending Rates	-.456	.514	-.532	-.887	.468	-.532	-.532	-.532

a. Dependent Variable: Return On Equity

Regression-NIM

Table 13 a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin- atson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.699 ^a	.489	.361	.22448	.489	3.827	1	4	122	2.45

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Net interest margin

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.193	1	.193	3.827	.122 ^a
	Residual	.202	4	.050		
	Total	.394	5			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Net interest margin

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	-2.990	.859		-3.483	.025			
	Difference between Borrowing and Lending Rates	1.514	.774	.699	1.956	.122	.699	.699	.699

a. Dependent Variable: Net interest margin

Regression-ROTA

Table 14a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-atson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.046 ^a	.002	-.497	.47816	.002	.004	1	2	.954	3.16

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Assets

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.001	1	.001	.004	.954 ^a
	Residual	.457	2	.229		
	Total	.458	3			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Assets

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	-2.325	1.869		-1.244	.339			
	Difference between Borrowing and Lending Rates	.111	1.703	.046	.065	.954	.046	.046	.046

a. Dependent Variable: Return On Assets

Regression-ROE

Table 15a

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-atson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.358 ^a	.128	-.308	.36155	.128	.294	1	2	.642	3.23

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Equity

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.038	1	.038	.294	.642 ^a
	Residual	.261	2	.131		
	Total	.300	3			

a. Predictors: (Constant), Difference between Borrowing and Lending Rates

b. Dependent Variable: Return On Equity

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	-.456	1.413		-.322	.778			
	Difference between Borrowing and Lending Rates	-.699	1.288	-.358	-.543	.642	-.358	-.358	-.358

^a Dependent Variable: Return On Equity

Appendix 3 Research Data

Table 16 a

YRS	TA	NA	TI
1996	7172	875	1195
1997	7723	1015	1402
1998	8221	1111	1035
1999	8262	1132	934
2000	8500	1062	854
2001	8500	1067	739
2002	8565	1072	720

Table 16b

YRS	NIM	ROTA	ROE
1996	0.075188	0.031385	0.257304
1997	0.077364	0.029934	0.227825
1998	0.072058	0.01766	0.130664
1999	0.064951	0.006434	0.046965
2000	0.066261	0.004238	0.033913
2001	0.06611	0.004235	0.033739
2002	0.06456	0.004126	0.033678

Table 16 c

YRS	TA1	TA2	TA3
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TIE	PAT	DIFFINT
656	225	7.67
805	231	11.72
443	145	18.94
397	53	13.28
291	36	14.75
177	36	12.41
139	24	12.48

TA4 NA1 NA2 NA3 NA4

1996	60466	16105	3208	1293	6921	2080	433	105
1997	66843	18224	3432	1513	8338	1976	573	106
1998	74698	19324	3083	511	9263	2575	545	83
1999	72276	20571	3376	603	8790	2457	626	73
2000	72241	22983	3524	690	8674	2257	592	230
2001	72454	24762	3358	884	8727	2271	564	135
2002	72666	26910	3358	886	8780	2178	549	148

Table 16 d

YRS	NIM1	NIM2	NIM3	NIM4	ROA1	ROA2	ROA3	ROA4
1996	0.101	0.073	0.061	0.027	0.0444	0.03117	0.01791	0.01169
1997	0.087	0.067	0.054	0.019	0.04236	0.02696	0.02059	0.00176
1998	0.086	0.066	0.071	0.096	0.02764	0.00716	0.01711	0.01203
1999	0.082	0.065	0.066	0.095	0.00543	0.00268	0.01208	0.00613
2000	0.080	0.059	0.056	0.052	0.01115	0.00449	-0.0019	-0.0541
2001	0.084	0.053	0.061	0.048	0.01111	0.00412	-0.0018	-0.0407
2002	0.082	0.051	0.062	0.041	0.01121	0.00398	-0.0017	-0.0398

Table 16 e

YRS	TH1	TH2	TH3	TH4	TIE1	TIE2	TIE3	TIE4
1996	12812	2918	656	92	6676	1738	461	56
1997	10879	2509	558	65	5067	1291	373	36
1998	12631	3206	608	109	6228	1921	390	60
1999	9324	2373	446	89	3393	1029	222	32

2000	8765	2387	412	55
2001	9384	2627	419	78
2002	9345	2638	402	72

Table 16 f

YRS	ROE1	ROE2	ROE3	ROE4
1996	0.38796	0.2414	0.13274	0.14377
1997	0.33959	0.24866	0.12339	0.02517
1998	0.22294	0.05371	0.09679	0.0742
1999	0.04468	0.02247	0.06519	0.05081
2000	0.09289	0.04577	-0.0114	-0.1621
2001	0.09224	0.04491	-0.0106	-0.2667
2002	0.09118	0.04355	-0.0117	-0.2345

Table 16 g

YRS	INT RATE SPREAD
1996	7.67
1997	11.72
1998	18.94
1999	13.28
2000	14.75
2001	12.41
2002	12.67

3010	1027	214	19
3292	1325	214	36
3157	1312	211	29

PAT1	PAT2	PAT3	PAT4
2685	502	57	15
2832	491	71	3
2065	138	53	6
393	55	41	4
806	103	-7	-37
805	102	-6	-36
801	101	-5	-29

Table 17 Index

Total Assets
Net Assets (Shareholders' funds)
Total Interest income
Total interest expense
Profit After Tax

Years	YRS
Net Income Margin	NIM1
	NIM2
	NIM3

More than KSh. 50 b	10b to 50b	1b to 10b	Upto 1b
TA1	TA2	TA3	TA4
NA1	NA2	NA3	NA4
TII1	TII2	TII3	TII4
TIE1	TIE2	TIE3	TIE4
PAT1	PAT2	PAT3	PAT4

More than KSh. 50 billion

More than Ksh. 10 billion and less than Ksh. 50 billion

More than Ksh. 1 billion and less than Ksh. 10 billion

Return On Asset

NIM4

ROA1

ROA2

ROA3

ROA4

Return On Equity

ROE1

ROE2

ROE3

ROE4

DIFFINT

Upto Ksh. 1 billion and less

More than KSh. 50 billion

More than Ksh.10 billon and less than Ksh.50 billion

More than Ksh.1 billion and less than Ksh. 10 billion

Upto Ksh. 1 billion and less

More than KSh. 50 billion

More than Ksh.10 billon and less than Ksh.50 billion

More than Ksh.1 billion and less than Ksh. 10 billion

Upto Ksh. 1 billion and less

Interest Rate Spread