INVESTMENT IN LOANS AND TREASURY BILLS AND THE OVERALL PROFITABILITY OF COMMERCIAL BANKS

A Case of Uganda

BY

NDAGIRE SPECIOSA KIMERA
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DECLARATION

I Ndagire Speciosa Kimera, declare that this dissertation is truly my original work and has never been at any one time submitted for the award of a degree in any university and that the material that is not my original work has been clearly identified.

Signature-------------------------------------------------------------------------------------

Date----------------------------------------------------------------------------------------
APPROVAL

This is to certify that this dissertation has been submitted with my approval as a university supervisor

Signed…………………………………,

Assoc. Prof. Samuel Sejaaka

Makerere University Business School
DEDICATION

To my parents, who worked tirelessly to ensure my education.
ACKNOWLEDGEMENT

I would like to thank the management of Bank of Uganda for sponsoring me for this postgraduate degree in Business Administration. My appreciation also goes to the staff of Commercial Banking and Research Departments of the Bank, particularly Mr. Roland Mwesigwa, for their help in providing me with the necessary data without which I would not have been able to accomplish this study.

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# TABLE OF CONTENTS

DECLARATION ....................................................................................................................... ii
APPROVAL ........................................................................................................................... iii
DEDICATION ........................................................................................................................ iv
ACKNOWLEDGEMENT ....................................................................................................... v
TABLE OF CONTENTS ........................................................................................................ vi
LIST OF TABLES .................................................................................................................. x
ABSTRACT ........................................................................................................................... xi

CHAPTER ONE .................................................................................................................... 1
INTRODUCTION .................................................................................................................. 1
1.1 Background to the study ............................................................................................... 1
1.2 Statement of the problem ............................................................................................ 3
1.3 Purpose of the study ..................................................................................................... 3
1.4 Objectives of the study ............................................................................................... 4
1.5 Hypotheses .................................................................................................................. 4
1.6 Scope of the study ....................................................................................................... 4
1.6.1 Subject scope ........................................................................................................... 4
1.6.2 Geographical scope ............................................................................................... 5
1.6.3 Time scope .............................................................................................................. 5
1.7 Significance of the study ............................................................................................ 5
1.8 Conceptual framework ............................................................................................... 6
1.9 Structure of the study ............................................................................................... 7

CHAPTER TWO .................................................................................................................... 9
LITERATURE REVIEW ............................................................................................................... 9

2.0 Introduction ...................................................................................................................... 9

2.1 Volume of investment in loans and profitability of commercial banks ....................... 9

2.2 Lending rates and the profitability of commercial banks ............................................. 14

2.3 Volume of investment in Treasury Bills and commercial banks’ profitability .......... 19

2.4 Yield on TBs and commercial banks’ profitability ..................................................... 22

2.5 Commercial banks Profitability .................................................................................. 23

CHAPTER THREE .................................................................................................................. 27

METHODOLOGY .................................................................................................................. 27

3.0 Introduction ..................................................................................................................... 27

3.1 Research design ............................................................................................................. 27

3.2 Population and Sample ............................................................................................... 27

3.3 Data source and collection ........................................................................................... 28

3.4 Measurement of variables ........................................................................................... 28

3.5 Empirical Estimation Model and analysis .................................................................. 29

3.6 Verification of the assumptions of Parametric Tests .................................................. 31

3.7 Problems encountered during data collection ............................................................. 31

CHAPTER FOUR ................................................................................................................... 35

DATA ANALYSIS, PRESENTATION & INTERPRETATION OF FINDINGS .......... 35

4.0 Introduction ..................................................................................................................... 35

Table 4.1: Descriptive Statistics ......................................................................................... 376

4.2: Model Estimates and Findings .................................................................................... 37
4.2.1 Relationship between the volume of commercial banks’ investment in loans and
t heir overall profitability in terms of ROA and ROE .................................................. 38
4.2.2 Relationship between commercial banks’ lending rates and their overall profitability
in terms of ROA and ROE .................................................................................................. 39
4.2.3 Relationship between the volume of commercial banks’ investment in TBs and their
overall profitability in terms of ROA and ROE .................................................................. 39
4.2.4 Relationship between commercial banks’ yield on TBs and their overall
profitability in terms of ROA and ROE .............................................................................. 40
4.2.5 Model Prediction ......................................................................................................... 40

CHAPTER FIVE .................................................................................................................. 42
DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS ….. 42
5.0 Introduction .................................................................................................................... 42
5.1 The Descriptive Statistics ............................................................................................. 42
5.2 Volume of commercial banks’ investment in loans and their overall profitability in
terms of ROA and ROE ................................................................................................. 423
5.3 Commercial banks’ lending rates and their overall profitability in terms of ROA and
ROE .................................................................................................................................. 425
5.4 Volume of commercial banks’ investment in TBs and their overall profitability in
terms of ROA and ROE ................................................................................................. 426
5.5 Commercial banks’ yield on TBs and their overall profitability in terms of ROA and
ROE .................................................................................................................................. 47
5.6 Conclusions .................................................................................................................. 48
5.7 Recommendations ......................................................................................................... 50
LIST OF TABLES

Table 4.1: Descriptive Statistics .......................................................................................................................... 36

Table 4.2: Estimation results using ROA as the dependent variable ................................................................. 37

Table 4.3: Estimation results using ROE as the dependent variable ................................................................. 38
ABSTRACT

Investigating the determinants of profitability of commercial banks has been one of the more popular topics among researchers in banking studies. Hence, to contribute to the existing knowledge, this study sought to analyze the extent to which investment in loans and treasury bills influence the overall profitability of commercial banks in Uganda, using a data set comprising 95 observations for 15 commercial banks over the period 1998-2005. The study used a longitudinal research design, based on quantitative data generated through document analysis of commercial banks’ monthly reports and returns to Bank of Uganda (BOU). Overall Profitability was measured using two profitability ratios namely: Return on Assets (ROA) and Return on Equity (ROE) while the independent variables included: volume of loans, volume of TBs, lending rates and yield on TBs.

The study found Volume of Loans and TBs having a positive correlation while Lending Rates and yield on TBs revealed negative correlation with ROA as an element of the dependent variable. With regard to ROE, Volume of Loans, Lending rates and Volume of TBs showed a positive relationship while yield on TBs indicated a negative correlation with this element of the dependent variable. However, the results of the two analyses showed that the only variable that had a statistically significant influence in accounting for commercial banks profitability in Uganda was Volume of loans, with ROE as a measure of profitability. On the basis of the findings, it was recommended that commercial Banks in Uganda should aim at committing themselves to the implementation of strategies that would enhance credit creation and disbursement while
ensuring adequate recovery mechanisms. It was also proposed that additional efforts should be put in educating the clientele about the banks’ loan products and prudent borrowing practices in order to increase demand and hence volume of loans.
CHAPTER ONE
INTRODUCTION

1.1 Background to the study

Due to the crucial roles that banks hold in the financial sector, this research evaluated some of the variables that influence the profitability of commercial banks in Uganda. Identifying the key success factors of commercial banks enables the design of policies that may improve the profitability of the banking industry (Buyinza, 2010). The basic aim of a bank’s management is to achieve a profit (Bobakova, 2003).

In Uganda, beginning in 1990, a number of reforms were implemented in the financial sector to achieve increased efficiency and financial deepening. During the same period however, profitability of several banks deteriorated (Nanyonjo 2001). As a result, some banks experienced solvency and liquidity problems and were closed down.

Against the above backdrop, the broad aim of this study was to identify significant determinants of bank profitability in Uganda. However, its scope was delimited to volume of investment in loans and treasury bills, lending rates and yield on treasury bills as determinants of bank profitability.

Loans and advances are the strongest driver of bank assets (BOU Annual Supervision Report, December 2011). However, in the case of Uganda’s banking industry, the experiences of the 1980s and 1990s appear to have negatively impacted on this role. The ratio of Non Performing Assets to total loans fluctuated between 26% and 39% between
1995 and 1999. During the same period, Commercial banks investment in TBs grew by 417% compared to growth in loans of 40% (Bank of Uganda (BOU) Annual Supervision Report, 1999). As at December 2003, the volume of commercial banks investment in TBs stood at Shs 886 billion, exceeding the volume of loans for the same period, at Shs 847 billion (BOU Annual Supervision Reports, December 2003). Commercial banks’ balance sheets reflected a strong preference for liquid and low-risk assets, which has implications for their soundness and overall profitability (Tumusiime- Mutebile, 2005).

