FACTORS AFFECTING PROFITABILITY OF COMMERCIAL BANKS IN KENYA: A COMPARATIVE ANALYSIS BETWEEN LISTED AND UNLISTED BANKS

BY

GABRIEL AKIMWANARY OBASIE

KCA/09/00711

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTER OF SCIENCE IN COMMERCE (FINANCE AND ACCOUNTING) IN THE SCHOOL OF BUSINESS AND PUBLIC MANAGEMENT KCA UNIVERSITY

2016

DECLARATION

I, declare that this dissertation is my original work and that it has not been previously published or submitted elsewhere for award of a degree. I also declare that this contains no material written or published by other people except where due reference is made and author duly acknowledged.

Signature …… **Reg**. KCA/09/00711

Date ……...

I do hereby confirm that I have examined the master's dissertation of

Gabriel Akimwanary Obasie

And have certified that all revisions that the dissertation panel and examiners recommended have been adequately addressed.

Signed …… Date …….

Dr. Christine Nanjala Simiyu

Dissertation Supervisor

ACKNOWLEDGEMENT

First and foremost I do acknowledge the almighty God for being with me, I also thank my family for their moral and financial support as I pursued my university education.

I wish to thank my supervisor **Dr Christine Nanjala Simiyu** for the valuable guidance , mentorship and the encouragement she gave me in the making of my thesis.

I also extend my gratitude to my classmates and colleagues for their support and encouragement they are offering not only during this research thesis writing period but also throughout my course period.

Without forgetting my lecturers who enabled me to acquire the necessary knowledge and skill for my present and future applications.

Finally, my special thanks will go to my research assistants Ruth Imoo and Abel Orone who have taken their time and effort to collect and analyze the data.

ABSTRACT

Banking sector acts as the life blood of modern trade and commerce to provide them with a major source of finance. Commercial Banks in Kenya have tended to pursue very rural or otherwise very unreachable clients, even at great cost. They provide financial services, including credit, tailored to the unique needs and limitations of the poor. The general objective of this study was to provide a comparative analysis of the factors affecting profitability of listed and unlisted commercial banks in Kenya using CAMEL model as modified by capital structure. This research is useful for both existing commercial banks as well as those that are starting up. It will enable existing commercial banks in Kenya to identify areas of improvement in their operations that can result in increased profitability through increased revenue or through reduction in operational costs. The study is a comparative study based on secondary data. The population of interest of this study was all commercial Banks operating in Kenya both listed and unlisted. The data was collected from the Central Bank of Kenya Banking Surveys from 2005 to 2015. Data was analyzed using fixed effect panel data regression model. The study found that the variables considered in this study (capital adequacy, asset quality, management quality, management efficiency, earnings ability, liquidity and ownership structure) influences banks profitability. The study recommends that banks should maximize lending to customers and also scrutinize their financial ability to repay before advancing loans to them to avoid default loans in order for them to maximize their profits.

Keywords: CAMEL, CBK, Fixed effect, Bank profitability

TABLE OF CONTENTS

DECLARATION **1**
ACKNOWLEDGEMENT **1**
ABSTRACT ..... **iii**
LIST OF TABLES ..... **vii**
LIST OF FIGURE ..... **viii**
LIST OF ACRONYMS AND ABBREVIATIONS ..... **ix**
DEFINITION OF TERMS ..... **xi**
CHAPTER ONE: INTRODUCTION **1**
1.1 Background of the Study 1
1.1.1 Outlook of Banking Sector in Kenya 7
1.2 Statement of the Problem 8
1.3 Research Objective. 10
1.3.1General Objective 10
1.3.2Specific Objectives 10
1.4 Research Questions. 10
1.5. Significance of the Study 11
1.6 Limitations and Delimitation of the Study 12
1.7 Basic Assumption of the Study 12
CHAPTER TWO:LITERATURE REVIEW **13**
2.1 Introduction 13
2.2. Theoretical Orientation 13
2.2.1. Portfolio Theory 13
2.2.2 Liquidity Preference Theory 14
2.2.3 Agency Theory 15
2.2.4 Expense- Preference (EP) Hypothesis 16
2.3 Empirical Review 17
2.3.1 Capital Adequacy and Profitability of Commercial Banks. 17
2.3.2 Asset Quality and Profitability of Commercial Banks 18
2.3.3 Management Efficiency and Profitability of Commercial Banks 19
2.3.4 Earning Ability and Profitability of Commercial Banks. 21

2.3.5 Liquidity and Profitability of Commercial Banks. 21
2.3.6 Ownership Structure and profitability of Commercial Banks 22
2.4 Conceptualization 23
2.4.1 Capital Adequacy 23
2.4.2 Asset Quality 24
2.4.3 Management Efficiency 25
2.4.4 Earnings Ability 25
2.4.5 Liquidity 26
2.4.6 Ownership Structure 26
2.4.7 Profitability 27
2.5 Operationalization of Variables 29
CHAPTER THREE: RESEARCH METHODOLOGY 30
3.1 Introduction 30
3.2 Research Design 30
3.3 Target Population 30
3.4 Sample Size and Sample procedure. 31
3.5 Data Collection 31
3.6 Data Analysis 31
3.5.1 Pre-analysis Plan 33
CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION 34
4.1 Introduction 34
4.2 Descriptive Statistics and Panel Data Exploration 34
4.2.1 Correlation Analysis and Multicollinearity Tests 37
4.2.2 Unit Root Tests 40
4.3 Diagnostic Tests 40
4.4 Fixed, Random Effects Models 41
4.4.1 Fixed, Random Effect – Net Income Margin 44
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 47
5.1 Introduction 47
5.2 Summary of Findings 47
5.3 Conclusions 48

5.4 Recommendations 49
5.5 Recommendations for further study 50
REFERENCES 51
APPENDICES 56
APPENDIX I: Classification of Banks according to Market Share. 56
APPENDIX III: Unit Root Tests 61
APPENDIX IV: Random Effects Model 62
APPENDIX V: Diagnostic Tests 63
APPENDIX VII: Normality of Model Residuals 66
APPENDIX X: Budget 80

LIST OF TABLES

Table 4.1: Descriptive Statistics 35

Table 4.2: Performance Comparison – Listed vs Non Listed 36

Table 4.3: Correlation Matrix 38

Table 4.4: Collinearity Test 39

Table4. 5: Serial Correlation 40

Table 4.6: Hausman Test 42

Table 4.7: Fixed Effect Model 44

Table 4.8: Hausman Test – Net Income Margin 45

Table 4.9: Random Effect Model – Net Income Margin 46

LIST OF FIGURES

Figure 2.1: Conceptual Framework..... 28

LIST OF ACRONYMS AND ABBREVIATIONS

CAMEL – Capital Adequacy, Asset Quality, Management Efficiency, Earnings Ability, Liquidity

CAPM – Capital Asset Pricing Model

CBK – Central Bank of Kenya

CITY – City Commercial Banks

CIR – Cost Income Ratio

CRB – Credit Reference Bureau

DTM – Deposit Taking Microfinance

GDP – Gross Domestic Product

EU – European Union

INF – Inflation

JSCB – Joint Stock Commercial Bank

KCB – Kenya Commercial Bank

MC – Market capitalization

MENA – Middle East and North Africa

MFC – Mortgage Finance Company

NIM – Net Interest Margin

NPL – Non-performing Loans

NSE – Nairobi Stock Exchange

OLS – Ordinary Least Squares

ROA- Return on Assets

ROI – Return on Investments

SOCB – State Owned Commercial Bank

DEFINITION OF TERMS

Asset quality- is the estimation of quality of bank asset as measured by a lender's credit standards and the liquidity of securities held in investment portfolio (Baral, 2005)

Capital Adequacy- Capital adequacy refers to the sufficiency of the amount of equity to absorb any shocks that the bank may experience (Kosmidou, 2008)

Commercial bank- A commercial bank is a financial institution that accepts demand deposits and makes loans and provides other services for the public, provides checking and savings accounts (CBK Bank Supervision Annual Report, 2015)

Earning Ability- reflects banks' ability to support present and future operations by absorbing losses, adequate capital base, finance its expansion and operations and pay dividends to its shareholders (Chantapong, 2005)

Liquidity- indicates the ability of the institutions to fund increases in assets and meet obligations as they fall due (Kosmidou, Tanna & Pasiouras, 2005)

Management Efficiency-This is gauged based on operational efficiency which serve as a measure of management soundness e.g. expenses ratio, earning per employee, cost per loan, average loan size and cost per unit of money lent (Baral, 2005)

Ownership Structure- is the ownership concentration as the distribution of shares owned by majority shareholders (Lee, 2008).

Return on Asset (ROA) - is a ratio calculated by dividing the net income over total assets. ROA have been used in most of the studies for the measurement the profitability of the banks (Molyneux & Thornton, 1992).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Banking sector acts as the life blood of modern trade and commerce to provide them with a major source of finance. The increasing phenomenon of globalization has made the concept of efficiency more important both for the non-financial and financial institutions and banks are the part of them. Banks largely depend on competitive marketing strategy that determines their success and growth. The modalities of the banking business have changed a lot in the new millennium compared to the way they used to be in the years bygone (Hussain and Bhatti, 2010). Pasiouras and Kosmidou (2007) found out there is a positive and significant relationship between the size and the profitability of a bank. According to Berger*et al*. (1987), there is evidence that costs can be reduced only slightly by increasing thesize of a bank and those very large banks are often even facing scale inefficiencies.

Micco*et al*. (2007) found no correlation between the relative bank size and the Return on Assets (ROA) for banks that is the coefficient is always positive but never statistically significant. Profitability is the primary goal of all business ventures. Without profitability the business will not survive in the long-run. So measuring current and past profitability is very important. Profitability is measured with income and expenses. A business that is highly profitable has the ability to reward its owners with a large return on the investment (Waweru&Kalani, 2009).

The banking industry in general has experienced some profound changes in recent decades, as innovations in technology and the inexorable forces driving globalization continue to create both opportunities for growth and challenges for banking managers to remain profitable in this increasingly competitive environment (Bobáková, 2003). It is needless to emphasize that one of the principal activities of commercial banks is to grant loans to borrowers. 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.

The importance of bank profitability can be appraised at the micro and macro levels of the economy. At the micro level, profit is the essential prerequisite of a competitive banking institution and the cheapest source of funds. It is not merely a result, but also a necessity for successful banking in a period of growing competition on financial markets. Hence, the basic aim of a bank's management is to achieve a profit, as the essential requirement for conducting any business. At the macro level, a sound and profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system. The importance of bank profitability at both micro and macro levels has made researchers, academics, bank managements and bank regulatory authorities to develop considerable interest on the factors that determine bank profitability (Athanasoglou*et al*., 2005). The banking industry is among one of the most heavily regulated industries in the world. The main reason for regulation is to provide a sound, stable and healthy financial system. Peltzman (1968) was among the first researchers to empirically test the effects of regulation on performance. Peltzman's findings indicated that a

prohibition on interstate branching and a legal restriction to new entry had a significant impact on the market value of a bank's capital hence affect profitability of the financial institution.

Hester and Zoellner (1996) studied the relationship between balance sheet items and the earnings of 300 banks in Kansas City and Connecticut. They found that changes in balance sheet items had a significant impact on a bank's earnings. While all asset items obtained positive results, liability items such as demand, time and saving deposits adversely affected profits. Haslem (1968) used 64 operating ratios in order to measure the effects of management, size, location and time on profitability of commercial banks. Haslem's findings indicated that all variables tested were significantly related to profitability. Fraser and Rose (1971) found that loan rate, time deposit rate, loan-to-deposit ratio, service charges and portfolio selection had no effect on profitability. Fraser *et al* (1974) considered operating costs, deposit and loan compositions as factors within the control of management. They found that the factor which had the biggest influence on bank performance is bank cost followed by bank's deposit and loan composition. Mullineaux (1992) used a profit-function approach in his study, and found that balance sheet structure had a significant impact on profitability and, depending on the nature of the balance sheet items; the relationship can either be negative or positive.

With regards to deposit structure, Heggested (1977) found that banks heavily committed to time and savings deposits earned considerably lower returns than banks which have higher dependence on demand deposits. Smirlock (1985) confirmed that demand deposits were a cheaper source of funds and had a positive impact on bank profits. Kwast and Rose's (1982) study, however, claimed that operating efficiency had nothing to do with profitability. They found that there was no compelling evidence that high-profit banks were characterized by a greater level of efficiency than low-profit banks.

A study by Kiyota (2009) looked at the comparative analysis of cost and profit efficiency of domestic and foreign banks operating in 29 Sub-Saharan African countries during 2000-2007in terms of accounting ratios as well as estimated bank efficiency. The findings suggest that foreign banks tend to outperform better than domestic banks for the profit efficiency and that foreign bank entry appears to have an impact on improving performance of domestic banks.

Farroq (2003) analyzed the structure and performance of commercial banks in Pakistan, analysis of performance showed that the profitability of state-owned banks deteriorated, especially after mid-1990s. The profitability of private banks was also not impressive during 1990s. As regard foreign banks, despite showing better asset quality, adequate capital base and sound management, they failed to retain their profitability during 1990s.

Another study was conducted by Sufian and Habibullah (2009) this paper sought to examine the determinants of the profitability of the Chinese banking sector during the post-reform period of 2000–2005. The empirical findings from this study suggested that all the determinant variables have statistically significant impact on China banks profitability. However, the impacts are not uniform across bank types. They found that liquidity, credit risk, and capitalization have positive impacts on the state owned commercial banks (SOCBs) profitability, while the impact of cost is negative. Similar to their SOCB counterparts, they found that joint stock commercial banks (JSCB) with higher credit risk tend to be more profitable, while higher cost results in a lower JSCB profitability levels. During the period under study, the empirical findings suggested that size and cost results in a lower city commercial banks (CITY) profitability, while the more diversified and relatively better capitalized CITY tend to exhibit higher profitability levels. The impact of economic growth is positive, while growth in money supply is negatively related to the SOCB and CITY profitability levels.

Chantapong (2005) provides a comparative study of the performance of domestic and foreign banks in Thailand in terms of profitability and other characteristics after the 1997 financial crisis. The results of this study indicate that foreign bank profitability is higher than the average profitability of the domestic banks. All banks gradually improved their profitability during the post-crisis period, and, the study found that in the post-crisis period, the gap between foreign and domestic profitability narrowed. This showed some positive sign of domestic bank performance improvement resulting from financial restructuring program implemented after the financial crisis.