The Yield on a TB is a function of the interest rate, amount invested and its maturity period. The average TB reference interest rate for the five year period between Financial Years 1998/99 - 2002/03 varied within a range of 5.33% -19.28%. On the other hand, the yield from traditional lending activities is a function of the lending rate and the amount loaned. The weighted average lending rate of commercial banks for the same five year period varied within a range of 17.57% - 22.96% (BOU Annual Report, 2002/2003).

The overall profitability of an investment is established using return on investment ratios, (Van Horne, 1980). Profitability ratios include the Return on Assets (ROA) and Return on Equity (ROE). ROA compares net profits after taxes to total assets; while ROE compares net profits after taxes to the Net Worth of the firm. ROA and ROE for the commercial banking industry in Uganda has been fluctuating over the years. For example, the industry’s ROA was 4.21% in the year 2000, but had declined to 2.7% by 2002. ROE stood at 45.10% in 2000, rose to 50.85% in 2001, fell to 24.4% in 2002 and in 2004, had risen to 37.4% (BOU Annual Supervision report, 2004).
1.2 Statement of the Problem

Commercial banks in Uganda are increasingly investing in TBs as an alternate asset to loans. Volume of investment in TBs grew by 417% over the period 1995 - 1999, compared to growth of 40% in volume of loans over the same period, and in 2002 and 2003, the volume of TBs exceeded that of loans. Conversely, the average TB reference interest rate was 7.72% during the Financial Year (FY) 1998/99 and sharply rose to 19.28% in FY 1999/00; while the weighted average lending rate of commercial banks for the five year period between FY 1998/99 and 2002/03 varied within a range of 17.57% - 22.96%.

Although commercial banks in Uganda invest in Loans and TBs as alternate investment assets, there is absence of systematic understanding of the extent to which commercial bank’s volume of investment in loans and associated lending rates and volume of investment in TBs and associated yields influences the overall profitability of the banks as measured in terms of ROA and ROE.

1.3 Purpose of the Study

The study sought to establish the relationship between volume of investment in loans and associated lending rates, volume of investment in TBs and associated yields, and the overall profitability of commercial banks in terms of ROA and ROE.
1.4 Objectives of the Study

i. To establish the relationship between the volume of commercial banks’ investment in loans and their overall profitability in terms of ROA and ROE

ii. To establish the relationship between commercial banks’ lending rates and their overall profitability in terms of ROA and ROE

iii. To establish the relationship between the volume of commercial banks’ investment in TBs and their overall profitability in terms of ROA and ROE

iv. To establish the relationship between commercial banks’ yields from TBs and their overall profitability in terms of ROA and ROE

1.5 Hypotheses

1. The volume of investment in loans significantly affects the profitability of commercial banks;

2. Lending rates significantly impinge on the profitability Commercial banks;

3. Volume of investment in TBs significantly influences the profitability of commercial banks;

4. The yield on TB investments has a significant effect on the profitability of commercial banks.

1.6 Scope of the study

1.6.1 Subject scope

The researcher studied the overall profitability of commercial banks in Uganda in terms of ROE and ROA. The study covered commercial banks volume of investment in loans
and associated lending rates and volume of investment in TBs and associated yields as variables that affect the overall profitability of commercial banks. All commercial banks licensed in Uganda as at 31st December 2004 were studied.

1.6.2 Geographical scope

The Geographical area of the study covered Kampala city only, since all commercial banks have their head offices in Kampala.

1.6.3 Time scope

The time scope of the study was spread over eight years starting from 1998 to 2005. The data was collected from all commercial banks that were licensed in Uganda as at 31st December 2004.

1.7 Significance of the study

The findings contributed to identifying some of the determinants of commercial bank’s profitability in Uganda and therefore provide vital information to bank managers, for the development of effective strategies for optimized performance. Profitability of commercial banks impacts on financial sector soundness and stability. The study therefore has important policy implications that may help banking sector regulatory authorities in Uganda to come up with future policies and regulations for improving and sustaining the banking industry soundness and stability.

The outcomes of the study may also serve as useful pointers to macroeconomic issues for further investigation by Uganda’s economic authorities.
Thirdly, though similar studies have been conducted elsewhere (such as and Colombia (Barajas et al., 1999), Latin America (Brock, P.L., and Rojas-Saurez, L., 2000), Tunisia (Naceur and Goaied, 2001 and Naceur, 2003), and Europe (Staikouras, C. and Wood, G., 2003), there is no econometric study to our knowledge that has exclusively examined determinants of bank profitability within the Ugandan context; therefore the present study fills an important gap in the existing literature and improve the understanding of bank profitability in Uganda.

1.8 Conceptual Framework

Relationships between Uganda’s Commercial banks’ investment portfolio in loans and TBs and the overall profitability of the banks in terms of ROA and ROE

Commercial banks may invest in either loans or TBs as alternate investment options. Loans and TBs as alternate commercial bank assets have different risk and return profiles. Therefore, Commercial banks’ volume of loans and associated lending rates and volume of TBs and the associated yields influence the overall profitability of the commercial banks in terms ROA and ROE. This hypothesis draws insights from portfolio theories (modern and classical), which analyze the risk-reward characteristics of investment portfolios. The conceptual framework below builds upon existing literature to develop a model to evaluate the effect of commercial banks asset allocations in volume of loans and associated lending rates, and volume of TBs and associated yields, on commercial banks’ overall profitability in terms of ROA and ROE. For simplicity, the model focuses on only establishing relationships among the above named variables.
Investment in Loans and Treasury Bills and the Overall Profitability of Commercial Banks in terms of ROA and ROE

1.9 Structure of the study

To achieve its broad aim, the study is organized into five chapters and organized in the following manner. Chapter one provides the introduction, including: background to the study, Statement of the problem, purpose and objectives of the study, research hypotheses

significance of the study, scope and the conceptual framework. Chapter two provides a review of the relevant literature on related topics while chapter three outlines the methodology and tools used in the study. Chapter four provides the data analysis, presentation and interpretation of the findings. Lastly, chapter five contains a discussion of the findings, conclusions, recommendations and areas of further research.
CHAPTER TWO
LITERATURE REVIEW

2.0  Introduction

In this chapter, the researcher presents a review of the related literature pertaining to the objectives of the study. The review covers commercial banks investment in Loans, Lending rates, investment in TBs and associated yields and the profitability of commercial banks.

2.1  Volume of investment in loans and profitability of commercial banks

One of the principal activities of commercial banks is to grant loans to borrowers. Commercial banks represent the core of the credit for any national economy. In turn, the credit is part of the engine that put in motion the financial flows that determine growth and economic development of a nation. As a result, Claudiu and Daniela (2009) opine that any efficiency in the activities of commercial banks has special implications on the entire economy.

Traditionally, commercial banks have been thought of as firms which take deposits, give loans and make profit by the difference between the costs of the former and the earnings from the latter activities (Smith, Staikouras & Wood, 2003). According to Traditional theories of intermediation, banks exist because they mitigate problems that otherwise prevent liquidity from flowing directly from agents with excess liquidity (depositors) to agents in need of liquidity (borrowers) - (De Young & Rice, 2003). The problems they mitigate include information asymmetry, contracting costs and scale mismatches between
liquidity suppliers and liquidity demanders. Much of the empirical literature on commercial banking has analyzed the financial flows fundamental to the intermediation process, including; interest paid on deposits, received on loans and the resulting net margins. However, commercial banks business models have evolved over the past two decades (De Young & Rice, 2003), necessitating new models to explain the banks business operations.

As Bourke (1989) affirms, the loans market, especially credit to households and firms, is risky and has a greater expected return than other bank assets, such as government securities. Thus, one would expect a positive relationship between liquidity and profitability. For that reason, Devinaga, (2010) avers that loans are among the highest yielding assets a bank can add to its balance sheet and they provide the largest portion of operating revenue. In this respect, the banks are faced with liquidity risk since loans are advanced from funds deposited by customers. However, the higher the volume of loans extended the higher the interest income and hence the profit potentials for the commercial banks. In their study on the factors influencing the profitability of Islamic banks in eight Middle Eastern countries for the period 1993–1998 Bashir and Hassan (2003) established that large loans-to-asset ratios lead to higher profitability. This point to the need to increase loan volume, but according to the BOU Annual Supervision Report (December 2011), annual growth of loans and advances declined to 27.9% during 2011 from 35.1% in 2010.
Samy (2003) analyzed the determinants of Tunisian commercial banks profitability. The data used in the empirical work were extracted from the Central bank data base using a sample of the main deposit banks in Tunisia (10 banks) over the period 1980-2000. In all net interest margin equation specifications, the coefficients on bank loans (BLOAN) were positive and significant. This reflected that bank loans are interest-paying suggesting that they increase net interest margin. Abreu and Mendes (2002) examined banks in Portugal, Spain, France and Germany and according to the findings, the loans-to-assets ratio as a proxy for risk had a positive impact on the profitability of commercial banks.

Similarly, Kabir and Abdel-Hameed, (2002) analyzed how bank characteristics affect the performance of Islamic banks. Utilizing bank level data, the study examined the performance indicators of Islamic banks’ worldwide during 1994-2001. Controlling for macroeconomic environment, financial market structure, and taxation, the results indicated that high capital and loan-to-asset ratios lead to higher profitability. Furthermore, the empirical results from a study that explored the determinants of bank profitability in the South Eastern European Region Panayiotis et al (2006) showed that loan concentration positively affects bank profitability when profitability is measured by ROA. A positive relationship between the ratio of bank loans to total assets, LOANTA, and profitability was also found from using international database (Demirguc-Kunt and Huizinga, 1997). Fraser, et al (1974) used canonical correlation analysis to measure the relationship between the performance of banks and the profitability determinants. Among the financial statement variables included in their studies were bank costs, composition of bank deposits and composition of bank credit. They found that the factor which had the
greatest influence on bank performance was bank costs, followed by composition of deposits and composition of loans.

Abdel-Hameed. (2003) analyzed bank characteristics and how they affect the overall financial performance of Islamic banks. Utilizing bank level data, the study examined the performance indicators of Islamic banks across eight Middle Eastern countries between 1993 and 1998. Controlling for macroeconomic environment, financial market structure, and taxation, the results indicate that high capital-to-asset and loan-to-asset ratios lead to higher profitability. The data revealed that volume of loans have strong and robust link with profitability. In particular, the results showed that every dollar spent on loans generates two (2) cents of profits. The positive and statistically significant relationships serve as leading indicators of higher future profits. Intuitively, as banks become less leveraged and their loans-to-assets ratios increase, they become more profitable. Conversely, as they become highly leveraged, their vulnerability to macroeconomic shocks increases; precipitating into losses and fewer profits.

On the other hand however, while contributing to the same debate, Bourke (1989) and Molyneux and Thornton (1992), among others found a negative and significant relationship between the level of risk and profitability. This result might reflect the fact that financial institutions that are exposed to high-risk loans also have a higher accumulation of unpaid loans. These loan losses lower the returns of the affected banks. Staikouras and Wood (2003) analysed the performance of a sample of banks operating in 13 European countries. The findings of their study revealed that loans-to-assets ratio were
inversely related to banks’ return on assets. Fraser and Rose (1971 cit Rasiah, 2010) in their study used loan composition, and annual wage and salary payments (cost measures) to average assets ratio as an independent variable, and regressed them with the index of bank operating performance. Fraser and Rose found that both loan composition and cost measures had no effect on profitability. Similarly, Kabir and Abdel-Hameed’s (2002) findings using a linear equation, relating the performance measures to a variety of financial indicators the coefficient of Loan/TA variable was negative and statistically significant for ROE, ROA and profitability. In this context, the IMF (2001) notes that loan concentration in a specific economic sector or activity (measured as a share of total loans) makes banks vulnerable to adverse developments in that sector or activity implying that the quality of financial institutions, loan portfolios is closely related to the financial health and profitability of the institutions’ borrowers. In this context, monitoring the level of household and corporate indebtedness is useful.

Accordingly, changes in credit risk may reflect changes in the health of a bank’s loan portfolio (Cooper et al., 2003), which may affect the performance of the institution. Duca and McLaughlin (1990), among others, conclude that variations in bank profitability are largely attributable to variations in credit risk, since increased exposure to credit risk is normally associated with decreased firm profitability. This triggers a discussion concerning not the volume but the quality of loans made. In this direction, Miller and Noulas (1997) suggest that the more financial institutions are exposed to high-risk loans, the higher the accumulation of unpaid loans and the lower the profitability.
By and large, bank loans are expected to be the main source of revenue, and are expected to impact profits positively. In a strong economy, only a small percentage of the borrowers will default, and the bank’s profit will rise. On the other hand, the bank could be severely damaged during a weak economy, because several borrowers are likely to default on their loans. Ideally, banks should capitalize on favorable economic conditions and insulate themselves during adverse conditions.

2.2 Lending rates and the profitability of commercial banks

For the economist, interest is a price that is paid for the use of credit or money. On his part, Smith (1995) cited in Lanyero (2002) notes that interest rate is the rate of return to the supplier of financial resources (saver) for the temporary loss of freedom or compensation for parting with money. Thus, interest rate is the price paid for accessing and utilizing credit resources. According to Ertuna (2003) cited in Nakamya (2003), interest rates are a measure to price the funds (valuation of securities) or are a factor to bring supply and demand for loanable funds in balance. Patterson and Lygnerud, (1999), cited in Nakamya (2003) mention that the spread of interest rates have been exceptionally high in Uganda, reflecting high levels of perceived risk, low competition among banks and inefficiency in the system. According to the IMF country report (2003) cited in Nakamya (2003), the spreads in interest rates have ranged between 15 to 20% since 1994 while real lending rates have varied between 10 to 25 since 1996

Lending rates constitute some of the important macroeconomic determinants of bank performance. To emphasize this point, the IMF (2003) observes that interest rates are
important elements in determining the demand for financial assets and as an element of cost of capital; it influences the demand and allocation of credit. In the context of this study, the researcher hypothesized that lending rates are expected to have a positive relationship with profitability of commercial banks in Uganda. In other words, loan pricing has a critical impact on bank’s profitability and its willingness to accept higher risks. Anna and Vong (2006) contend that in the essence of lend-long and borrow-short argument, banks, in general, may increase lending rates sooner by more percentage points than their deposit rates. In addition, the rise in real interest rates will increase the real debt burden on borrowers. This, in turn, may lower asset quality, thereby inducing banks to charge a higher interest margin in order to compensate for the inherent risk.

Ogunleye (2001) argues that when interest rates rise or fall, it exerts an impact on banks’ profits through adjustment to revenues; and this comes about in two ways. First, an increase in market rates raises the amount of income a bank can earn on new assets it acquires. However, the speed with which revenues adjust to new market conditions depends on how long it takes for the average asset’s interest rate to adjust to current market rates (Flannery, 1980). Secondly, the effect could come through impact on the bank’s decisions about which loans and securities to purchase and how much to hold in cash reserves (apart from regulatory requirement). In time of rising rates, rates on loans are usually higher than rates on marketable securities; hence banks are likely to book more loans to earn higher incomes than buying securities.
Previous studies have revealed a positive relationship between interest rate and bank profitability. For instance, empirical evidence from Molyneux and Thornton (1992) and Demirgüç-Kunt and Huizinga (1999) indicate that high interest rates are significantly associated with higher bank profitability. Demirgüç-Kunt and Huizinga (1999) emphasize that this relationship is more so in developing countries. Kabir and Abdel-Hameed, (2002) note that for conventional banks, high real interest rate generally leads to higher loan rates, and hence higher revenues. Using a panel data set comprising 1255 observations of 154 banks over the 1980-2006 period, and macroeconomic indices over the same period, Uhomoibhi’s (2009) regression results revealed interest rate as one of the significant macroeconomic determinants of bank profitability in Nigeria. While contributing to the debate of commercial banks profitability, Uhomoibhi’s (2009) findings also indicated that interest rates have a significant positive impact on bank profitability in Nigeria; and this finding tallies with those of Molyneux and Thornton (1992) and Demirgüç-Kunt and Huizinga (1999).

While the above studies indicate a positive relationship between interest rate and bank profitability, Naceur (2003) identified a negative relationship. In the same way, Arestis and Panicus (1993) maintain that high interest rates reduce the aggregate demand for funds which lowers aggregate demand hence a reduction in investment. Accordingly, Nanyonjo (2001) warns that while moderate increases in the lending interest rate would normally be associated with a higher volume of lending; increasing the rate beyond a certain level would reduce the expected return to the bank due to two actions. First, the quality of the pool of borrowers would change adversely in favor of those with high
default risks. Second, a higher interest rate induces firms to undertake the more risky investments because they are associated with higher expected profits. Thus, since the bank cannot directly observe the actions of the borrowers, it sets an interest rate that maximises its expected profits, rather than one that clears the market, and attracts borrowers with high probabilities of repayment to apply for loans (Nanyonjo, 2001). In a similar way, a bank with an excess supply of loanable funds must assess the profitability of the loans that a lower interest rate will attract, and in equilibrium no bank will lower its loan rate (Nanyonjo, 2001).