Pasiouras & Kosmidou (2007) examined the performance of domestic and foreign commercial banks in 15 EU countries during the period 1995–2001. They found that profitability of both domestic and foreign banks is affected not only by bank specific characteristics, but also by financial market structure and macroeconomic conditions. The results suggest that all variables have significant relationship with bank profitability, although their impacts and relation is not always uniform for domestic and foreign banks.

Ben & Goaied (2008) examined the impact of bank characteristics, financial structure, and macroeconomic conditions on Tunisian banks' net interest margin and profitability during the period of 1980 to 2000. They suggested that banks that hold a relatively high amount of capital and higher overhead expenses tend to exhibit higher net-interest margin and profitability levels, while size is negatively related to bank profitability. During the period under study, they found that stock market development has positive impact on banks' profitability. The empirical findings suggest that private banks are relatively more profitable than their state owned counterparts. The results suggest that macroeconomic conditions have no significant impact on Tunisian banks' profitability.

Ben & Omran (2008) examined the influence of bank regulations, concentration, financial and institutional development on Middle East and North Africa (MENA) countries commercial banks margin and profitability during the period 1989–2005. They found that bank specific characteristics, in particular bank capitalization and credit risk, have positive and significant impact on banks' net interest margin, cost efficiency, and profitability. On the other hand, macroeconomic and financial development indicators have no significant impact on bank performance.

Bank profitability is a function of internal and external factors. According to Sehrish, Faiza, & Khalid, (2011) factors influencing banks profitability include; internal factors which focus on bank specific features i.e., capital, loan and deposits, while external factors consider macroeconomic factors i.e., Gross Domestic Products (GDP), Inflation (INF) and Market Capitalization (MC).

To identify the relevant factors affecting commercial bank profitability in Kenya, this study concentrated on various factors based on Capital Adequacy, Assets quality, management efficiency, Earnings ability and liquidity (CAMEL) framework; CAMEL is a widely used framework for evaluating bank performance. The Central Bank of Kenya also uses the same to evaluate the performance of commercial banks in Kenya. Several studies Sufian&Habibullah (2009); Baral (2005); and Uzhegova (2010) have used CAMEL (Capital Adequacy, Assets quality, management efficiency, Earnings ability and Liquidity) to examine factors affecting bank profitability with success. The system was developed by the US Federal Deposit Insurance Corporation (FDIC) for "early identification of problems in banks operations" (Uzhegova, 2010). The CAMEL framework is the most widely used model and it is recommended by Basel

Committee on Bank Supervision and IMF Baral, (2005). The CAMEL system has been chosen because it allows gauging the bank's overall condition and performance.

1.1.1 Outlook of Banking Sector in Kenya

The banking sector plays an important economic role in providing financial intermediation and economic acceleration by converting deposits into productive investments. The (CBK Bank Supervision Annual Report, 2015) reported that as at 31st December 2015, the banking sector comprised of the Central Bank of Kenya, as the regulatory authority, 44 banking institutions (43 commercial banks and 1 mortgage finance company - MFC), 4 representative offices of foreign banks, 6 Deposit-Taking Microfinance Institutions (DTMs), 118 Forex Bureaus and 2 Credit Reference Bureaus (CRBs). Out of the 44 banking institutions, 31 locally owned banks comprise 3 with public shareholding and28 privately owned while 13 are foreign owned. The foreign owned financial institutions comprise of 9 locally incorporated foreign banks and 4 branches of foreign incorporated banks. Further, according to CBK annual reports, (2015) 11 banks out of 44 commercial banks operating in Kenya are public owned and listed in the Nairobi Securities Exchange. Listed banks are biggest in terms of asset base, return on assets and distribution channels. Furthermore, there have been cases of other banks such as Imperial bank, Chase bank and Dubai bank being placed under receivership though chase bank was reinstated under the management of KCB group.

According to (CBK Bank Supervision Annual Report, 2015), the Kenyan banking sector remained resilient in 2015 despite a challenging macro-economic environment. The sector registered a 20.4 percent increase in the total net assets from Ksh. 1.68 trillion in December 2014 to Ksh. 2.02 trillion in December 2015. Similarly, gross non-performing loans declined by 8.0 percent from Ksh. 57.6 billion in December 2014 to Ksh. 53.0 billion in December 2015.The

sector faced challenges in 2015 from increasing levels of inflation, interest rates and exchange rate volatility. The inflation rate which increased from 3.97 percent in March 2014 to 12.05 percent in April 2015 stood at 18.93 percent in December 2015. This was mainly attributed to steep increases in food and fuel prices. The depreciation of the Kenya Shilling against most traded world currencies in the year was attributed to the Euro sovereign debt crisis that led to increased demand for US dollars and a widening current account deficit.

1.2 Statement of the Problem

Commercial Banks in Kenya have tended to pursue very rural or otherwise very unreachable clients, even at great cost. They provide financial services, including credit, tailored to the unique needs and limitations of the poor. These banks have generally been more flexible than for profit financial services providers, more forgiving and typically offer training and education to their customers. The positive impact of these commercial banks on the socioeconomic welfare of the poor will only be attained and sustained if the financial institutions offering these services can achieve good financial performance. Good financial performance, evidenced by increased profitability and growth, would convert poverty into an opportunity as opposed to a threat (CBK annual report, 2015).

The study of the critical success factors affecting profitability was chosen because as noted by CBK (2016), banks in Kenya are now facing capital problems, management inefficiencies and liquidity difficulties which have led to the wave of mergers, acquisitions and collapse of banks witnessed recently in Kenya including Imperial bank, Chase bank, Dubai bank among others thus making a wakeup call to the Central Bank of Kenya to strengthen its bank supervision arm (CBK, 2016). Vogiazas & Nikolaidou (2011) investigated determinants of non-performing loans in the Romanian banking sector during the Greek crisis by taking the data from

December 2001 to November 2010; according to them construction and investment expenditure, unemployment and inflation rate and Romania's external debt to GDP and M2 (narrow money and intermediate money) can influence the credit risk of country's banking system. Locally, a study done by Ochami (2004) assessed the factors that contributed to the level of non-performing loans on Housing Finance Company Kenya Limited, the study found out that credit risk management and the external environment were major contributors of non-performing loans. Waweru (2009) in his study on banking crisis found management inefficiencies to be a major contributor. Warue (2010) did a study on macro and microeconomic determinants of bank performance and found that employment rate, income and bank structures can significantly affect performance.

However, these studies did not look at the integrated influence of specific factors such as capital adequacy, asset quality; management efficiency, liquidity, earnings and ownership structure may affect the performance of commercial banks. This study was compelled by the recent crisis in the banking sector where Imperial bank, Chase bank and Dubai bank were placed under receivership citing liquidity ratios and capital management inefficiencies as the major causes. This study, therefore, filled this knowledge gap by investigating how these specific factors influenced performance of commercial banks taking with comparison of listed and unlisted banks by answering the question: What factors affected profitability of Kenya commercial banks with reference to listed and unlisted commercial banks?

1.3 Research Objective.

1.3.1 General Objective

The general objective of this study was to establish the factors affecting profitability of commercial banks in Kenya.

1.3.2 Specific Objectives

In regard to the general objective above, the specific objectives included:

i. To determine how capital adequacy affected profitability of commercial banks

ii. To establish the effects of asset quality on profitability of commercial banks.

iii. To determine how management efficiency affected profitability of commercial banks.

iv. To determine how earnings ability influenced profitability of commercial banks

v. To determine how liquidity affected profitability of commercial banks

vi. To establish how ownership structure affected profitability of commercial banks

1.4 Research Questions.

In order to address the above research objectives, the study was guided by the following questions:

i. How does capital adequacy affect profitability of commercial banks?

ii. To what extent does asset quality affect profitability of commercial banks?

iii. How does management efficiency affect profitability of commercial banks?

iv. How does earnings ability influence profitability of commercial banks?

v. To what extent does liquidity affects profitability of commercial banks?

vi. How does ownership structure affect profitability of commercial banks?

1.5. Significance of the Study

The research was useful for both existing commercial banks as well as those that are starting up. It will enable existing commercial banks in Kenya to identify areas of improvement in their operations that can result in increased profitability through increased revenue or through reduction in operational costs. It is also a resource that will enable commercial banks in Kenya to begin on the right path, through learning from those that have gone before them.

The research has contributed to the Kenyan economy through the identification of best practices and key approaches needed by deposit-taking financial institutions seeking to grow or enter into the Kenyan market. Once these best practices are known, emerging commercial banks in will break even early. This study has filled the knowledge gap by finding how the specific factors influenced performance of commercial banks taking with comparison of listed and unlisted banks.

Finally, this study demonstrated that banking on the poor can be profitable and will encourage financial institutions to open branches in regions they had previously deemed unprofitable, thereby improving access to financial services, partly overcoming the problems of outreach so long as they are prudent in their operations.

1.6 Limitations and Delimitation of the Study

The method used was a descriptive research design whereby the variables cannot be controlled by the researcher.

1.7 Basic Assumption of the Study

The study assumed that the researcher will get all the support required from relevant authorities in getting secondary data needed.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will provide the beneficiaries of this study with information about profitability of banks according to other authors and previous studies. The chapter discusses the bank profitability in general and reviews the previous studies and also banking sector in Kenya. Literature on factors which affect the profitability of foreign banks and local banks were also discussed.

2.2. Theoretical Orientation

The foregoing gives insight of the various theories that guided the researcher when conducting the research. They include:

2.2.1. Portfolio Theory

Portfolio theory was originally proposed by Markowitz in 1952. Portfolio theory supplies the necessary tools for measuring the risks of insolvency. One of the major tasks of measuring capital adequacy is finding this expected variance. In thinking about the factors causing a bank's variance and risk, a useful background is the extensive literature based on portfolio theory and the Capital Asset Pricing Model (CAPM).

The portfolio theory approach is the most relevant and plays an important role in bank performance studies (Nzongang & Atemnkeng, 2006). According to the Portfolio balance model of asset diversification, the optimum holding of each asset in a wealth holder's portfolio is a function of policy decisions determined by a number of factors such as the vector of rates of return on all assets held in the portfolio, a vector of risks associated with the ownership of each

financial assets and the size of the portfolio. It implies portfolio diversification and the desired portfolio composition of commercial banks are results of decisions taken by the bank management. Further, the ability to obtain maximum profits depends on the feasible set of assets and liabilities determined by the management and the unit costs incurred by the bank for producing each component of assets (Nzongang & Atemnkeng, 2006). This study found portfolio theory relevant to bank profitability as it provides tools for measurement of risks of insolvency and asset diversification for purposes of maintaining liquidity levels and asset quality.

2.2.2 Liquidity Preference Theory.

This concept was first developed by John Maynard Keynes (1936) as written in The Collected Writings of John Maynard Keynesral theory and after. He used the General theory of employment, interest and money to explain how interest rates are determined by forces of supply and demand for money. John Maynard Keynes believed in what has come to be termed as the assumption of finance where all investors are assumed to be risk averse and will therefore demand an interest rate which will always be positive. The interest rate will always be a function of the risk free rate which compensates for the time the borrower will stay with the borrowed funds and a risk premium which compensates for the risk that the borrower may default. Proponents of this theory state premium demanded by lenders (banks) will increase if the period in which the borrower will stay with the money increases. However, supply of loans by banks is determined by the level of credit risk associated with the borrower. This is because banks act as intermediaries between lenders (depositors) and borrowers. Each bank selects the interest rate it offers on its deposits in order to maximize profits. The loaned funds must be repaid at a given interest rate which is inclusive of premium so that the bank(s) was able to repay the depositors.

They make loans at exogenously given interest rates. The study found liquidity preference theory useful in interest determination by forces of supply and demand. Interest earned on loans and investment form a large proportion of bank profits.

2.2.3 Agency Theory

Agency theory is the relationship between principal and agent. Jensen and Meckling, (1976) defined agency relationship as the contracts under which one or more (persons) principal engages another person (agent) to perform some services on their behalf which involves delegating some decision making authority to the agent. In the context of banks, there might exist shareholder verses management conflict. In the event that banks are owned by shareholders they appoint managers who are to carry out responsibilities on behalf of them. So, in such a scenario the management is the agent while the shareholders are the principal. The management is responsible for setting objective of the bank, two of the major objectives is maximizing shareholders wealth and maximizes profit; they also determine the risk level to be undertaken by the bank. To achieve the objectives the financial manager would take the actions that are expected to make major contribution to the firm's overall goals.

Some managers are risk averse, others are risk takers. A conflict may arise when the management of the banks for instance is risk averse, shareholders prefer usually high risk high return investments, and managers on the other hand prefer low risk low return investments. The difference in the risk profile is a source of conflicts of interest. If there is the principal-agent problem it could cost the firm money. To minimize agency problem and contribute to maximization of shareholder's wealth, agency cost is incurred. These are the costs of maintaining a corporate governance structure that monitors the management behaviors, ensures

against dishonest acts of management, and gives managers the financial incentives to maximize share price. Agency theory was important in the study as it informs management efficiency which ensures that management capacity is enhanced in order to make decisions that will benefit management, employees, shareholders and other stakeholders.

2.2.4 Expense- Preference (EP) Hypothesis

This hypothesis was introduced by Becker, (1957) which was then further developed by Williamson (1963) and used in banking by Edwards, (1977). In contrast to profit-maximizing policy, the Expense Preference hypotheses (EP) consider the firm as a utility maximizing unit through the pursuit of non-profit-maximizing policies. The manager increased staff expenditures, managerial emoluments and discretionary profit for which they have a positive preference.

Bourke (1989) employed a more robust test to investigate the presence of the expense preference behavior in banking. He used a value added measure of profitability, in order to remove the effect of managerially-induced expenditure and labor union negotiated wage demands from net income. In the banking context, value added could be defined as loan interest and other revenue less deposit interest and other non-wage expenses. Hence, support for the expense preference hypothesis would be found, if the coefficient of the concentration variable remains positive but increase in magnitude when a value added measure of profitability is used as the dependent variable. He observed a moderately positive relationship between concentration and pre-tax return on assets. However, contrary to expectation the sign of the coefficient of the concentration variable was negative when a value added measure of profitability was used as the dependent variable. Thus, Bourke's findings do not support the existence of the expense

preference hypothesis in banking. However, Molyneux and Thornton (1992) replicated Bourke's methodology and their results confirmed evidence of the existence of expense preference behavior in European banking markets. This theory is relevant as it informs determination of asset quality which considers non-value adding expenditures.