In view of the foregoing review, Indranarain (2009) mentions that the impact of interest rate on bank’s profits operates via two main channels of the revenues side. First, a rise in interest rate scales up the amount of income a bank earns on new assets it acquires. But, the speed of revenue adjustment will be a function of speed of interest rate adjustment. Second, the effect hinges on the amount of loans and securities held. Indeed, in case of rising interest rates, rates on loans are higher than marketable securities so that strong incentives prevail for banks to have more loans rather than buying securities. In this regard, Barajas, et al. (1999) affirms that banks tend to offset the cost of screening and monitoring due to bad loans/or the cost of foregone interest revenue by charging higher lending rates. These responses are likely to impact on banking sector’s performance. Indeed, Randell (1998) finds support for the positive and significant association between poor bank performance and provisions for doubtful debts in the Caribbean countries. Barajas, et al., (1999; 2000) further confirm that the cost of poor quality assets is shifted to bank customers through higher spreads in the Colombian financial system. However,
Brock and Rojas-Suarez (2000) find a significant negative relationship in the cases of Argentina and Peru.

In Uganda, by the late 1980s, Uganda Commercial Bank’s non-performing loans accounted for about 75 percent of its total loan portfolio. Although the protracted economic crisis, disruption caused by war and the weak legal system made the lending climate for the banks in Uganda very difficult and undoubtedly made some contribution to the bad debts of the public banks, Brownbridge (1998) maintains that the scale of the problem was attributable to the poor lending practices. Of late however, Mugume (2006) reports that the banking industry in Uganda has been strengthened in many important aspects over the last few years and is now stronger and vibrant albeit still at low levels of development compared to other developing countries. According to Mugume, Uganda’s banking systems are characterized not only by low levels of intermediation but also by high interest rates, wide intermediation spreads, and substantial bank profitability. High lending interest rates, whether caused by inefficiency or lack of competition, do more than add to borrowers’ costs. Although financial deepening has shown positive trend in part through effective supervision and enforcement of prudential regulations in the banking system, increased frequency of on-site inspections and surveillance, Mugume (2006) points out that this performance is heterogeneous as several of the smaller banks are still riddled with poor lending practices.
2.3 Volume of investment in Treasury Bills and commercial banks’ profitability

Treasury Bills familiarly known as T-Bills, are negotiable non-interest bearing securities issued by governments, with original maturities of three months, six months and one year. They represent direct obligation of the government and therefore have no credit risk. When the government wants to borrow to meet its budgetary needs, treasury bills are then issued. Treasury bills are particularly important to, and are also popular with commercial banks (Ezema, 1993). Moreover, treasury bills count as liquid assets of commercial banks while at the same time earning handsome interest rate for the holders. And as such, a treasury bill is a secured means of holding short-term assets as Ezema, (1993) rightly asserts. They are regarded as investments that carry low inherent credit risk. Put in simple terms, T-Bills are arguably the safest form of indigenous investment available.

Treasury bills dominate the money market in Uganda, accounting for the largest portion of all government domestic debt (Musinguzi and Katarikawe, 2002). Its initiation in 1992 through an auction system provided the minimum market base necessary to facilitate the transition from direct to indirect monetary control. The 91-day TBs were offered to banks and to the non-bank institutions on a fortnightly basis, but the frequency later increased to a weekly basis. In January 1993, the term structure of the TB market was lengthened, with the weekly auction being augmented by a monthly allocation of 182-day and 273-day TBs and later by the 364-day TBs in December 1994. This continued until July 2000 when the frequency of the 182-, 273-, and 364-day TBs increased from a monthly to a weekly basis. Due to the enormous need to mop up excessive liquidity, the
The stock of TBs more than doubled from Shs 206 billion as at end-June 1999 to Shs 486 billion as at end-December 2000 (Musinguzi and Katarikawe, 2002).

Before 1992, Treasury bills had been used as a fiscal instrument to mobilize funds for the budget, and commercial banks had not been allowed to hold them. This new arrangement allowing banks to hold Treasury bills helped to improve BOU’s liquidity management. In order to boost their incomes and profits, commercial banks have tended to invest more in relatively risk-free financial assets such as Treasury bills and foreign exchange than in credit extension. Open market-type operations conducted through Treasury bills (TB), Bank of Uganda bills and repurchase agreements (repos) are the major monetary policy instruments. Of the three, the TB is the most commonly used (Musinguzi and Katarikawe, 2002). During the period 1993-1998, the movements in interest rates for the Uganda 91-day Treasury bill indicated volatility in interest rates. While the observed fluctuations may partly be explained by the liquidity position of commercial banks (which are the major participants in the TB market), they have largely been attributed to variations in the weekly issuance of Treasury Bills according to the desired developments in reserve money, as Nanyonjo (2001) reveals.

Ogunleye (1995) reports that among other factors, bank profitability is affected by monetary authorities’ policy measures on liquidity ratios and according to him, an increase in the stipulated liquidity ratio exerts a negative influence on bank profitability. This is so because banks would have to hold some of their assets in treasury bills and certificates, the returns of which are quite below market rates. In his study, Short (1979),
used both central bank discount rates and the interest rates on long-term government securities. He found that these hypotheses had a significant positive relationship with profitability. Short’s hypothesis was further tested by Bourke (1989) and Molyneux and Thornton (1992). The findings of these two studies also found that investment in government securities had a significant positive relationship with the profitability of commercial banks.

According to Rehana and Rizwana (1998) an increase in bank investment in the government securities and treasury bills, is expected to affect the bank advances positively as it curtails the supply of advances in the open market. The level of economic activity is expected to make a positive impact on bank advances as it not only increases the demand for advances but the supply of loanable funds as well. According to Rehana and Rizwana (1998) study, although statistically insignificant the impact of bank (statutory) investment in government treasury bills and securities on the spread was positive. These results show that the direct impact of a tight monetary policy on the spread was negligible.

Uremadu’s (2009) model depicted the liquidity structure of the Nigerian financial system as represented by components of money market instruments which comprised treasury bills(TBs, treasury certificates (TCs), eligible development stocks (EDS), certificate of deposits(CDs), commercial papers (CPs) and bankers acceptance (BAs). Regression results indicated that commercial papers had the greatest significant impact on bank liquidity (proxy for financial system liquidity) in Nigeria, followed by TCs, EDS and TBs.
in descending order of magnitude. As such, portfolio management as an aspect of treasury management function involves a decision to invest excess cash generated, the amount to be invested, and the type of securities, or placements in which the funds are to be invested (Ezema, 1993). The type of security in which cash is to be invested will depend on the expected cash flow patterns and the certainty of these cashflows. If future cashflow pattern are certain, the portfolio manager can time the maturities of securities to coincide with dates when funds are needed. To illustrate, if there is a fixed deposit which is certain to mature in three months’ time, part of the portfolio investment can be tailored to mature in three months’ time. In such a case, the cash will be invested in treasury bills; interbank placements may be preferred, if a reasonable amount of deposit is on call, such as seven days’ call (Ezema, 1993). If, however, it is expected that a six months or three months deposit will be rolled over, the portfolio may be invested in a less marketable, but more earning-yielding assets and perhaps, more risky securities with a longer-term maturities like commercial papers, development stocks, treasury certificates of 180-day or 360-day maturities and bankers acceptances (Ezema, 1993 and Uremadu, 2006). When future cashflow is uncertain, the most important factor in security purchased becomes marketability as well as ability to easily convert into cash otherwise viewed as liquidity.

### 2.4 Yield on TBs and commercial banks’ profitability

A TB is a promise to pay the amount of its face value on a stated maturity date. The TBs are priced at a discount. The return to the investor is the difference between the purchase price and par value. Since there are no interim coupon payments on TBs, the market price is necessarily less than its face value. The yield on a TB is defined to be that rate of
return which produces the face value from an investment equal to the market price in the
time remaining until maturity. (Nelson & Siegel 1985).

The yield is given by the formula: \[ \frac{F - P}{P} \times \frac{365}{t} \]

where

F = Face value of the TB
P = Price
t = actual number of days remaining to maturity.

(Department of Finance, Canada, at http://www.fin.gc.ca/invest/bondprice-e.html)

2.5 Commercial banks’ Profitability

To begin with profitability is simply the difference between total revenue and total cost
(Devinaga, 2010). Thus, the factors which affect commercial bank profitability would be
those which affect banks’ revenue and costs. Essentially, the determinants of bank
profitability are those characteristics of a macro economy that affect the profitability of
the banks operating within it. They vary in their respective levels of significance from
one economy to another and cannot be directly controlled by individual shareholder and
managerial decisions and according to Ogunleye (2001), these are described as
uncontrollable or external factors that influence bank performance

Specifically, Gambs (1977) argued that:

“Extremely bad management may not prove fatal to a bank until adverse
economic conditions lead to unexpected capital outflows or loan losses.
Thus, even if every bank which failed is judged to have suffered from
mismanagement or fraud, or operated in an overpopulated banking
market, it may well be the case that adverse economic conditions will be the proximate cause of many bank failures.”

Lending credence to Gambs’ assertion, Tsiko (2006) opined that difficult constraints facing an economy can adversely impact on the profitability of its banks. He cited Zimbabwe, in which commercial banks downsized their operations owing to difficult economic challenges.

Over the past several years, substantial research effort has gone into measuring the efficiency of financial institutions. Indeed, the determinants of banks’ profitability have long been a major focus of banking research in many countries around the world. The literature classifies the determinants of profitability as internal and external. Internal determinants concern banks’ specific characteristics and include measures like bank size, asset quality, capital ratios, liquidity and operational efficiency. External determinants are not related to bank management, but reflect financial industry (concentration, financial market development, and banking sector development) and macroeconomic environment such as inflation rate, interest rate and growth rate in GDP (Olson, and Zoubi, 2008).

Studies have found that inefficiencies are quite large, on the order of 20% or more of total banking industry costs and about half of the industry’s potential profits. As Berger and Mester, (1997), rightly point out, there is no consensus on the sources of the differences in measured efficiency. Therefore, despite the very significant research effort that has been mounted over the last few years examining the efficiency of financial institutions, there is as yet little information and no consensus on the sources of the
substantial variation in measured efficiency. In other words, these sources remain a “black box” (Berger & Mester, 1997). This study sought to get inside the box by examining the relationship between commercial banks’ investment in loans and TBs and the overall profitability of the banks. Although there are several quantitative methods used in assessing the performance of commercial banks in terms of profitability (Claudiu and Daniela 2009), the major profitability indicators that were considered relevant to this study were Return on Assets (ROA) and Return on Equity (ROE).

Panayiotis, Matthaios, and Christos, (2006) point out that in the literature, bank profitability, typically measured by the return on assets (ROA) and/or the return on equity (ROE), is usually expressed as a function of internal and external determinants. In analysing how well any given bank is performing, it is often useful to contemplate on the return on assets (ROA) and the return on equity (ROE) as used by Bourke (1989) and Molyneux and Thornton (1992). The choice of the profitability ratio will depend on the objective of the profitability measure. The ROA is primarily an indicator of managerial efficiency. It indicates how capable the management of the bank has been in converting the institution’s assets into net earnings. The ROA is a valuable measure when comparing the profitability of one bank with another or with the commercial banking system as a whole. A low rate might be the result of conservative lending and investment policies or excessive operating expenses. If time and savings accounts make up a large proportion of the total deposits, interest expenses may be higher than average. Banks can then tailor-make lending and investment policies to generate more income and to increase their
profits. Unlike the ROE, the ROA cannot be subject to an increase of higher borrowings, as debt will increase the level of assets as well. The higher the ratio the better the profits.

On the other hand, ROE is a measure of the rate of return flowing to the bank’s shareholders (Devinaga, 2010). The ROE ratio is calculated by dividing a bank’s net income by its average total equity, that is common and preferred stock, surplus, undivided profits, and capital reserves. This measure of profitability is the most important for a bank’s stockholders, since it reflects what the bank is earning on their investment. The higher the ratio the better, as it reflects a more effective utilisation of shareholders’ funds. However, it is possible for this ratio to be increased as a result of an increase in liability (such as bank borrowings) to generate net income while shareholders’ funds remain unchanged. In the context of ROE, consistent with Bourke (1989), and Molyneux and Thornton (1992), total equity is assumed to include both shareholders’ capital and reserves.

Thus, since ROA and ROE have been used in most structure-performance studies, they were included in this study to reflect commercial banks’ ability to maximize profits basing on investment in loans, lending rates, investment in treasury bills and the associated yields for licensed commercial banks that were operating in Uganda from 1998 to 2005.
CHAPTER THREE
METHODOLOGY

3.0 Introduction
This chapter describes the framework within which the research was conducted. The chapter presents the Research design, population and sample, data source and collection, measurement of variables, empirical estimation model and analysis methodology. The chapter also highlights the problems encountered during data collection.

3.1 Research Design
To examine the relationships between commercial banks’ investment in loans and TBs and the overall profitability of commercial banks in Uganda, the researcher used a longitudinal research design covering a period of eight years from 1998 to 2005.

3.2 Population and Sample
3.3 Data source and collection

The data used was retrospective (secondary) quantitative data obtained through document analysis of commercial banks monthly reports and returns to Bank of Uganda (BOU); Commercial Banking and Research Departments. This data provided a detailed and comprehensive picture of quarterly credit flows and balance sheet positions over the years studied. The extracted variables included: volume of loans, lending rates, volume of treasury bills, associated yields from TBs and overall profitability in terms of ROA and ROE.

Overall, the data set comprised of 95 observations from the fifteen (15) commercial banks.

3.4 Measurement of variables

In the study, commercial banks’ volume of investment in loans, associated lending rates, volume of investment in TBs and associated yields were the independent variables, while overall profitability of commercial banks in terms of ROE and ROA was the dependent variable. In choosing the proxies for bank profitability, namely ROA and ROE, the researcher followed the literature.

Overall Profitability for each commercial bank was measured using two profitability ratios that relate profits to investments: Return on Assets (ROA) and Return on Equity (ROE). ROA was measured as net profits after taxes divided by total assets. It shows the profit earned per shilling of assets.
On the other hand, ROE was measured as net profits after taxes divided by Net Worth of the firm. It shows the profit earned per shilling of equity. The advantage of using profitability ratios as pointed out by Devinaga (2010) is that they are inflation invariant, that is, they are not affected by changes in price levels. Both measures have been used in most structure-performance studies and are used here to reflect the bank’s ability to generate income.

**Volume of Loans was measured as** the amount of money in Uganda Shillings (UGX) invested in loans per annum by each commercial bank while the **Lending rate was measured as** an annual weighted average for each commercial bank, in percentage. **Volume of TBs was measured by** the amount of money in Uganda Shillings (UGX) invested in TBs per annum by each commercial bank and the **Yield on TBs was measured as** the ratio of income from TBs to Volume invested, expressed as a percentage per annum.

### 3.5 Empirical Estimation Model and analysis

Retrospective data (Submitted to BOU between 1998 to 2005) was captured and analyzed using statistical package for social scientists (SPSS 13). In particular, in analyzing the data, the researcher used a multiple regression technique to establish the extent to which the dependent variable is influenced by the independent variables.

To empirically ascertain the influence of loans and treasury bills as significant macroeconomic determinants of bank profitability in Uganda for the period under review,
A multiple linear regression model was used. The justification for using this model is that it is widely used in the literature and produces good results (Bourke, 1989 and Bashir, 2000). The majority of studies on bank profitability, such as Short (1979), Bourke (1989), Molyneux and Thornton (1992), Demirguc-Kunt and Huizinga (2001), Goddard et al. (2004) and Athanasoglou et al. (2005) use linear models to estimate the impact of various factors that may be important in explaining bank profits. In order to eliminate the possibility of obtaining spurious correlations, the researcher ensured that all the variables that were incorporated into the predicted model are clearly established in the literature. Regression estimates were derived using the simple Ordinary Least Squares (OLS) method (Koutsoyiannis, 2003 and Greene, 2004). Indeed, Koutsoyiannis (2003) statistically demonstrates that least squares estimates are the most reliable regression estimates because of their general quality of minimized bias and variance. Thus, since the ultimate objective of management is to maximize the profitability of the bank, a linear equation or model used to relate profitability measures to the independent variables during the study is specified below:

**The Model**

\[ \Pi_{it} = \alpha_o + \delta_1 \text{loanv} + \delta_2 \text{lend} + \delta_3 \text{Tbv} + \delta_4 \text{Tbyield} + \epsilon_{it} \] ................................(1)

Where \( \Pi_{it} \) is the profitability of bank \( i \) at time \( t \), with \( i = 1, \ldots, N; \ t = 1, \ldots, T; \ \alpha_o \) is a constant term, and \( \delta_1 \ldots \delta_4 \) are variable coefficients; while \( \epsilon_{it} \) is the error term.
3.6 Verification of the assumptions of Parametric Tests

In multiple Regressions, if the conclusion is that there is a significant dependence of Y on Xs, it does not mean that all variables are important in explaining Y. It is therefore necessary to pick only those that significantly affect Y to retain in the model. This is the principle of parsimony. Before presenting the results in the report, a number of checks were performed to make sure that the assumptions of Ordinary Least Square (OLS) are not violated. In particular, the following assumptions were considered.