2.3 Empirical Review

This section reviews studies of work done by other researchers in relations to bank –specific factors that affect profitability of banks.

2.3.1 Capital Adequacy and Profitability of Commercial Banks.

Capital adequacy refers to the sufficiency of the amount of equity needed to absorb any shocks that the bank may experience (Kosmidou, 2008).Capital adequacy has been the focus of many studies and regulators as it is considered to be one of the main drivers of any financial institution's profitability (Sufian&Habibullah 2009;Uzhegova, 2010;Berger, 1995; Bourke, 1989; Thompson, Berker, & Scott, 2002; Navapan & Tripe, 2003; and Morrison & L. White, 2000).

Capital adequacy ratios relate to the firms overall use of financial leverage. Banks have to make decisions about the amount of capital they need to hold for the following reasons; Bank capital help prevent banks failure, a situation in which bank cannot satisfy its obligations to pay its depositors and other creditors and goes out of business. The amount of capital affect returns for the equity holders of the bank. Minimum amount of bank capital (banks' capital requirement) is required by regulatory authorities (IMF, 2013).

According to Christian, Moffit and Suberly (2008), capital adequacy measures provide significant information regarding a firm's returns, while a few of the individual variables

representing asset quality and earnings are informative. Various studies (Staikouras& Wood 2003; Tripe 2003) suggested that banks with higher levels of capital perform better than their Undercapitalized ones. Banks with higher capital adequacy are perceived as safer managers of borrowed funds and will attract deposits on more favorable terms than inadequately capitalized banks. Thus, well capitalized banks should be profitable than lowly capitalized banks. Staikouras & Wood (2003), observed that there exists a positive link between a greater equity and profitability among EU banks. However,Navapan and Tripe (2003), found the contrary that there is a negative relationship between capital and profitability. Ratio to be used for measuring capital adequacy was: Shareholders' equity to Total assets.

2.3.2 Asset Quality and Profitability of Commercial Banks

Asset quality is the estimation of quality of bank asset as measured by a lender's credit standards and the liquidity of securities held in investment portfolio. Each bank makes its own decisions as to how deposited funds should be allocated, and this decision determines its level of credit (default) risk. Credit risk is one of the factors that affect the profitability of a firm. The extent of the credit risk depends on the quality of assets held by a firm; the quality of assets held by a firm depends on exposure to specific risks, trends in non-performing loans, and the health and profitability of bank borrowers (Baral, 2005). Increased exposure to credit risk is normally associated with decreased firm profitability.

One of the major causes of bank failure is poor asset quality. Banking crises occurred in Kenya in 1998, when five banking institutions were placed under statutory management (Tobias and Themba, 2011).The bank failures were attributed to high non-performing loans. According to the International Monetary Fund, a non-performing loan is any loan in which: interest and principal payments are more than 90 days overdue; or more than 90 days' worth of interest has

been refinanced, capitalized, or delayed by agreement; or payments are less than 90 days overdue but are no longer anticipated. Many Financial institutions that collapsed in Kenya since 1986 failed due to non-performing loans (Waweru and Victor, 2009).

Two indicators— non-performing asset ratio and loan loss reserve ratio—are used to measure the quality of assets being held by banks (Baral, 2005). The CBK measures asset quality by the ratio of net non-performing loans to gross loans. However, Koch (1995) argues that a good measure of credit risk or asset quality is the ratio of loan loss reserve to gross loans because it captures the expectation of management with regard to the performance of loans. Poor asset quality therefore is related to reduced banks' profits which may result to banks failure (Baral, 2005). Asset quality has a positive relationship with bank profitability as observed by Molyneux and Thornton (1992).

2.3.3 Management Efficiency and Profitability of Commercial Banks

The management of the banking institution itself is a prerequisite for achieving profitability and stability of a bank. Management efficiency in banking organizations could be gauged based on operational efficiency. Several indicators can serve as a measure of management soundness. Expenses ratio, earning per employee, cost per loan, average loan size and cost per unit of money lent can be used as a proxy of the management efficiency (Baral, 2005). This study will concentrate on operating expense ratio. The expense management variable provides information on variations in operating costs. Expense management is captured by the ratio of these operating expenses to total assets and it is expected to be positively related with profitability, since improved management of these expenses will increase efficiency and thereafter raise profits.

In this study, the level of operating expenses was viewed as an indicator of the management's efficiency. The inclusion of bank expenses into the profitability is also supported

by Bourke (1989) and Molyneux & Thornton (1992) who found a link between bank profitability and expense management. For the most part, the literature argues that reduced expenses improve the efficiency and hence raise the profitability of a financial institution, implying a negative relationship between operating expenses ratio and profitability (Bourke, 1989). However, Molyneux and Thornton (1992) observed a positive relationship, suggesting that high profits earned by firms may be appropriated in the form of higher payroll expenditures paid to more productive human capital. The cost income ratio (CIR) measure is a good measure of operating efficiency. It measures bank operating cost as a proportion of its total income (Welch, 2006), Mathuva (2009) observed an inverse relationship between cost income ratio and bank's profitability.

Guru, Staunton, & Balashanmugan (2002) investigated the determinants of bank profitability in Malaysia. They used a sample of 17 commercial banks during the 1986 to 1995 period. The profitability determinants were divided in two main categories, namely the internal determinants (liquidity, capital adequacy, and expenses management) and the external determinants (ownership, firm size, and economic conditions). The findings revealed that efficient expenses management was one of the most significant in explaining high bank profitability. Among the macro indicators, high interest ratio was associated with low bank profitability and inflation was found to have a positive effect on bank performance.

Another study by Thorsten & Michael,(2004) showed that foreign-owned banks are more profitable than their domestic counterparts in developing countries and less profitable than domestic banks in industrial countries, perhaps due to benefits derived from tax breaks, technological efficiencies and other preferential treatments.

2.3.4 Earning Ability and Profitability of Commercial Banks.

Performance of a bank in terms of earnings and profitability reflects its ability to support present and future operations. It determines the ability of the bank to absorb losses by having an adequate capital base, finance its expansion and operations and pay dividends to its shareholders. The studies that have been conducted to establish how earnings ability affects profitability have used Net interest margin (NIM) as the parameter. NIM accounts for a huge percentage of the banks total revenue; a small change in the NIM has a huge impact on the profitability. Farroq (2003) analyzed the performance of commercial banks in Pakistan. According to his study NIM was higher in private banks and foreign banks compared to state owned banks in Pakistan. Chantapong (2005) also found out that Net interest margin of foreign banks was higher than those of domestic banks. (Low earnings ability is associated with low banks profitability (Farroq (2003).

2.3.5 Liquidity and Profitability of Commercial Banks.

Liquidity indicates the ability of the institutions to fund increases in assets and meet obligations as they fall due, it is an important profitability indicator.

Banks need liquidity for the major reasons:

To meet the liquidity needs of the deposit withdrawals and to satisfy demand for loans from customers. The deposits are convertible on demand (or on specified notice) into cash. Demands for conversion (withdrawal, check draws) are offset by new deposits.

Bank manufactures liquidity mainly through pooling new deposits. Mechanism to provide liquidity when pooling proves insufficient. When the demand for liquidity is great enough to completely overwhelm the backup mechanism the bank is unable to provide funds for its depositors. Such an overwhelming demand for liquidity leads to bank run. A regulatory

authority need to set the minimum amount of liquidity to ensure bank does not fail and this is experienced when they are unable to meet their legal obligations to depositors, other creditors and borrowers. Liquidity risk arises from the possible inability of banks to accommodate decreases in liabilities or to fund increases on the assets' side of the balance sheet, is considered an important determinant of bank profitability (CBK annual report, 2015). In Kenya, the statutory minimum liquidity requirement is 20%. According to CBK Bank Supervision Annual Report(2011) the average liquidity ratio for the sector was 39.8% in 2009, 44.5 % in 2010, and way above the minimum requirements. In previous studies, the results concerning liquidity are mixed (Kosmidou, Tanna, & Pasiouras, (2005) Determinants of profitability of domestic UK commercial banks: panel evidence from the period 1995-2002) found a positive relationship between liquidity and banks profitability. Bourke (1989) also found a positive relationship between bank liquidity and profitability. Molyneux & Thornton (1992) revealed a negative effect of liquidity on bank profits. Liquidity measurement is given by ratio of liquid assets to total liability deposits. This liquidity ratio has been used in the study of Samad & Hassan (2001) for the performance of Malaysian Islamic bank during 1984-1997. This research also intends to use this ratio.

2.3.6 Ownership Structure and profitability of Commercial Banks

Past studies have looked at ownership structure basically from management- owner structure (Lee, 2008; Ongore, 2011). Ownership structure as an internal mechanism of corporate governance has also developed to accommodate different ownership. Lee (2008) categorizes ownership structure into ownership concentration and ownership identity. He defines ownership concentration as the distribution of shares owned by majority shareholders. Ownership identity is mainly categorized into foreign versus domestic investors and institutional investors.

Other scholars such as Gorriz and Fumias (1996) look also at family owned firms versus non family owned firms. Ongore (2011) also widened the ownership identity in his study to incorporate diverse ownership and ownership by managers. Government ownership has been of much interest by many scholars looking at comparative performance between state versus non state ownership (Clarke et al., 2003; Young & Kang, 2008). This has even been theorized in the public choice theory.(The relationship between ownership structure and banks profitability depends on corporate issues associated with the bank which can either result to increased profits or reduced profits (Ongore, 2011).

2.4 Conceptualization

The basic understanding of the term "Conceptualization" is inventing or contriving an idea or an explanation and mentally formulating it. To conceptualize is to define what to measure. It tries to explain how the independent variables affect the dependent variable.

2.4.1 Capital Adequacy

Capital adequacy is a measure of a bank's capital. It is expressed as a percentage of a bank's risk weighted credit exposures. The calculation of banks' capital adequacy is based on projections of regulatory capital and the risk-weighted assets for capital adequacy. Banks' regulatory capital is the sum of Tier 1 capital and subordinated debt. Two types of capital are measured: tier one capital, which can absorb losses without a bank being required to cease trading, and tier two capital, which can absorb losses in the event of a winding-up and so provides a lesser degree of protection to depositors. It is impossible, however, to identify all components of Tier 1 capital. Therefore, a residual, i.e. the difference between the last reported figure for Tier 1 capital and the sum of the Tier 1 capital items in the balance sheet, is also projected (Uzhegova, 2010).In Kenya, the minimum regulatory Capital Adequacy requirement which is measured by the ratio of Core

Capital and Total Capital to Total Risk Weighted Assets is 8.0 percent and 12.0 percent respectively according to CBK.

The initial capital requirement for setting up financial institutions was increased for commercial banks. A substantial number of mergers and acquisitions have taken place in the banking sector in Kenya, partly occasioned by the need to meet the increasing minimum core capital requirements and to enhance the institution's market share in the local banking industry (Tobias & Themba, 2011). Between 1994 and 2005 there were 20 successful mergers, with the number increasing to 26 by 2007, with one merger in 2008.Ratio to be used under this is: Shareholders' equity to Total assets. A high ratio will reflect more protection for banks, which will influence the overall stability of banks soundness of the financial institutions. A deterioration of the equity-to-assets ratio indicates either an increase in debt financing of banks total assets (while holding total assets constant), or a decline in banks total assets (while holding total equity constant), or both over time. High equity asset ratio is assumed to be indicator of low leverage and therefore lower risk.

2.4.2 Asset Quality

Asset quality entails assessing the credit risk associated with a particular asset (loans). Changes in credit risk may reflect changes in the health of a bank's loan portfolio which may affect the performance of the bank. Two ratios will be used for this study that is the total loan to total asset ratio and non-performing loan to total asset ratio. Total Loan to Total Assets ratio is used in order to capture the effect of one of the core businesses of a bank on its profit, i.e. advances and investment (Arby &Farooq, 2003). Interest earned on advances and investment is the major source of revenue for the bank. The level of interest earning depends on the quantity of loans and the rate of interest. Non-performing loans refer to past due loan accounts whose principal or

interest is more than 90 days overdue. A lower asset quality indicates that the bank is more profitable, but a high asset quality indicates the bank is less profitable because the bank has a high percentage of nonperforming loans. The growth of NPL, lead to reduction in asset quality, reduction in credit-deposit ratio hence less profitability.

2.4.3 Management Efficiency

Sound management is important to the performance of any organizations. The cost income ratio (CIR) measure is a good measure of bank's management efficiency. The cost-to-income ratio measures the overheads or costs of running the bank, defined by operating costs (staff wages and administrative expenses) to net operating income (net interest income, net foreign exchange income, net fees and commission, and other income). Other expenses (include taxes, depreciation etc.). Although, the relationship between expense and profits appears straightforward implying that higher expenses mean lower profits and the vice versa, this may not always be the case. The explanation for this is that higher amounts of expenses may be associated with higher volume of banking activities and therefore higher revenues. Therefore, in order to assess the efficiency in management, we use a measure of costs relative to income. The study wants to establish the extent to which CIR affects bank's profitability. Higher ratios imply a less efficient management (Welch, 2006).

2.4.4 Earnings Ability

To establish the extent to which earnings ability affect bank's profitability the study intend to use NIM (Net interest margin) ratio for calculating banks' earnings. It is the difference between interest income and interest expenses as a percentage of total assets. NIM = (Interest Income –

Interest Expense) / Assets. If a commercial bank has high earnings ability the profit made was high. Therefore, earnings ability and profitability is expected to be positively related.

2.4.5 Liquidity

A bank needs enough money to fund increases in assets and meet obligations as they fall. The importance of liquidity goes beyond the individual bank, as a liquidity shortfall at an individual bank can have systemic repercussions in the banking sector. Loans given to the customers by the banks are considered as asset by the bank, while the deposit is a liability to the bank because the bank has an obligation to pay the depositor the money deposited. Therefore the bank should strike a balance between loan and deposit so as to ensure sufficient liquidity is achieved. Liquidity should not be less than the minimum 20% as prescribed by Central Bank of Kenya.

Liquidity measurement to be used in this study is the ratio of liquid asset to total liability deposits. The study wants to find out the extent to which liquidity affects profitability of commercial banks in Kenya. Higher figures of the ratio denote lower liquidity; this implies that more (less) liquid banks tend to exhibit higher (lower) profitability levels.