- **Normality** – This involved checking for the normality of the dependent variable so that if one or more of these variables are not normal, then normalizing transformation is performed, because technically, normality is necessary for hypothesis tests to be valid.

- **Homogeneity** of variance (heteroscedasticity) - the error variance should be constant

- **Independence** - the errors associated with one observation are not correlated with the errors of any other observation (multicollinearity)

- **Model Specification** - the model should be properly specified (including all relevant variables, and excluding irrelevant variables)

These tests were performed using the relevant commands in STATA as seen below.

**Normality:**

It was useful to inspect the assumption of normality by drawing histograms for the dependent variable and super imposing a normal curve into the graphs.
The graphs show that although ROA was slightly positively skewed, but generally, the shapes of the dependent variables (ROI and ROA) were normality distributed. The histogram indicates that data used in this study is normally distributed. This concludes that the regression model used in this study was adequate hence there was no need of applying normalizing transformations.

**Homoscedasticity:** The `hettest` command in STATA was used to test for heteroscedasticity which tests the null hypothesis that the variance of the residuals is homogenous. A summary of the results for the two models is reported below.

<table>
<thead>
<tr>
<th></th>
<th>ROA</th>
<th>ROE</th>
</tr>
</thead>
<tbody>
<tr>
<td>chi2(1)</td>
<td>28.20</td>
<td>9.78</td>
</tr>
<tr>
<td>Prob &gt; chi2</td>
<td>0.0987</td>
<td>0.7805</td>
</tr>
</tbody>
</table>

The summary statistics given in the above table show that for both models, none of them had a problem of Heteroscedascity. This is because for both models, the p-values (0.0987 and 0.7805) were above the level of significance 0.05 at which the null hypothesis was tested.
**Multicollinearity:** this problem occurs when more than two predictor variables are related to each other and under such circumstances; the estimates for a regression model cannot be uniquely computed. The primary concern was that as the degree of multicollinearity increases, the regression model estimates of the coefficients become unstable and the standard errors for the coefficients can get wildly inflated. Thus in order to detect whether there was any multicollinearity, the *Variance Inflation Factor (vif)* was used.

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume of loans</td>
<td>2.48</td>
<td>0.403433</td>
</tr>
<tr>
<td>Volume of TBs</td>
<td>2.47</td>
<td>0.404588</td>
</tr>
<tr>
<td>Lending Rates</td>
<td>1.13</td>
<td>0.885756</td>
</tr>
<tr>
<td>Yield on TBs</td>
<td>1.05</td>
<td>0.952812</td>
</tr>
</tbody>
</table>

From the table above, since no variable had a VIF greater than 10 or a tolerance value lower than 0.1, this suggests that the variables entered into the regression model were not linearly related to one another. This means that there is no multi-collinearity problem in the regression model used for this study.

**Model Specification:** A model specification error may occur when one or more relevant variables are omitted from the model or one or more irrelevant variables are included in the model all of which can substantially affect the estimate of regression coefficients. This was tested using the *ovtest* command in STATA. This test performs another test of regression model specification referred to as a Regression Specification Error Test (RESET) for omitted variables. The results are indicated below.
Since the p-values for the F-statistics are greater than 0.05, this means that the null hypothesis is accepted that the model has no omitted variables. This implies that the model was correctly specified.

### 3.7 Problems encountered during data collection

The yield on treasury bills could not be obtained from the returns. However, yield approximations were obtained by taking the ratio of income from TBs to volume invested, expressed as a percentage.
CHAPTER FOUR
DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS

4.0 Introduction

To contribute to the existing knowledge on bank profitability, this study investigated the relationship between Uganda’s commercial banks’ volume of investment in loans and associated lending rates, volume of treasury bills and associated yields and the overall profitability of commercial banks in terms of ROA and ROE. This chapter deals with the data analysis, presentation and interpretation of findings of the study. The chapter begins with the presentation of the descriptive statistics for both the independent and the dependent variables. These include: Return on Assets (ROA), Return on Equity (ROE) as the dependent variables, and Volume of Loan, Lending rates, Volume of TBs and Yield on TBs as the independent variables. These are presented using the means and standard deviation including the minimum and maximum values for each of the variables. This is then followed by the empirical results of the estimated profit function / model given in chapter three.

Table 4.1 below presents the main descriptive statistics of the independent variables used in the estimation, classified as bank-specific determinants of bank profitability, and the descriptive on the dependent variables (ROA and ROE).
Table 4.1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Assets (ROA)</td>
<td>.003428</td>
<td>.0791999</td>
<td>-.5221</td>
<td>.0794</td>
</tr>
<tr>
<td>Return on Equity (ROE)</td>
<td>.07690</td>
<td>.394956</td>
<td>-2.034</td>
<td>1.066</td>
</tr>
<tr>
<td>Volume of Loans</td>
<td>40584027.96</td>
<td>49439488.900</td>
<td>820810</td>
<td>205624883</td>
</tr>
<tr>
<td>Lending rates</td>
<td>20.3636</td>
<td>5.17178</td>
<td>.00</td>
<td>28.27</td>
</tr>
<tr>
<td>Volume of TBs</td>
<td>37650551.39</td>
<td>73095613.009</td>
<td>0</td>
<td>388766129</td>
</tr>
<tr>
<td>Yield on TBs</td>
<td>3.3611</td>
<td>1.11784</td>
<td>.23</td>
<td>7.17</td>
</tr>
</tbody>
</table>

The examination of the two profitability measures (ROA and ROE) reveals that over the period under investigation, ROE was higher than ROA during 1998-2005. The average ROA, and ROE during this period were .003428 and .07690 respectively. With regard to the average values for the independent variables, the findings in Table 4.1 show that volume of Loans average was Shs 40,584,027.96/= while that of investment volume in treasury bills was Shs 37,650,551.39/=. This scenario shows a narrow margin between commercial banks investment in loans and TBs. On the other hand, Lending rates averaged 20.36% while average yield on TBs was 3.36%.

4.2 Model Estimates and Findings

This section analyzes and presents the regression results. The data from the sample of fifteen Commercial banks was pooled for eight years (1998-2005) and used to establish
the relationships between Volume of Loans, Lending rates, Volume of TBs and Yield on TBs and the overall profitability of commercial banks in terms of ROA and ROE.

Tables 4.2 and 4.3 contain the estimated parameters and t-statistics obtained from the application of the multiple linear regression model using ROA and ROE as measures of profitability (dependent variables) respectively. As stated earlier, the explanatory variables used included Volume of Loans, Lending rates, Volume of TBs and Yield on TBs which were predicted to exert a significant influence in accounting for variability in the profitability of commercial banks from 1998-2005. The results in Tables 4.2 and 4.3 relate to regressing ROA and ROE respectively on the above set of explanatory variables.

**Table 4.2: Estimation results using ROA as the dependent variable**

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Coefficients</th>
<th>B</th>
<th>Std. Error</th>
<th>t</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td>.014</td>
<td>.047</td>
<td>.303</td>
<td>.762</td>
</tr>
<tr>
<td>Volume of Loans</td>
<td>-2.17E-010</td>
<td>.000</td>
<td>- .047</td>
<td>- .874</td>
<td>.384</td>
</tr>
<tr>
<td>Lending rates</td>
<td>-.001</td>
<td>.002</td>
<td>-.445</td>
<td>.657</td>
<td></td>
</tr>
<tr>
<td>Volume of TBs</td>
<td>-4.00E-011</td>
<td>.000</td>
<td>.242</td>
<td>.809</td>
<td></td>
</tr>
<tr>
<td>Yield on TBs</td>
<td>-.001</td>
<td>.008</td>
<td>-.106</td>
<td>.916</td>
<td></td>
</tr>
</tbody>
</table>

No of obs = 95

R2=.039 F=.913 sig=.460

The findings relating to the quantitative analysis from the regression model where ROE was the dependent variable are provided in table 4.3.
Table 4.3: Estimation results using ROE as the dependent variable

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
</tr>
<tr>
<td>(Constant)</td>
<td>.008</td>
</tr>
<tr>
<td>Volume of Loans</td>
<td>2.21E-009</td>
</tr>
<tr>
<td>Lending rates</td>
<td>.001</td>
</tr>
<tr>
<td>Volume of TBs</td>
<td>5.43E-010</td>
</tr>
<tr>
<td>Yield on TBs</td>
<td>-.018</td>
</tr>
<tr>
<td><strong>No of obs = 95</strong></td>
<td></td>
</tr>
<tr>
<td><strong>R2=.177</strong></td>
<td></td>
</tr>
<tr>
<td><strong>F=.4.845</strong></td>
<td></td>
</tr>
<tr>
<td><strong>sig=.001</strong></td>
<td></td>
</tr>
</tbody>
</table>

4.2.1 Relationship between the volume of commercial banks’ investment in loans and their overall profitability in terms of ROA and ROE

The estimated equation when ROA was the dependent variable established a positive coefficient between volume of Loans and the profitability of commercial banks in Uganda. But despite the positive coefficient, the relationship was not statistically significant. The p-value was .384, greater than the alpha level of significance equal to 0.05. The findings therefore show that measuring commercial banks profitability in terms of ROA, the volume of loans had a positive but statistically insignificant relationship with the profitability of commercial banks.

In the case of ROE as a measure of profitability, the results in Table 4.3 showed Volume of Loans taking on a statistically significant (p<0.05), positive coefficient with the profitability of commercial banks. The empirical results therefore show that volume of loans positively and significantly affect bank profitability, but only when profitability is measured by ROE.
4.2.2  Relationship between commercial banks’ lending rates and their overall profitability in terms of ROA and ROE

In the estimated equation when ROA was the dependent variable, the findings indicated lending rates having a negative (-.001) and statistically insignificant correlation (p>0.05) with the profitability of commercial banks in Uganda. This implies that increasing interest rates are negatively associated with the overall profitability of commercial banks in terms of ROA. Conversely, lower interest rates imply higher profitability, although the impact was found to be statistically insignificant.

In relation ROE as a measure of profitability, lending rates on the other hand took on positive coefficient (.001), suggesting that when profitability is measured using ROE the lending rates are positively related with the dependent variable. But as shown in Table 4.3, row 2 indicates that lending rate had no statistically significant (p>0.05) association with ROE, although this parameter had the predicted sign.

4.2.3  Relationship between the volume of commercial banks’ investment in TBs and their overall profitability in terms of ROA and ROE

In Tables 4.2 and 4.3, the findings showed commercial banks investment in the volume of TBs having a positive correlation with ROA and ROE as the dependent variables, implying that higher levels of investment in TBs are associated with higher profitability of commercial banks. Nonetheless, although the relationship was positive in the two analyses, the findings did not show any statistically significant association between volume of TBs and the resultant profitability, with p>0.05.
4.2.4 Relationship between commercial banks’ Yield on TBs and their overall profitability in terms of ROA and ROE

In the last objective, the study sought to analyze the influence of yield on TBs on the profitability of commercial banks in Uganda. According to the findings, the results of the regression showed correspondence between the results in both ROA and ROE as the measures of profitability. Specifically, the findings revealed negative and insignificant coefficients at 5 percent level in the two analyses.

4.2.5 Model Prediction

In the estimated models, for the case of ROA (Table 4.2) the Model fit represented by $R^2$ equal to 0.039 suggests that using ROA as a measure of bank profitability, holding other variables constant, the independent variables account for about 3.9% in explaining the variations in the dependent variable while the p-value for the F-Statistic being equal to .460 implies that with regard to ROA, none of the variables in the model demonstrated significant influence on the profitability of commercial banks in Uganda in the period of eight years (1998-2005).

On the other hand, the Model fit in Table 4.3 represented by $R^2$ equal to 0.177 implies that estimating commercial banks profitability using ROE as the dependent variable, holding other variables constant, the independent variables account for about 17.7% in explaining the variations in the dependent variable while the p-value for the F-Statistic being equal to .001 implies that with regard to ROE, there were some variable(s) in the
model that demonstrated significant influence on the profitability of commercial banks in Uganda in the period of eight years (i.e. from 1998-2005).
CHAPTER FIVE
DISCUSSION OF FINDINGS, CONCLUSIONS AND
RECOMMENDATIONS

5.0 Introduction

This chapter discusses the findings, and presents conclusions, recommendations and areas for further research.

The study examined the relationship between investment in loans and treasury bills and the overall profitability of commercial banks in Uganda. Using ROA and ROE as the dependent variables, the independent parameters that were included in the linear model to estimate the impact of various factors that may be important in explaining bank profits included, volume of loans, volume of TBs, lending rates and yield on TBs.

5.1 The Descriptive Statistics

The findings in Table 4.1 show that volume of loans average was Shs 40,584,027.96/= while that of volume of investment in treasury bills was Shs 37,650,551.39/= during the period of study. This reveals a relatively high preference for liquid and low risk assets (TBs), as opposed to financial intermediation theories which emphasize that extending loans is the traditional business of commercial banks (De Young & Rice, 2003).

The Lending rate average of 20.36% and the Yield on TBs of 3.36% confirm Bourke (1989)’s findings, who noted that the loans market has a greater expected return than other bank assets such as government securities. The results are also in line with Devinaga, (2010), who maintains that loans are among the highest yielding assets a bank
can add to its balance sheet and they provide the largest portion of operating revenue.

5.2 Volume of commercial banks’ investment in loans and their overall profitability in terms of ROA and ROE

The study established a positive coefficient between volume of loans and the profitability of commercial banks in Uganda when ROA was the dependent variable. Thus, unlike Bashir and Hassan (2003) and Staikouras and Wood (2003) who showed that a higher loan ratio impacts profits negatively, this later study noticed a positive coefficient of volume of loans and profitability of commercial banks. But despite the positive relationship, the results of this coefficient were not statistically significant. This was given by a p-value given by .384 greater than the alpha level of significance equal to 0.05. The findings therefore suggest that measuring commercial banks profitability in terms of ROA, the volume of loans had no statistically significant influence on the profitability of commercial banks during the period under study. The non significant relationship is supported by some of the previous studies like Fraser and Rose (1971 cit Rasiah, 2010) who found loan composition as having no significant effect on profitability.

The findings are also in line with Valentina, Calvin and Liliana, (2009), who maintain that the main source of bank-specific risk in Sub Saharan Africa is credit risk. According to these authors, poor enforcement of creditor rights, weak legal environment, and insufficient information on borrowers expose banks to high credit risk. At the macroeconomic level, weak economic growth adds to risk as it promotes the deterioration of credit quality, and increases the probability of loan defaults.
In the case of ROE as a measure of profitability, the results in Table 4.3 showed Volume of loans taking on a statistically significant (p<0.05) positive coefficient with the profitability of commercial banks, confirming previous findings.

The findings corroborate Berger & Mester (1997) cited in Acharya et al (2002) who found that banks with higher loan-to-asset ratios tend to have higher profit efficiency. In the same way, these results render credence to Abdel-Hameed. (2003) data which revealed that volume of loans have strong and robust link with profitability. Moreover, results support Panayiotis et al (2006) who showed that loan concentration positively affects bank profitability. These findings further show correspondence with Bashir and Hassan (2003) who established that large loans-to-asset ratios lead to higher profitability in Islamic banks in eight Middle Eastern countries for the period 1993–1998. This means the higher the volume of loans extended, the higher the interest income, and the higher the profit potentials for the commercial banks.

The positive and statistically significant relationships can serve as leading indicators of higher future profits, based on increased loan volume. Intuitively, as banks become less leveraged and their loans-to-assets ratios increase, they become more profitable. Conversely, as they become highly leveraged, their vulnerability to macroeconomic shocks increases; precipitating into losses and lesser profits.
5.3 Commercial banks’ lending rates and their overall profitability in terms of ROA and ROE

The findings indicated lending rates having a negative (-.001) but statistically insignificant (p>0.05) correlation with the profitability of commercial banks in Uganda when ROA was the dependent variable.

The findings tally with those of Naceur (2003) who highlighted a negative relationship between interest rates and bank profitability in Tunisia. In the same line, the negative coefficient further supports Ogunleye (2001) who argued that when interest rates rise it exerts a negative impact on banks’ profits. Bourke (1989) explains that interest rate may have a negative effect on bank profitability if higher rates lower the demand for loans. In this regard, Barajas, et al. (1999) affirms that banks tend to offset the cost of screening and monitoring due to bad loans/or the cost of foregone interest revenue by charging higher lending rates but these responses are likely to impact on banking sector’s performance. In fact, Brock and Rojas-Suarez (2000) finds a significant negative relationship between high lending rates and the performance of banks in the cases of Argentina and Peru.