2.4.6 Ownership Structure

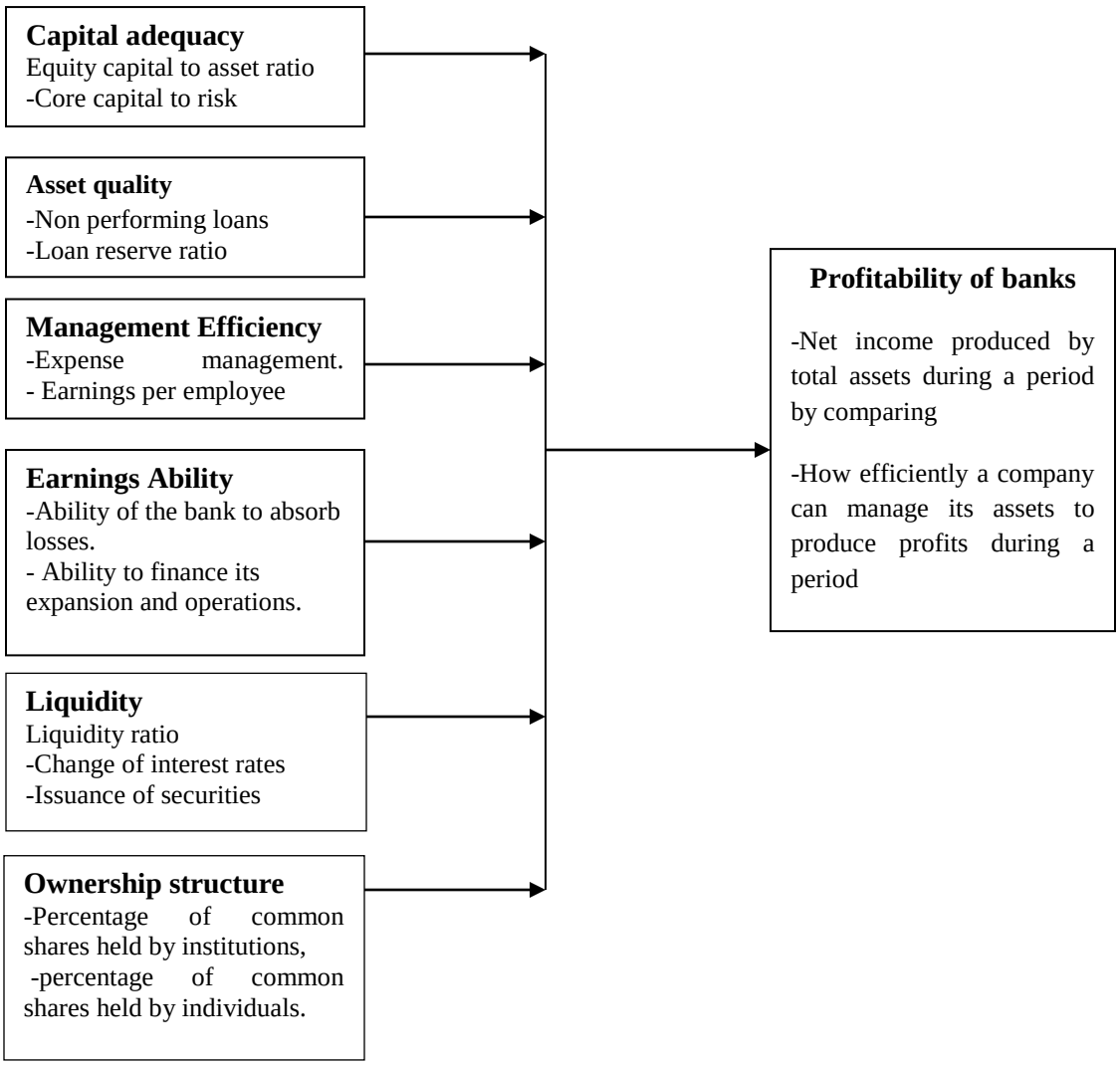
Lee (2008) stated that measurement of ownership structure involved the use of the percentage of shares held by a controlling shareholder as a proxy for ownership concentration. Ownership structure will be conceptualized as percentage of common shares held by institutions, percentage of common shares held by foreigners, percentage of common shares held by government and percentage of common shares held by individuals.

2.4.7 Profitability

A common measure of bank profitability is the return on assets (ROA). ROA, measures the net income produced by total assets during a period by comparing net income to the average total assets. In other words, the return on assets ratio or ROA measures how efficiently a company can manage its assets to produce profits during a period.

Return on investment (ROI) measures the relationship between income and a bank's level and source of finance. It also measures managerial efficiency and acts as a tool for planning and control.

Figure 2.1: Conceptual Framework



Source: Author (2016)

2.5 Operationalization of Variables

Table 2.1 Summary of Measurement of Variables

Variables	Abbreviation	Measurement	Formula
Capital Adequacy	CA	Core capital to asset ratio -Equity capital to asset ratio -Core capital to risk weighted	Shareholder's equity/ Total asset
Asset Quality	AQ	-Non performing loans -Loan reserve ratio	Non-performing loan / Gross Loans
Management Efficiency	ME	-Expense management. - Earnings per employee	Operating costs/ Net income CIR ratio
Earnings ability	EA	-Ability of the bank to absorb losses. - Ability to finance its expansion and operations.–Ability to pay dividends to its shareholders.	Operating cost/ Net operating income
Liquidity	L	-Liquidity ratio - Change of interest rates - Issuance of securities	Liquid asset/ Total liability deposit
Ownership structure	OS	Percentage of common shares held by institutions, percentage of common shares held by individuals.	1. Institutional Ownership (IO), 2. Individual Ownership(INDO)
Profitability	ROA	-Net income produced by total assets during a period by comparing -How efficiently a company can manage its assets to produce profits during a period	Net income/Total assets

Source: Author (2016)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The aim of this chapter is to clearly give a description of the procedures that was used in carrying out the research. It consists of a description of the Research design, target population, sample size and sample procedure data collection method, data analysis model and pre-analysis plan.

3.2 Research Design

This research used descriptive research design by analyzing historical trends of financial statements. Historical research is the study of a problem that requires collecting information from the past. This entails studying, understanding and experiencing the past, it seeks data that are available. Kraemer (1993) describes a descriptive survey as a means of gathering information about the characteristics, actions or opinions of a large group of people thus suitable for the current study.

3.3 Target Population

Schlinder and Coopers, (2004) define population to mean the total collection of elements about which we make inferences. The target population for this study was all the 43commercial banks operating in Kenya both listed and unlisted at NSE. As at December 2015, the banking sector comprised of the 44 banking institutions (43 commercial banks and 1 mortgage finance company - MFC). Out of the 44 banking institutions, 31 locally owned banks comprise 3 with public shareholding and 28 privately owned while 13 are foreign owned. The foreign owned financial institutions comprise of 9 locally incorporated foreign banks and 4 branches of foreign incorporated banks. The 44 registered commercial banks consist of 11 large banks which are

listed on NSE and, 23 small and 15 medium banks. However, two banks which are under receivership were excluded.

3.4 Sample Size and Sample procedure.

The study opted to undertake a census because of the small number of commercial banks in Kenya since it was possible to collect data from all the banks.

3.5 Data Collection

The data was collected from the Central Bank of Kenya Banking Surveys from 2005 to 2015. The banking Survey is an annual publication that publishes annual financial statements of all banks in Kenya. The data was extracted from income statements and balance sheets relating to years 2005 – 2015. The data was reported in Kenya shillings. Since it was a comparative analysis, data for the listed banks was treated separately from the data for unlisted banks for easy categorization during data analysis and presentation. The period between 2005 and 2015 (2005 inclusive) was therefore be considered in this study. These data allowed for the calculation measures relevant to this study. This was treated as panel data since it constituted a mixture of cross-sectional as well as time series data.

3.6 Data Analysis

Data analysis commenced with the descriptive analysis of the data. Test of panel model assumptions are represented to determine the suitability of the data for OLS, fixed, random model including test of linearity through correlation, multicollinearity, homogeneity and collinearity. Within and between bank trend analysis of the variables to determine performance over time.

To examine factors affecting profitability the study estimated the regression equation for both listed and unlisted banks. The regression coefficients for all the independent variables and the dependent variables for both listed and unlisted were then regressed for overall comparison. A dummy variable β1 and β2 representing listed banks and unlisted banks were used to represent the intercepts for the banks under study. Panel data regression models tested included fixed effect model and the random effects model which deals with cross-sectional effect that may exist on each bank or banks in a group. The random effects model separates the differences across components (panels) and individual are random and uncorrelated with the independent variables. Hence error term thus captures the random effects due to the panels and random errors. To determine which of the two models would be used to best explain the estimation, a Hausman specification test was carried out to evaluate the aptness of each model.

The fitted pooled OLS, fixed and random effects models are as follows:

1. Pooled OLS:

   i. $Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$

   Where ε_{it} = error term

2. Random effects:

   ii. $Y_{it} = \alpha + X_{it}\beta + \varepsilon_{it} + \mu_{it}$

   Where ε_{it} = within entity error term

   μ_{it}= between entity error term

From the equations, Y_{it} =Profitability (ROA) and NIM for i^{th} firm in t^{th} year. X_{it}= vector representing independent variables (Capital adequacy, Asset quality, Management Efficiency, Earnings Ability, Liquidity and Ownership structure) for firm *i* in year *t*, β= Vector of

Coefficients of the independent variables, α= the intercept for each entity, i = 1, 2 … 43 (indicator of the commercial banks) and t= 1, 2 … 11 (time indicator).

3.5.1 Pre-analysis Plan

Before fitting the models (1) and (2) above; the data was cleaned and subjected to the tests of regression assumptions that are made about variables during statistical tests. Statistical procedures used in analyses may have some errors and therefore need to be tested. The study therefore carried out test of normality which is used to establish if a data set is well-modeled by a normal distribution, linearity which was carried out to establish that the data used for analysis was sampled from a population that relates the variables of interest in a linear fashion, homogeneity of variances which was carried out to establish the significance of the variance of the variables used in the study and Multicollinearity tests which was carried out primarily to avoid the problem of multiple counting, brought about when a researcher uses the same type of information more than once with different variables which is common in technical analysis. Further, the study carried out the comparison of means of the variables between listed and unlisted banks using a t-test.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The chapter presents findings of data analysis and their interpretations. It commences with the descriptive analysis of the data. Test of panel model assumptions are represented to determine the suitability of the data for fixed, random model including test of linearity through correlation, multicollinearity, homogeneity and collinearity. Within and between bank trend analyses of the variables was carried out to determine performance over time.

4.2 Descriptive Statistics and Panel Data Exploration

The study presented summary statistics of the main models variables so as to illustrate the overall performance on the variables. These include: minimum, maximum, mean, standard deviation, skewness and kurtosis.

Table 4.1 shows that the mean of return on assets of the bank was 2.267 with maximum and minimum values of 10.43 and -26.49 respectively. This shows that the banking industry has been profitable. The median value of 2.56 shows that more than half of the observations were positive performance. A standard deviation of 3.232 shows that the variability in profitability as measured by ROA was quite moderate. This compares to net interest margin which had a standard deviation of 2.253. The mean value of net interest margin of 5.61 further points to profitability with a maximum value of 13.73. Management efficiency has a mean of 72.73 and maximum value of 893.94 showing that while on average banks incurred Ksh0.7 in cost for every shilling earned, the most profitable ones incurred no cost while the least incurred Ksh8.9. The standard deviation of 65.47 shows that there was high variability in management efficiency.

The table below further shows an average asset quality value of 10.98 with a maximum value of 83.24. a standard deviation of 12.608 points to high variability. Capital adequacy had a mean of 23.616, a maximum value of 136.24 and a standard deviation of 18.202. Liquidity had a mean of 44.295 and standard deviation of 23.862. Earnings ability had a mean of 69.687 with a minimum of 3.47 and maximum value of 444.57 and standard deviation of 35.381. this points to high variability in these regressors from one commercial bank to the other.

Analysis of skewness shows that net income margin (0.529) and ownership structure (0.4191) were asymmetrical to the right around its mean as their skewness values were close to zero. Additionally, return on asset (23.697), management efficiency (75.37) and earning ability (49.2) are highly peaked compared to other regressors. Net income margin (1.102) has low peaks.

Table 4.1: Descriptive Statistics

	Return on Assets	**Net Income Margin**	**Management Efficiency**	**Asset Quality**	**Capital Adequacy**	**Liquidity**	**Earnings Ability**	**Ownership Structure**
Mean	2.2678	5.6157	72.728	10.98	23.616	44.295	69.687	0.39746
Median	2.56	5.39	61.02	6.8	17.29	38.26	67.03	0
Minimum	-26.49	-0.04	0	0	-15.86	0	3.47	0
Maximum	10.43	13.73	893.94	83.24	136.24	221.88	444.57	1
Std. Dev	3.2323	2.2528	65.473	12.608	18.202	23.862	35.381	0.48989
C.V.	1.4253	0.40116	0.90025	1.1482	0.77075	0.53869	0.50771	1.2325
Skewness	-3.3951	0.52932	7.5335	2.4778	2.5907	1.9848	5.4074	0.41905
Ex. Kurtosis	23.697	1.1015	75.37	7.6167	8.7504	8.049	49.2	-1.8244
5% Perc	-1.86	2.221	32.589	0.785	9.256	16.986	28.935	0
95% Perc	6.215	9.895	139.66	36.475	61.374	84.194	113.61	1
IQ Range	2.755	2.535	24.52	9.74	15.38	25.955	23.505	1

Source: Author (2016)

Trend analysis of the panel data was conducted to determine time performance or component of the dependent variable (return on assets) within and between firms. Appendix II shows that there have been time changes or variability of both ROA and net income margin (NIM) within individual bank. For instance, Eco bank, Gulf African bank, First Community Bank and Oriental Commercial bank showed greater variability than other banks. Between banks trend was used to determine whether there is significant differences between banks owing to different intercepts. Between groups show that different banks had different intercepts which confirms the suitability of fixed or random panel models compared to pooled ordinary least square models.

Table 4.2: Performance Comparison – Listed vs Non Listed

	Return on Assets		**Net Income Margin**	
	Not-Listed	**Listed**	**Not-Listed**	**Listed**
N	363	110	363	110
Mean	1.7842	3.8635	5.3722	6.4191
Std. Deviation	3.43648	1.6349	2.32524	1.78068
Skewness	-3.39	-0.283	0.743	0.059
Std. Error of Skewness	0.128	0.23	0.128	0.23
Kurtosis	22.429	0.275	1.454	0.979
Std. Error of Kurtosis	0.255	0.457	0.255	0.457
Minimum	-26.49	-1.52	-0.04	0
Maximum	10.43	7.36	13.73	10.94
1st Quartile	0.9	2.63	3.87	5.23
2nd Quartile	2.03	4.005	5.18	6.13
3rd Quartile	3.31	4.9925	6.41	7.4475
Levene's Test for Equality of Variances	F	6.736		4.082
	sig.	0.01		0.044
	t	-8.722		-5.007
	df	387.244		232.088
	sig.	.000		.000

Source: Author (2016)

Table 4.2 presents comparative results on the profitability of listed and non-listed commercial banks. On ROA, listed commercial banks had a mean of 3.864 with a standard deviation of 1.635 while non-listed banks had a mean of 1.784 with a standard deviation of 3.436. First quartile values were 2.63 for listed banks and 0.9 for non-listed banks. This means for that quarter of least performing listed banks had better ROA than average and half of non-listed commercial banks. On NIM, listed banks had a mean of 6.419 against 5.372 for non-listed banks. Quartile values also shows that quarter of the least performing listed banks had superior NIM than half of non-listed commercial banks.

Independent t-test was conducted to establish whether there are significant differences in the means of the profitability of listed commercial banks and the not-listed ones. The t-test null hypothesis was that the means of the two groups are not significantly different. Levene's test for equality of variances sought to establish if the two groups have approximately equal variance in profitability. The study established significant Levene statistics at $p = .01$ and $p = .044$ in ROA and NIM respectively. Thus, equal variances are not assumed. On ROA, t value of -8.722 at 387.2 degrees of freedom with a p-value of <.001. This shows that listed commercial banks posted significantly higher ROA than non-listed banks. On NIM, t-test statistics were: $t = -5.007$, $df = 232.088$, $p = <.001$. Thus, listed commercial banks had significantly higher NIM than non-listed banks.

4.2.1 Correlation Analysis and Multicollinearity Tests

Correlation analysis was used to determine the linearity of the relationship between dependent and independent variables. The correlation matrix was also instrumental in determining collinearity between two independent variables.

Table 4.3: Correlation Matrix

```
. pwcorr roa nim mgteff assqua capade liqui earnabi ownstr, sig star(5)
             |      roa      nim   mgteff   assqua   capade    liqui  earnabi
-------------+---------------------------------------------------------------
         roa |   1.0000
             |
             |
         nim |   0.3076*  1.0000
             |   0.0000
             |
      mgteff |  -0.3785* -0.2598*  1.0000
             |   0.0000   0.0000
             |
      assqua |  -0.4375*  0.0493   0.0402   1.0000
             |   0.0000   0.2850   0.3832
             |
      capade |  -0.2849* -0.0381   0.2559   0.2811  1.0000
             |   0.0000   0.4079   0.1181   0.0710
             |
       liqui |   0.0745  -0.1367* -0.0298   0.0051   0.2891*  1.0000
             |   0.1056   0.0029   0.5176   0.9111   0.0000
             |
     earnabi |  -0.1448*  0.3182* -0.0585   0.3405   0.2076  -0.1475   1.0000
             |   0.0016   0.0000   0.2042   0.0613   0.1052   0.0713
             |
      ownstr |  -0.0113  -0.1176* -0.0460   0.1340  -0.0501  -0.0592  -0.0852
             |   0.8069   0.0105   0.3179   0.0835   0.2769   0.1989   0.0640
```

Source: Author (2016)

Table 4.3 shows existence of negative and significant linear relationship between ROA and: management efficiency (R=-.3785, p <.001); asset quality (R=-.4375, p<.001); capital adequacy (R=.2849, p<.001) and earning ability (R=-.1448, p=.0016). There was however insignificance relationship between ROA, liquidity and ownership structure. There was negative and significant linear relationship between NIM and: management efficiency (R=-.2598, p <.001); liquidity (R=-.1397, p=.0029); and ownership structure (R=-.1176, p=.0105). There was significant and positive relationship between earning ability and NIM (R=.3182, p<.001).

The study tested for multicollinearity using variance inflation factor and tolerance. Table 4.4 shows VIF values between 1.07 and 1.71. Tolerance values were below 0.1. The mean VIF was 1.37 signifies lowly correlated variables, thus no multicollinearity.

Table 4.4: Collinearity Test

```
. collin roa nim mgteff assqua capade liqui earnabi ownstr
(obs=473)

  Collinearity Diagnostics

                        SQRT                     R-
  Variable      VIF     VIF    Tolerance     Squared
----------------------------------------------------
       roa      1.71    1.31     0.5847       0.4153
       nim      1.38    1.18     0.7224       0.2776
    mgteff      1.29    1.14     0.7730       0.2270
    assqua      1.50    1.23     0.6660       0.3340
    capade      1.38    1.18     0.7243       0.2757
     liqui      1.22    1.11     0.8164       0.1836
   earnabi      1.36    1.17     0.7347       0.2653
    ownstr      1.07    1.04     0.9319       0.0681
----------------------------------------------------
  Mean VIF      1.37
```

Source: Author (2016)

Serial Correlation was tested using Wooldridge test for autocorrelation in panel data. The study established an F-value of 24.433 at $p < .001$. Though the study shows serial autocorrelation of first-order, this is generally assumed for 11 year panel data.

Table 4. 5: Serial Correlation

```
. xtserial roa nim mgteff assqua capade liqui earnabi ownstr

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      42) =     24.433
           Prob > F =      0.0000
```

Source: Author (2016)

4.2.2 Unit Root Tests

The study conducted unit root tests to determine whether there is stationarity problem with the data or whether the data is random. The study performed this by running both Levin-Lin-Chu and Harris-Tzavalis unit-root tests which assume a null hypothesis of unit root. From Appendix III, Levin-Lin-Chu produced a t-value of -16.944 at p<.001. Harris-Tzavalis unit-root produced a z-value of -12.3148 at p <.001. Therefore, there is no presence of unit roots – (p-value < 0.05 Reject Ho) and the panel data is stationary.

4.3 Diagnostic Tests

The study conducted diagnostic test such as: Time-fixed effects, random effects, cross-sectional independence and groupwise heteroscadiscity. The diagnostic test results were presented in Appendix V. Time-fixed effects produced an F test value of 3.10 at p < .001 signifying no time-fixed effects.

Random effects was tested using Breusch-Pagan Lagrangian multiplier test to determine if random effect or pooled OLS is suitable. Breusch-Pagan produced a significance value of $p < .001$. Thus, null hypothesis of pooled OLS is rejected showing that random effect model is more suitable. Pesaran test was used to determine cross-sectional independence to determine if residuals are correlated across entities. Cross sectional dependence violates panel models assumptions in long-time series (more than 20 years panels) leading to bias in tests results. It tests the null hypothesis that residuals are not correlated (there is no serial correlation). Test result of 1.956 was established at $p = 0.0504$ showing no cross-sectional dependence or correlation. Heteroscedasticity was tested using Wald test for fixed effect regression. A chi-square value of 18960.17 was established at $p < .001$. Thus, heteroscedasticity is present.

4.4 Fixed, Random Effects Models

The study conducted a fixed and random effect regression model. This was important as the study used panel data which has cross-sectional and time-series attributes. Fixed and random effect was better suited than pooled regression model as considers the heterogeneity or individuality of the different banks. Besides, the analysis was important in determining if data has been gathered from all the levels of banks' profitability or profitability has many possible levels, interest is in all possible levels, but only a random sample of levels is included in the data. Random effect model estimated whether omitted variables are constant over time but vary between cases, and others are fixed between cases but vary over time.

The study conducted Hausman test to determine whether fixed effect would perfectly fit the panel data by comparing fixed with random effect. Hausman test tests the null hypothesis that random effect model is appropriate against the alternative that fixed effect model is suitable.

That is, choosing between fixed and random effects. It tests the null hypothesis that estimated coefficients by the efficient random effects model are the same as the ones estimated by the consistent fixed effects model. The study established a chi-square of 21.71 at p = .0014. Since the Hausman test is significant at 95% confidence level, the study rejects the null hypothesis of difference in coefficients is not systematic. Thus, fixed effect model is more suitable for the panel data than random effects model.

Table 4.6: Hausman Test

```
. hausman fixed random

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |    fixed       random       Difference          S.E.
-------------+------------------------------------------------------------
      mgteff |  -.0069937    -.0118761        .0048825        .001112
      assqua |  -.1071532    -.1029889       -.0041643        .0063304
      capade |  -.0289079    -.0240704       -.0048375        .0056664
       liqui |    .008549     .0120523       -.0035033        .0022228
     earnabi |  -.0014829     3.42e-06       -.0014863        .0021335
      ownstr |   2.008756     .2212659         1.78749        2.518777
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =       21.71
                Prob>chi2 =      0.0014

.
```

Source: Author (2016)

Fixed effect model permits heterogeneity of individual banks by allowing each to have its own intercept value although the intercept does not vary across time – time invariant. Random effect, on the other hand, assumes that all the banks have a common mean value for the intercept.

That is, fixed effect model is instrumental in controlling for omitted variables that differ between cases but are constant over time by using the changes in the variables over time to estimate the effects of the independent variables on ROA. Robust error estimation was preferred owing to presence of heteroscedasticity. From the Table 4.7, the study established an F-test value of 17.27 with a significance value of p <. .001. This means that all the coefficients of the model are not equal to zero. Therefore, the overall fixed effect model is perfectly fitted and thus significant. Overall R-square statistics was 0.2368 which depicts a moderate independent variables predictor power on return on assets. Interclass correlation (rho) of 0.3274 shows that 32.7% of variance is due to differences across panels. That is, 32.7% of variations are explained by individual-specific effects and not idiosyncratic effects. Asset quality and ownership structures had significant relationship with ROA. Asset quality had a negative relationship of -0.1071 at p < .001. This shows that asset quality would lead to 0.1071 reduction in ROA when asset quality change between banks. Ownership structures had a coefficient of 2.0086 at p < .001. Thus, ownership structures would lead to 0.1071 increase in ROA when it changes between banks.

Though not used, in the study, random effect produced a chi-square test value of 161.64 significant at 95% confidence level (p<.001) (Appendix IV). The overall R-square was 0.3316 showing moderate causality between dependent and independent variables. Interclass correlation (rho) of 0.129 shows that 12.9% of variance is due to differences across panels. This further underscore the appropriateness of fixed over random effect model. Histogram and QQ-plot in Appendix VII point to normality in distributed of the models residuals.

Table 4.7: Fixed Effect Model

```
. xtreg roa mgteff assqua capade  liqui earnabi ownstr, fe vce(robust)

Fixed-effects (within) regression               Number of obs      =       473
Group variable: bank                            Number of groups   =        43

R-sq:  within  = 0.1964                         Obs per group: min =        11
       between = 0.3210                                        avg =      11.0
       overall = 0.2368                                        max =        11

                                                F(5,42)            =         .
corr(u_i, Xb)  = -0.1969                        Prob > F           =         .

                                    (Std. Err. adjusted for 43 clusters in bank)
------------------------------------------------------------------------------
             |               Robust
         roa |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      mgteff |  -.0069937   .0077041    -0.91   0.369    -.0225411    .0085537
      assqua |  -.1071532   .0257216    -4.17   0.000    -.1590614    -.055245
      capade |  -.0289079   .0405294    -0.71   0.480    -.1106996    .0528839
       liqui |    .008549   .0087982     0.97   0.337    -.0092065    .0263046
     earnabi |  -.0014829   .0103711    -0.14   0.887    -.0224127    .0194469
      ownstr |   2.008756   .3744539     5.36   0.000     1.253077    2.764434
       _cons |   3.561935   1.453787     2.45   0.019     .6280734    6.495797
-------------+----------------------------------------------------------------
     sigma_u |   1.691674
     sigma_e |  2.4245356
         rho |  .32742759   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Source: Author (2016)

4.4.1 Fixed, Random Effect – Net Income Margin

The study also estimated the fixed random effect of the bank data against net income margin. The study conducted Hausman test to determine whether to use the random or fixed effect model. Hausman test value of 3.58 was established at p = .7329. Owing to the insignificance, the study fails to rejects the null hypothesis that difference in coefficients is not systematic. Thus, random effect model is more suitable for the panel data than fixed effects model.

Table 4.8: Hausman Test – Net Income Margin

```
. hausman fixed random

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |    fixed       random       Difference          S.E.
-------------+------------------------------------------------------------
      mgteff |  -.0085742    -.0085648       -9.40e-06        .0002725
      assqua |  -.0021411    -.0019535       -.0001876        .0016524
      capade |   .0073557     .0066631        .0006926        .0014989
       liqui |  -.0086562    -.0088721        .0002159        .0006132
     earnabi |   .0086214     .0094997       -.0008782        .0005418
      ownstr |  -1.068081    -.6071437       -.4609376        1.264083
------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =         3.58
                Prob>chi2 =       0.7329
```

Source: Author (2016)

Random effect model presented in Table 4.9 shows a chi-square test value of 84.19 at p < .001. The overall R-square was 0.1685 showing moderate causality between dependent and independent variables. Management efficiency, liquidity and earning ability were significant at 95% confidence level. However, only earning ability had a positive relationship of 0.0095. Management efficiency and liquidity had coefficients of -0.0086 and -0.0089. Therefore, on average management efficiency and liquidity would have a negative effect on NIM when they change across time and between banks. Interclass correlation (rho) of 0.6261 shows that 62.6% of variance is due to differences across panels compared to 63.3% in fixed model in Appendix VI.

Table 4.9: Random Effect Model – Net Income Margin

```
. xtreg nim mgteff assqua capade  liqui earnabi ownstr, re

Random-effects GLS regression                   Number of obs      =       473
Group variable: bank                            Number of groups   =        43

R-sq:  within  = 0.1516                         Obs per group: min =        11
       between = 0.1879                                        avg =      11.0
       overall = 0.1685                                        max =        11

                                                Wald chi2(6)       =     84.19
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

nim	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
mgteff	-.0085648	.0012543	-6.83	0.000	-.0110232	-.0061065
assqua	-.0019535	.0068318	-0.29	0.775	-.0153435	.0114365
capade	.0066631	.0052658	1.27	0.206	-.0036576	.0169838
liqui	-.0088721	.0031444	-2.82	0.005	-.015035	-.0027092
earnabi	.0094997	.0024173	3.93	0.000	.0047619	.0142374
ownstr	-.6071437	.5001916	-1.21	0.225	-1.587501	.3732139
_cons	6.074968	.4346487	13.98	0.000	5.223072	6.926864
sigma_u	1.6747392					
sigma_e	1.2941754					
rho	.62611071	(fraction of variance due to u_i)				

Source: Author (2016)

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the study and makes conclusion based on the findings. The recommendations of the study and areas for further research are also presented.