In relation ROE as a measure of profitability, Lending rates on the other hand took on positive coefficient suggesting when profitability is measured using ROE the lending rates are positively related with the dependent variable. But as shown in Table 4.3, row 2 the relationship was not statistically significant (p>0.05).
In line with the regression results of ROE, previous studies have revealed a positive relationship between interest rate and bank profitability. High real interest rate generally leads to higher loan rates, and hence higher revenues as Bourke (1989) reports. The findings however do not fully corroborate empirical evidence from Molyneux and Thornton (1992) and Demirgüç-Kunt and Huizinga (1999), Kabir and Abdel-Hameed, (2002) who indicated that high interest rates are significantly associated with higher bank profitability (i.e. a significant positive relationship). In the same vein, the results of this analysis do not corroborate U homoibhi’s (2009) regression results which showed interest rate as one of the significant macroeconomic determinants of bank profitability in Nigeria. Similarly, the results of this study did not corroborate empirical evidence in Buyinza’s (2010), in which interest rate was reported as having a positive and significant effect on bank profitability in the ROA regressions while in ROE model, the findings revealed a negative and significant effect on bank profitability. In the present study, in the results of both ROA and ROE models, the impact of lending rates was insignificant but negative for ROA and positive in ROE.

The contradiction between this research and other researchers generates a need for further empirical analyses of the relationship between lending rates and bank profitability.

5.4 Volume of commercial banks’ investment in TBs and their overall profitability in terms of ROA and ROE

The findings showed commercial banks investment in the volume of TBs having a positive but statistically insignificant (p>0.05) correlation with both ROA and ROE,
implying that higher levels of investment in TBs are associated with profitability of commercial banks. These findings support Rehana and Rizwana (1998) who noted that although statistically insignificant the impact of bank (statutory) investment in government treasury bills and securities on the spread was positive.

On the other hand, although Ezema (1993) acknowledges the vital role of Treasury bills for the overall performance of commercial banks, the findings reported in the two analyses do not support this assertion. The results also hardly corroborate with Short (1979) whose study used both central bank discount rates and the interest rates on long-term government securities and found that these hypotheses had a significant positive relationship with profitability.

5.5 Commercial banks’ Yield on TBs and their overall profitability in terms of ROA and ROE

The findings of the study revealed negative and insignificant coefficients (at 5 percent level) between yield on TBs and profitability of commercial banks in Uganda as measured in terms ROA and ROE. The results align with Ogunleye (1995) who reported that bank profitability is affected by monetary authorities’ policy measures (such as issuing treasury bills). According to him, an increase in the stipulated liquidity ratio exerts a negative influence on bank profitability.

According to the results, volume of loans and volume of TBs demonstrated positive coefficients while Lending rates and yield on TBs revealed negative coefficients with the
dependent variable using ROA as a measure of commercial banks profitability. Nonetheless, none of the four variables exhibited statistically significant coefficient with ROA. On the other hand, with regard to ROE, Loan Volume, Lending rates and Volume of TBs showed a positive relationship while yield on TBs indicated a negative correlation with profitability as measured by ROE.

However, although most of the explanatory variables showed positive coefficients using ROA and ROE as measures of profitability, the results of the two analyses showed that the only variable that had a statistically significant effect on commercial banks profitability was commercial banks volume of investment in loans with particular reference to ROE as a measure of profitability. Thus, in this study, commercial banks volume of investment in loans was found to be the only important variable that accounted for the profitability of commercial banks in Uganda from 1998 to 2005.

5.6 Conclusions
According to the results, volume of loans and volume of TBs demonstrated positive coefficients while Lending rates and yield on TBs revealed negative coefficients with the dependent variable using ROA as a measure of commercial banks profitability. Nonetheless, none of the four variables exhibited statistically significant coefficient with ROA. On the other hand, with regard to ROE, Loan Volume, Lending rates and Volume of TBs showed a positive relationship while yield on TBs indicated a negative correlation with profitability as measured by ROE.
However, although most of the explanatory variables showed positive coefficients using ROA and ROE as measures of profitability, the results of the two analyses showed that the only variable that had a statistically significant effect on commercial banks profitability was commercial banks volume of investment in loans, with ROE as the measure of profitability. Thus, in this study, commercial banks volume of investment in loans was found to be the only important variable that accounted for the profitability of commercial banks in Uganda from 1998 to 2005.

Based on the study findings, the following were therefore the major conclusions that were drawn:

i. The volume of commercial banks’ investment in loans positively influences their overall profitability, with a statistically significant impact in terms of ROE and insignificant in terms of ROA. This conclusion collaborates many earlier studies, including: Berger & Master (1997), Acharya et al (2002), Abdel- Hameed (2003), Panayiotis et al (2006) and others;

ii. Lending rates have a negative relationship with commercial banks profitability in terms of ROA and a positive relationship in terms of ROE, although the relationships are not statistically significant in both cases;

iii. Commercial banks investment volume in TBs demonstrated a statistically insignificant but positive relationship with profitability of commercial banks; in terms of both ROA and ROE;

iv. The yield on TB revealed negative but insignificant relationship with both ROA and ROE as measures of commercial banks’ profitability in Uganda.
5.7 Recommendations

This study established that Volume of loans has a positive and significant relationship with profitability of commercial banks in terms of ROE. Since the objective of businesses, commercial banks inclusive, is to maximise the return to its shareholders, managers of commercial banks in Uganda should aim at committing themselves to the implementation of strategies that would enhance credit creation, disbursement and adequate recovery mechanisms. Innovative loan products should be designed for the presently under banked subsectors of economy, such as small and medium enterprises and low income segments especially characterizing the informal and rural sectors. The present reluctance by the commercial banking system to lend to the informal and rural sectors is not based on liquidity constraints; rather, it is based on the perception that lending to these sectors carries a higher level of risks and costs than the commercial lenders are prepared to tolerate. Innovative loan products should enable commercial banks to diversify into these under banked sectors, thus increasing volume of loans, and thus profitability.

Similarly, commercial banks should put additional efforts in educating the clientele about the banks’ loan products and prudent borrowing practices. This will increase demand for loans while reducing the incidence of nonperforming loans, leading to increased profitability.
5.8 Areas for further research

The researcher did not include some variables in the model such as inflation, exchange rates, political stability, other investments and management that may affect banks’ profitability.

The empirical evidence from this research, that lending rates have no significant impact on bank profitability with particular reference to Uganda among the selected commercial banks for the period 1998-2005, contradicts most of the evidences and arguments indicated in the literature review. This contradiction between this research and other researchers generates a need for further empirical analyses of the relationship between lending rates and bank profitability.

Furthermore, the time period of analysis was relatively short (8 years) and as a result, the researcher believes that if future researchers estimate the models using a larger time frame, the results may be different, especially including the years 2006 to 2011 which witnessed certain important macroeconomic events, such as rise in inflation and exchange rates.

Finally, it would be interesting to widen the sample of study by adding other countries. For example, future researchers can examine the factors influencing banks’ profitability in East African countries.
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APPENDICIES

Appendix A: Introductory letters

July 07, 2005

The Executive Director
Bank Supervision
Bank of Uganda
P.O. Box 720
Kampala

Dear Sir/Madam,

Ref: NDAGIRE SPECIOSA KIMEBA, Reg. No. 2002/HD10/1543

This is to introduce to you the above named Masters of Business Administration (MBA) student of this School. She is undertaking research in partial fulfillment of the Masters Degree on the topic: “Commercial Banks Investments in Loans, Investments in Treasury Bills, Lending rates, Interest Yield on Treasury Bills, and Total Income of Commercial Banks.”

She would like to get the above information on all existing commercial banks.

Any assistance rendered to her to complete the research will be highly appreciated.

Sincerely,

Agaro, Prof. Dr. Thomas Walter
Director

Bank of Uganda

Web: www.bankofuganda.org
Email: customer@bouganda.org

60
July 07, 2006

The Executive Director
Research
Bank of Uganda
P.O. Box 21290
Kampala

Dear Sir/Madam,

RE: HOACIE SPECIOSA KIMERA Reg No. 2002/M10/1543U

This is to introduce to you the above named Masters of Business Administration (MBA) student of this School. She is undertaking research in partial fulfillment of the Masters Degree on the topic “Commercial Banks Investments in Loans, Investments in Treasury Bills, Leading rates, Interest Yield on Treasury Bills, and Total Income of Commercial Banks.”

She would like to get the above information on all existing commercial banks.

Any assistance rendered to her to complete the research will be highly appreciated.

Sincerely,

[Signature]

Asst. Prof. Dr. Thomas Walter
Director
### Appendix B: Dataset

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