5.2 Summary of Findings

Capital adequacy is a measure of a bank's capital. The study sought to determine capital adequacy influence on banks profitability. The results indicate that capital adequacy had a statistically positive influence on profitability of commercial banks and therefore must be well managed for commercial banks to remain profitable. This finding concurs with Staikorous & Wood (2003) which found capital adequacy had a positive relationship with bank profitability. Asset quality is the estimation of quality of bank asset as measured by a lender’s credit standards and the liquidity of securities held in investment portfolio. The study therefore found of paramount to determine the effect of asset quality on commercial banks profitability. The results showed that asset quality influences banks profitability. This implies that commercial banks have put in place proper ways of managing the non-performing loans. Tobias and Themba, (2011) found out that one of the major causes of bank failure is poor asset quality. Banking crises occurred in Kenya in 1998, when five banking institutions were placed under statutory management.

Sound management being very important to the performance of any organizations, the study found it of paramount to determine its effect on commercial banks profitability.

Management efficiency influenced banks profitability implying that banks have put efforts towards motivating and building capacity in the employees to enhance their productivity. Molyneux and Thornton (1992) observed a positive relationship, suggesting that high profits earned by firms may be appropriated in the form of higher payroll expenditures paid to more productive human capital.

The study further determined the effect of earnings ability on commercial banks profitability which showed positive statistical influence. This implies that shareholders' dividends also constitute an appropriation of funds which would otherwise finance expansion and therefore reduces the profitability of the commercial banks. The findings concur with Farroq (2003) who analyzed the performance of commercial banks in Pakistan. According to his study NIM was higher in private banks and foreign banks compared to state owned banks in Pakistan.

Ownership structure showed statistically positive influence on banks profitability implying that as more shares are owned by outsiders or public the banks efficiency improves due to continuous monitoring from the shareholders.

5.3 Conclusions

The study concludes that the variables considered in this study (capital adequacy, asset quality, management efficiency, earnings ability, liquidity and ownership structure) explain the profitability of commercial banks in one way or another. The results showed that asset quality and ownership structure explained profitability of commercial banks as measured by the return on assets in the fixed effect model. This illustrates that institutional owned banks had a better performance than individual-owned banks. Listed commercial banks also had superior performance compared to non-listed banks as shown by their ROA and NIM statistics. A quarter of

the listed banks performed better than half of combined non-listed firms. Management efficiency, capital adequacy, liquidity and earning ability explained variations in net income margins.

5.4 Recommendations

As far as capital adequacy is concerned the study recommends that banks should manage risks involved during their operation to minimize potential risks and losses. From the findings the study also recommends that dividends paid to shareholders should be well managed to maximize the retained earnings for expansion. As far as asset quality is concerned, the study further recommends that banks should maximize lending to customers and also scrutinize their financial ability to repay before advancing loans to them to avoid default loans in order for them to maximize their profits. The study further recommends that banks should diversify loans to customers to minimize the risk of default. Building capacity in the banking sector is a major contributor to profitability.

The study further recommends that banks should offer advisory services to their customers on how to invest the borrowed amount. Concerning earnings ability, the study recommends that banks should plough back in to the business much of their profits at the expense of shareholders for efficient and continued business operation. The study further recommends that shareholders should be given second priority after all banks operation expenses have been taken care of. Concerning liquidity, the study recommends that banks should continue lending to their potential customers to increase their profitability through interest rates. Banks should also raise liquid holdings in order to reduce liquidity risk. Further the study recommends that banks should develop strategies to meet their short term obligation through enhanced disbursement of loans to their customers. The study has clearly established that publicly owned banks performed more than privately owned banks.

5.5 Recommendations for further study

This study considered only six factors affecting profitability of commercial banks in Kenya. Further studies should incorporate economic, political, legal and social factors that may affect profitability of commercial banks e.g interest rates, inflation rate and the effects of the recent legislation passed by parliament capping interest rates in Kenya. Other studies should also be carried out on the same to determine the extent to which the considered factors influence the profitability of micro finance institutions in Kenya.

REFERENCES

Arby, Muhammad Farooq."Structure and Performance of Commercial Banks in Pakistan."*State Bank of Pakistan* (2003).

Athanasoglou, Panayiotis P., Sophocles N. Brissimis, and Matthaios D. Delis."Bank-specific, industry-specific and macroeconomic determinants of bank profitability."*Journal of international financial Markets, Institutions and Money* 18.2 (2008): 121-136.

Awuor, Fred. *Effects of selected bank specific factors on non performing loans amongst commercial banks in Kenya*.Diss.University of Nairobi, 2015.

Baral, Keshar J. "Health check-up of commercial banks in the framework of CAMEL: A case study of joint venture banks in Nepal." *Journal of Nepalese Business Studies* 2.1 (2005): 41-55.

Ben Naceur, Sami, and Mohammed Omran."The effects of bank regulations, competition and financial reforms on MENA banks' profitability."Economic Research Forum, 2008.

Berger, Allen N., Diana Hancock, and David B. Humphrey. "Bank efficiency derived from the profit function." *Journal of Banking & Finance* 17.2 (1993): 317-347.

Bobáková, I. V. "Raising the profitability of commercial banks."*BIATEC* 11 (2003): 21-25.

Bourke, Philip. "Concentration and other determinants of bank profitability in Europe, North America and Australia."*Journal of Banking & Finance* 13.1 (1989): 65-79.

Chantapong, Saovanee, and Lukas Menkhoff. "Cost efficiency of domestic and foreign banks in Thailand: Evidence from panel data." (2005).

Chantapong, Saovanee. "Comparative study of domestic and foreign bank performance in Thailand: The regression analysis." *Economic Change and Restructuring* 38.1 (2005): 63-83.

Christian, Cal, Jacquelyn Sue Moffitt, and Lynn A. Suberly. "Fundamental analysis for evaluating bank performance: what variables provide the greatest insight into future earnings?." *Bank Accounting & Finance* 21.6 (2008): 17-25.

Cooper, D.R & Schindler, P.S. (2003).*Business Research Methods* (8th Ed.). McGraw-Hill: New York

Edison, Hali J., et al. "Capital account liberalization and economic performance: Survey and synthesis." *IMF Staff Papers* (2004): 220-256.

Edwards, Franklin R. "Managerial objectives in regulated industries: Expense-preference behavior in banking." *The Journal of Political Economy* (1977): 147-162.

Eldomiaty, Tarek Ibrahim, Ahmed FikriMabrouk, and Diaa El Shater. "The Relative Contribution of Micro and Macroeconomic Determinants of Bank Profitability: Empirical Study on MENA and EU." *European Journal of Economics, Finance and Administrative Sciences* 76 (2015).

Fraser, Donald R., and Peter S. Rose. "More on Baking Structure and Performance: The Evidence from Texas." *Journal of Financial and Quantitative Analysis* 6.01 (1971): 601-611.

Gul, Sehrish, FaizaIrshad, and Khalid Zaman. "Factors affecting bank profitability in Pakistan." *The Romanian Economic Journal* 39.14 (2011): 61-89.

Guru, Balachandher K., J. Staunton, and B. Balashanmugam."Determinants of commercial bank profitability in Malaysia."*Journal of Money, Credit, and Banking* 17 (2002): 69-82.

Haslem, John A. "A statistical analysis of the relative profitability of commercial banks." *The Journal of finance* 23.1 (1968): 167-176.

International Monetary Fund (IMF), (2013), *Creating a Safer Financial System: Will the Volcker, Vickers, and Liikanen Structural Measures Help?* Staff Discussion Note 13/4.

Jensen, Michael C., and William H. Meckling. "Theory of the firm: Managerial behavior, agency costs and ownership structure." *Journal of financial economics* 3.4 (1976): 305-360.

Keynes, John Maynard. "The general theory of interest, employment and money." (1936).

Keynes, John Maynard. *The Collected Writings of John Maynard Keynes: The general theory and after: pt. 2, Defence and development*. Vol. 14.Macmillan, 1971.

Kiyota, Hiroyuki. *Efficiency of commercial banks in Sub-Saharan Africa: A comparative analysis of domestic and foreign banks*. No. 2011, 58. Working paper//World Institute for Development Economics Research, 2011.

Kosmidou, Kyriaki, SaileshTanna, and FotiosPasiouras. "Determinants of profitability of domestic UK commercial banks: panel evidence from the period 1995-2002." *Money Macro and Finance (MMF) Research Group Conference*.Vol. 45. 2005.

Kosmidou, Kyriaki. "The determinants of banks' profits in Greece during the period of EU financial integration."*Managerial Finance* 34.3 (2008): 146-159.

Lee, Sanghoon. "Ownership structure and financial performance: Evidence from panel data of South Korea." *Corporate ownership and Control* 6.2 (2008).

Mathuva, D. M. "Capital adequacy, cost income ratio and the performance of commercial banks: the Kenyan scenario." *The International Journal of Applied Economics and Finance* 3.2 (2009): 35-47.

Micco, Alejandro, UgoPanizza, and Monica Yanez."Bank ownership and performance. Does politics matter?." *Journal of Banking & Finance* 31.1 (2007): 219-241.

Mohammad, SulaimanD.*Does Financial Liberalization positive impact on economy: In case of Pakistan*.Diss. Federal Urdu University of Arts, Science and Technology.

Molyneux, Philip, and John Thornton. "Determinants of European bank profitability: A note." *Journal of banking & Finance* 16.6 (1992): 1173-1178.

Molyneux, Philip, and John Thornton. "Determinants of European bank profitability: A note." *Journal of banking & Finance* 16.6 (1992): 1173-1178.

Morrison, Alan D., and Lucy White."Crises and capital requirements in banking."*American Economic Review* (2005): 1548-1572.

Navapan, K., and D. Tripe."An exploration of the relationship between bank capital levels and return on equity."*Proceeding of the 16th Australasian Finance and Bank. Conf.(AFBC'03). Palmerston North*. 2003.

Ndegwa, Raphael. *Effect of mobile money on non-performing loans of commercial banks in Kenya*.Diss. 2014.

Nzoka, Festus K. *The effect of assets quality on the financial performance of commercial banks in Kenya*.Diss.University of Nairobi, 2015.

Nzongang, T., and J. Atemnkeng. "Market structure and profitability performance in the banking industry of CFA countries: The case of commercial banks in Cameroon." (2006).

Olweny, Tobias, and Themba Mamba Shipho."Effects of banking sectoral factors on the profitability of commercial banks in Kenya."*Economics and Finance Review* 1.5 (2011): 1-30.

Pasiouras, Fotios, and KyriakiKosmidou."Factors influencing the profitability of domestic and foreign commercial banks in the European Union."*Research in International Business and Finance* 21.2 (2007): 222-237.

Pasiouras, Fotios, and KyriakiKosmidou."Factors influencing the profitability of domestic and foreign commercial banks in the European Union."*Research in International Business and Finance* 21.2 (2007): 222-237.

Peltzman, Sam. "Bank stock prices and the effects of regulation of the banking structure."*The Journal of Business* 41.4 (1968): 413-430.

Smith, Rosie, Christos Staikouras, and Geoffrey Wood. "Non-interest income and total income stability." (2003).

Sufian, Fadzlan, and Muzafar Shah Habibullah. "Bank specific and macroeconomic determinants of bank profitability: Empirical evidence from the China banking sector." *Frontiers of Economics in China* 4.2 (2009): 274-291.

Sufian, Fadzlan, and Muzafar Shah Habibullah. "Determinants of bank profitability in a developing economy: Empirical evidence from Bangladesh." *Journal of business economics and management* 10.3 (2009): 207-217.

Thompson, Edward, BotanBerker, and Gordon Scott."Turkish Bank Capital Adequacy–Too Little, Too Late."*Fitch Ratings-Banks* (2002).

Vogiazas, Sofoklis D., and EftychiaNikolaidou."Credit risk determinants in the Bulgarian banking system and the Greek twin crises."*MIBES International conference*. 2011.

Waweru, Nelson, and Victor MutisyaKalani. "Commercial banking crises in Kenya: Causes and remedies." *African Journal of Accounting, Economics, Finance and Banking Research* 4.4 (2009).

APPENDICES

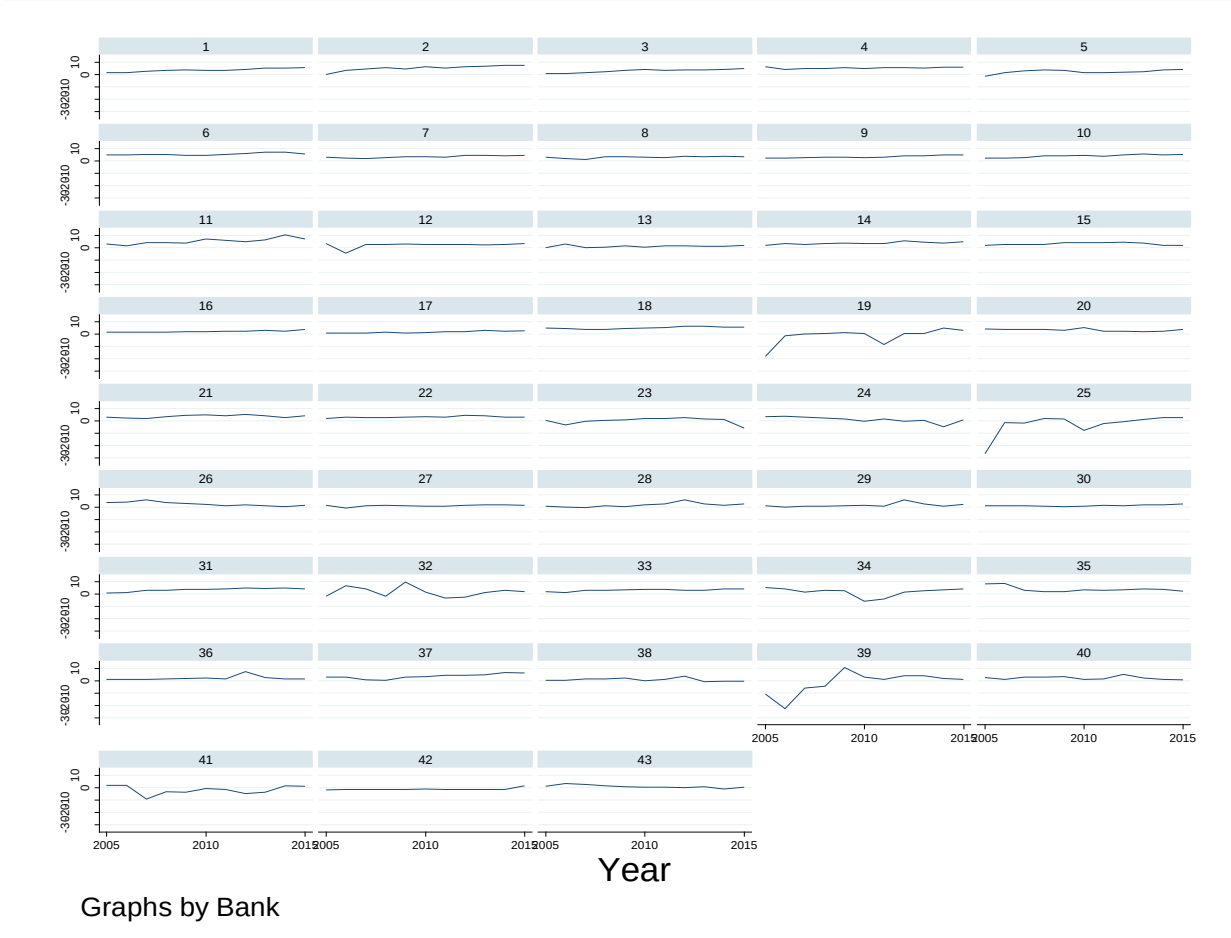
APPENDIX I: Classification of Banks according to Market Share.

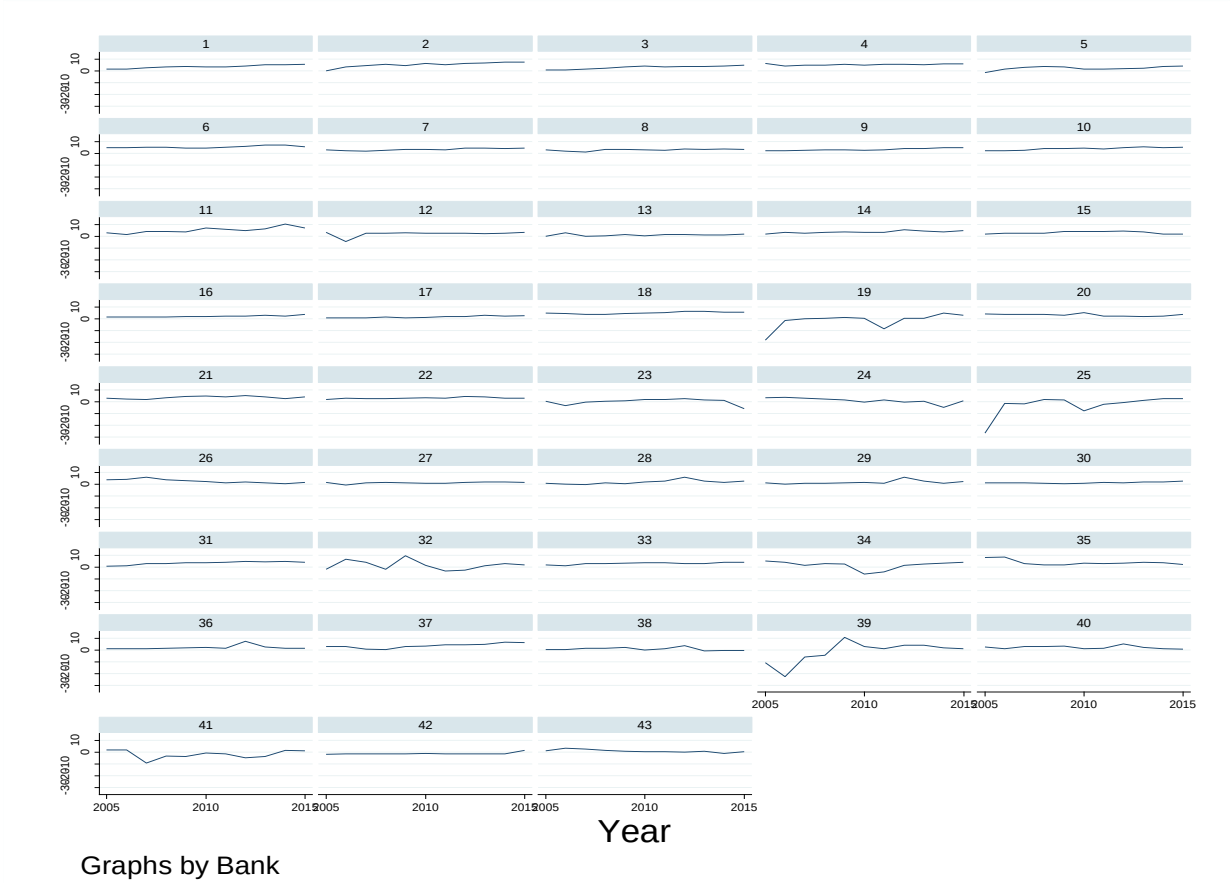
	Tier I – Large Banks
1	Kenya Commercial Bank
2	Equity Bank
3	Co-operative Bank of Kenya
4	Standard Chartered Bank
5	CFC Stanbic Bank
6	Barclays Bank of Kenya
	Tier II - Medium Banks
7	NIC Bank
8	Commercial Bank of Africa
9	Diamond Trust Bank
10	I&M Bank
11	Citibank
12	Chase Bank
13	Bank of Africa
14	Bank of Baroda
15	National Bank of Kenya
	Tier III – Small Banks
16	Prime Bank
17	Housing Finance
18	Imperial Bank
19	Ecobank
20	Family Bank
21	Bank of India
22	ABC Bank
23	Consolidated Bank
24	Equatorial Commercial Bank
25	Gulf African Bank
26	Development Bank of Kenya
27	GT Bank Kenya
28	Giro Commercial Bank
29	Fidelity Commercial Bank
30	Guardian Bank
31	Victoria Commercial Bank
32	First Community Bank
33	Habib A.G. Zurich

34	K-Rep Bank
35	Trans-National Bank
36	Paramount Universal Bank
37	Habib Bank Ltd
38	Credit Bank
39	Oriental Commercial Bank
40	Middle East Bank
41	Jamii Bora Bank
42	UBA Kenya Bank
43	Dubai Bank

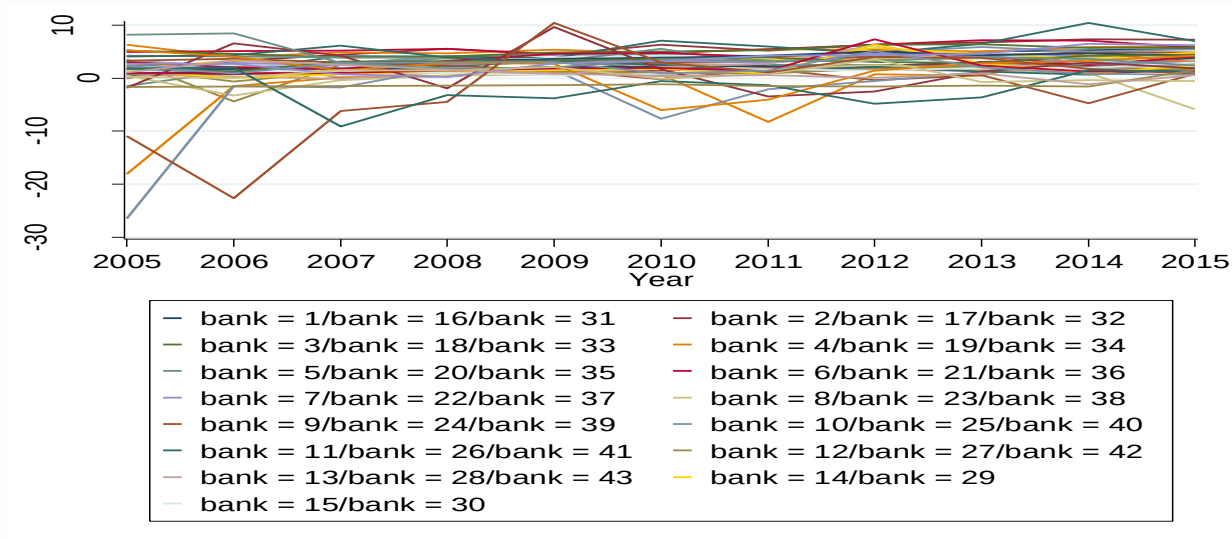
APPENDIX II: Trend Analysis

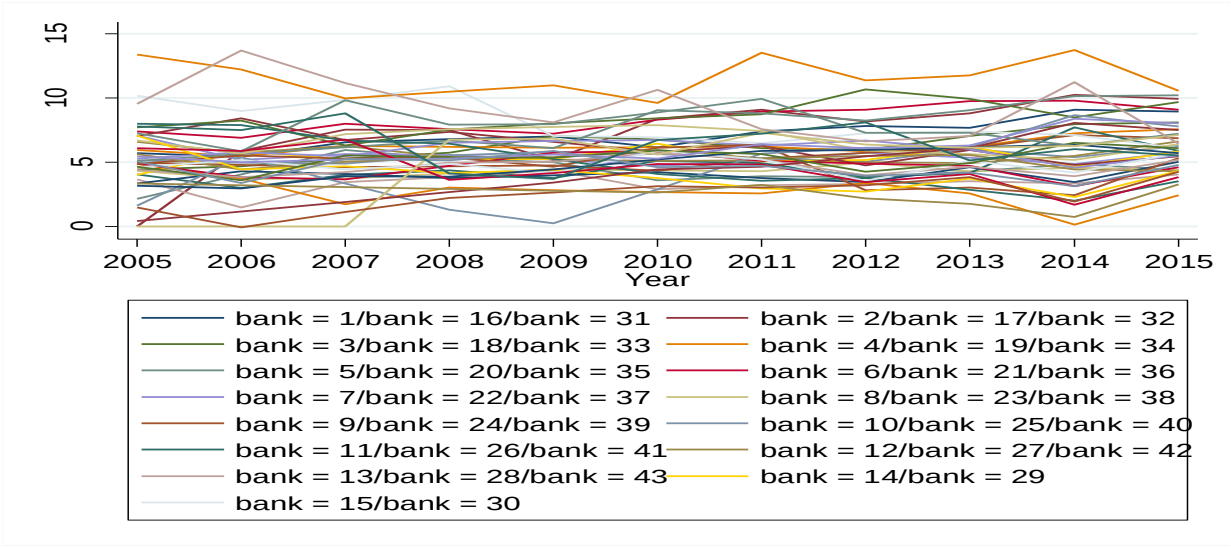
I. Within Bank Trends





II. Between Banks Graphs




0
5
10
15
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Year
bank = 1/bank = 16/bank = 31
bank = 2/bank = 17/bank = 32
bank = 3/bank = 18/bank = 33
bank = 4/bank = 19/bank = 34
bank = 5/bank = 20/bank = 35
bank = 6/bank = 21/bank = 36
bank = 7/bank = 22/bank = 37
bank = 8/bank = 23/bank = 38
bank = 9/bank = 24/bank = 39
bank = 10/bank = 25/bank = 40
bank = 11/bank = 26/bank = 41
bank = 12/bank = 27/bank = 42
bank = 13/bank = 28/bank = 43
bank = 14/bank = 29
bank = 15/bank = 30

APPENDIX III: Unit Root Tests

```
. xtunitroot llc roa

Levin-Lin-Chu unit-root test for roa
------------------------------------

Ho: Panels contain unit roots                  Number of panels  =     43
Ha: Panels are stationary                      Number of periods =     11

AR parameter: Common                           Asymptotics: N/T -> 0
Panel means:  Included
Time trend:   Not included

ADF regressions: 1 lag
LR variance:     Bartlett kernel, 7.00 lags average (chosen by LLC)
------------------------------------------------------------------------------
                     Statistic      p-value
------------------------------------------------------------------------------
 Unadjusted t       -16.9440
 Adjusted t*        -12.5148        0.0000
------------------------------------------------------------------------------

. xtunitroot ht roa

Harris-Tzavalis unit-root test for roa
--------------------------------------

Ho: Panels contain unit roots                  Number of panels  =     43
Ha: Panels are stationary                      Number of periods =     11

AR parameter: Common                           Asymptotics: N -> Infinity
Panel means:  Included                                      T Fixed
Time trend:   Not included
------------------------------------------------------------------------------
                     Statistic          z          p-value
------------------------------------------------------------------------------
 rho                   0.2735      -12.3148        0.0000
------------------------------------------------------------------------------
```

APPENDIX IV: Random Effects Model

```
. . xtreg roa mgteff assqua capade  liqui earnabi ownstr, re

Random-effects GLS regression                   Number of obs      =       473
Group variable: bank                            Number of groups   =        43

R-sq:  within  = 0.1879                         Obs per group: min =        11
       between = 0.5908                                        avg =      11.0
       overall = 0.3316                                        max =        11

                                                Wald chi2(6)       =    161.64
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000
```

roa	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
mgteff	-.0118761	.002132	-5.57	0.000	-.0160549	-.0076974
assqua	-.1029889	.0115463	-8.92	0.000	-.1256192	-.0803585
capade	-.0240704	.0085496	-2.82	0.005	-.0408273	-.0073135
liqui	.0120523	.005575	2.16	0.031	.0011256	.022979
earnabi	3.42e-06	.0041214	0.00	0.999	-.0080744	.0080813
ownstr	.2212659	.3768892	0.59	0.557	-.5174234	.9599551
_cons	4.208767	.5085596	8.28	0.000	3.212009	5.205526
sigma_u	.93322053					
sigma_e	2.4245356					
rho	.12903619	(fraction of variance due to u_i)				

APPENDIX V: Diagnostic Tests

I. Testing for Time-Fixed Effects

```
. xtreg roa mgteff assqua capade  liqui earnabi ownstr i.year, fe

Fixed-effects (within) regression               Number of obs      =       473
Group variable: bank                            Number of groups   =        43

R-sq:  within  = 0.2185                         Obs per group: min =        11
       between = 0.3263                                        avg =      11.0
       overall = 0.2558                                        max =        11

                                                F(16,414)          =      7.24
corr(u_i, Xb)  = -0.1183                        Prob > F           =    0.0000
```

roa	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
mgteff	-.0069272	.0024442	-2.83	0.005	-.0117318	-.0021226
assqua	-.0978308	.0152916	-6.40	0.000	-.1278897	-.067772
capade	-.0255905	.0103785	-2.47	0.014	-.0459916	-.0051894
liqui	.0106668	.0061141	1.74	0.082	-.0013518	.0226853
earnabi	.0002302	.0047056	0.05	0.961	-.0090196	.0094799
ownstr	1.901717	2.571956	0.74	0.460	-3.154004	6.957439
year						
2006	.7461312	.5265605	1.42	0.157	-.2889344	1.781197
2007	.7377498	.5327863	1.38	0.167	-.3095539	1.785054
2008	.857355	.5337375	1.61	0.109	-.1918185	1.906529
2009	1.484872	.5433545	2.73	0.007	.4167939	2.552949
2010	.6891722	.5509528	1.25	0.212	-.3938415	1.772186
2011	.2561673	.5497732	0.47	0.641	-.8245278	1.336862
2012	1.288976	.5561919	2.32	0.021	.1956638	2.382289
2013	.8456853	.5626933	1.50	0.134	-.2604069	1.951778
2014	.891973	.5625807	1.59	0.114	-.213898	1.997844
2015	1.00178	.5630746	1.78	0.076	-.1050617	2.108622
_cons	2.40577	1.304089	1.84	0.066	-.1576923	4.969232
sigma_u	1.6539289					
sigma_e	2.4196036					
rho	.31845084	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(42, 414) =     3.10                 Prob > F = 0.0000

.
```

II. Testing for Random Effects Breusch-Pagan LM test

```
. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        roa[bank,t] = Xb + u[bank] + e[bank,t]

        Estimated results:
                     |         Var      sd = sqrt(Var)
             ---------+------------------------------
                 roa |    10.44764        3.232281
                   e |    5.878373        2.424536
                   u |    .8709006        .9332205

        Test:   Var(u) = 0
                            chibar2(01) =     37.83
                         Prob > chibar2 =    0.0000
```

III. Pesaran Test of Cross-Sectional Independence

```
. xtcsd, pesaran abs

Pesaran's test of cross sectional independence =     1.956, Pr = 0.0504

Average absolute value of the off-diagonal elements =     0.347
```

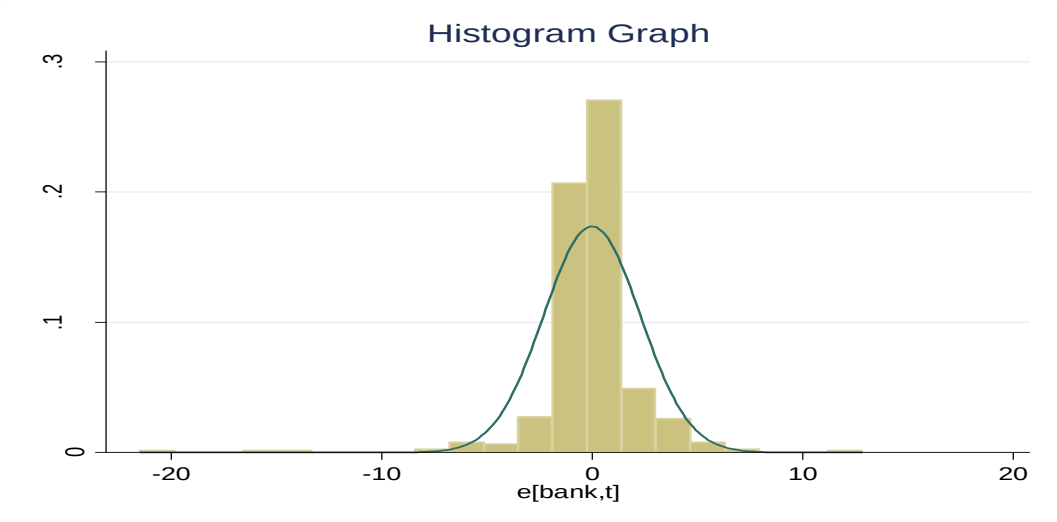
III. Wald Test for Heteroscedasticity

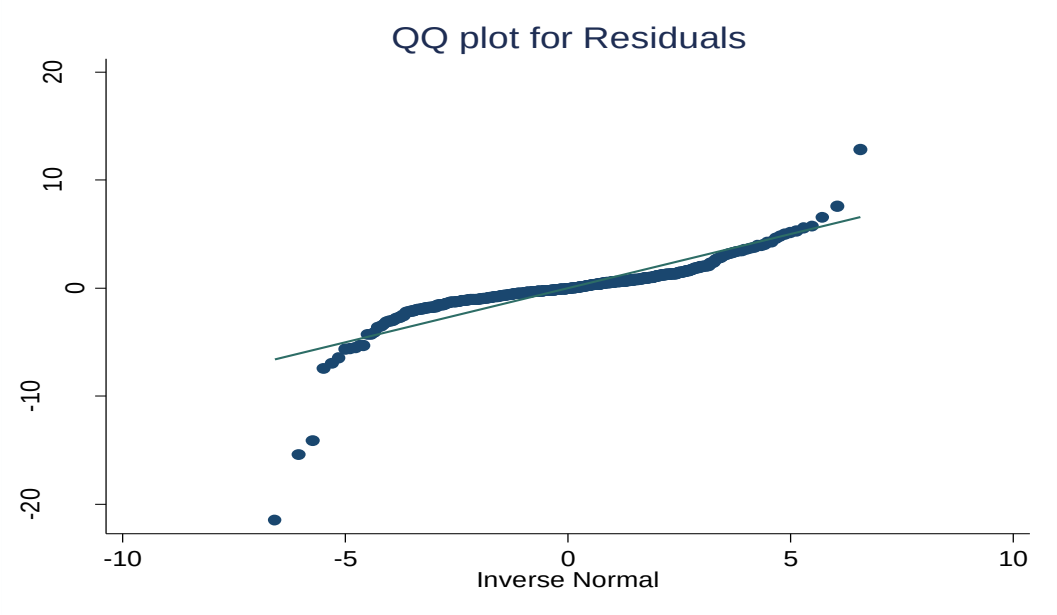
```
. xttest3

Modified Wald test for groupwise heteroskedasticity
in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (43)   =    18960.17
Prob>chi2 =        0.0000
```

APPENDIX VI: Fixed, Random Effect Model – Net Income Margin

```
. xtreg nim mgteff assqua capade  liqui earnabi ownstr, fe

Fixed-effects (within) regression               Number of obs      =       473
Group variable: bank                            Number of groups   =        43

R-sq:  within  = 0.1520                         Obs per group: min =        11
       between = 0.1427                                        avg =      11.0
       overall = 0.1460                                        max =        11

                                                F(6,424)           =     12.67
corr(u_i, Xb)  = 0.0040                         Prob > F           =    0.0000

------------------------------------------------------------------------------
         nim |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      mgteff |  -.0085742   .0012835    -6.68   0.000    -.0110971   -.0060513
      assqua |  -.0021411   .0070288    -0.30   0.761    -.0159566    .0116745
      capade |   .0073557   .0054749     1.34   0.180    -.0034057    .0181171
       liqui |  -.0086562   .0032036    -2.70   0.007    -.0149532   -.0023592
     earnabi |   .0086214   .0024772     3.48   0.001     .0037522    .0134906
      ownstr |  -1.068081   1.359448    -0.79   0.432    -3.740178    1.604015
       _cons |   6.296199    .628418    10.02   0.000     5.060996    7.531401
-------------+----------------------------------------------------------------
     sigma_u |  1.7002777
     sigma_e |  1.2941754
         rho |  .63316891   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(42, 424) =    17.74                 Prob > F = 0.0000

. estimates store fixed

. xtreg nim mgteff assqua capade  liqui earnabi ownstr, re

Random-effects GLS regression                   Number of obs      =       473
Group variable: bank                            Number of groups   =        43

R-sq:  within  = 0.1516                         Obs per group: min =        11
       between = 0.1879                                        avg =      11.0
       overall = 0.1685                                        max =        11

                                                Wald chi2(6)       =     84.19
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

------------------------------------------------------------------------------
         nim |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      mgteff |  -.0085648   .0012543    -6.83   0.000    -.0110232   -.0061065
      assqua |  -.0019535   .0068318    -0.29   0.775    -.0153435    .0114365
      capade |   .0066631   .0052658     1.27   0.206    -.0036576    .0169838
       liqui |  -.0088721   .0031444    -2.82   0.005     -.015035   -.0027092
     earnabi |   .0094997   .0024173     3.93   0.000     .0047619    .0142374
      ownstr |  -.6071437   .5001916    -1.21   0.225    -1.587501    .3732139
       _cons |   6.074968   .4346487    13.98   0.000     5.223072    6.926864
-------------+----------------------------------------------------------------
     sigma_u |  1.6747392
     sigma_e |  1.2941754
         rho |  .62611071   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. estimates store random
```

APPENDIX VII: Normality of Model Residuals





APPENDIX VIII: **Commercial Bank Data**

Bank	Year	Return on Assets	Net Interest Margin	Management Efficiency	Asset Quality	Capital Adequacy	Liquidity	Earning Ability	Ownership Structure
1	2005	1.45	5.71	68.93	45.9	13.5	33.32	52.84	1
1	2006	1.54	5.44	77.6	35.81	11.25	36.18	62.98	1
1	2007	2.49	6.55	73.46	23.07	14.64	38.86	56.29	1
1	2008	3.38	6.82	64.64	18.59	16.84	37.07	58.19	1
1	2009	3.49	7.01	63.46	11.16	12.42	26.58	64.14	1
1	2010	3.14	6.16	55.76	8.49	9.6	18	56.6	1
1	2011	3.23	7.42	66.86	12.5	13.58	24.92	55.27	1
1	2012	3.9	7.82	61.05	8.14	11.6	33.42	71.71	1
1	2013	4.98	7.69	52.72	5.03	18.25	15.76	81.13	1
1	2014	5.26	9.11	50.52	5.43	19.42	26.86	80.7	1
1	2015	5.48	8.97	51.55	6.56	15.46	20.7	81.72	1
2	2005	0	0	0	8.41	8.76	54.24	56.12	0
2	2006	3.25	5.9	62.43	8.17	0	57.38	56.55	0
2	2007	4.37	7.55	68.91	8.9	17.41	47.48	61.06	0
2	2008	5.51	7.53	63.34	5.02	8.89	35.73	66.9	0
2	2009	4.45	5.2	59.84	4.44	7.36	66.82	69.13	0
2	2010	6.33	8.39	52.34	5.61	28	37.6	87.8	0
2	2011	5.16	9.1	60.16	7.38	19.98	28.04	90.77	0
2	2012	6.26	8.19	51	4.9	18.58	23.43	74.62	0
2	2013	6.75	8.8	46.67	2.36	15.63	35.3	84.85	0
2	2014	7.36	10.25	45.3	2.22	13.18	37.07	85.97	0
2	2015	7.25	9.95	45.05	4.2	15.76	35.12	95.77	0
3	2005	0.56	4.45	79.28	35.25	8.98	25.41	66.64	0
3	2006	0.77	4.71	70.48	26.23	5.72	20.53	68.45	0
3	2007	1.38	5.29	64.57	21.87	9.38	31.43	65.97	0
3	2008	2.16	5.75	61.25	21.61	10.99	36.32	56.32	0
3	2009	3.19	7.04	65.3	13.09	10.54	30.3	68.38	0
3	2010	4	6.79	61.02	10.93	10.3	26.9	79.4	0
3	2011	3.37	6.12	62.8	8.05	17.3	41.9	67.3	0
3	2012	3.65	5.95	58.92	4.24	13.33	38.21	68.46	0
3	2013	3.66	7.07	62.01	3.62	13.04	26.66	76.67	0
3	2014	4.12	7.97	58.45	4.36	15.22	34.19	72.91	0
3	2015	4.63	8.12	58.55	3.87	14.34	35.87	76.04	0

4	2005	6.25	5.98	44.77	6.96	13.24	68.94	34.81	0
4	2006	4.01	5.48	53.94	6.03	12.33	59.67	46.77	0
4	2007	4.82	6.28	45.53	4.78	8.95	49.85	57.04	0
4	2008	4.7	6.22	45.52	5.07	18.37	52.9	53.01	0
4	2009	5.39	6.14	46.21	3.26	15.2	51.05	53.39	0
4	2010	4.77	6.18	49.38	2.39	15.1	51.6	54.3	0
4	2011	5.44	6.24	41.48	1.42	12.37	50.08	61.76	0
4	2012	5.38	5.87	42.55	1.29	13.01	51.31	57.62	0
4	2013	5.03	6.16	45.59	0.7	9.93	26.75	73.89	0
4	2014	5.89	7.27	40.85	1.49	10.65	35.55	78.24	0
4	2015	6.04	7.59	39.81	2.35	14.64	34	80.4	0
5	2005	-1.52	2.17	115.35	4.87	9.66	45.21	46.09	1
5	2006	1.33	4.08	82.33	1.41	10.6	33.7	76.18	1
5	2007	2.96	5.97	65.72	1.44	13.75	37.06	67.12	1
5	2008	3.57	5.29	51.2	2.01	12.88	48.73	50.91	1
5	2009	3.46	5.02	50.22	1.44	11.23	15.93	82.43	1
5	2010	1.58	3.59	58.53	6.38	6	34	63.5	1
5	2011	1.37	3.91	69.71	3.43	9.06	27.56	58.53	1
5	2012	1.96	3.86	68.88	2.52	8.87	20.91	67.18	1
5	2013	2.23	4.29	64.62	1.32	9.81	14.55	60.12	1
5	2014	3.53	4.87	60.84	1.56	12.22	20.01	67.11	1
5	2015	4.1	4.4	50.19	2.54	14.24	18.28	60.02	1
6	2005	4.92	7.4	54.23	14.85	12.25	39.88	72.94	1
6	2006	5.08	6.93	46.05	13.4	11.48	27.08	76.98	1
6	2007	5.17	8.02	52.68	17.06	12.2	29.89	78.54	1
6	2008	5.5	7.59	51.36	11.75	11.15	32.83	76.9	1
6	2009	4.49	7.22	58.83	5	9.47	14.4	86.13	1
6	2010	4.76	8.31	60.65	5.91	12.8	23.5	78.5	1
6	2011	5.46	8.96	59.33	7.61	17.24	38.26	74.16	1
6	2012	6.25	9.09	53.99	7.06	20.75	49.11	70.33	1
6	2013	7.18	9.76	51.63	5.27	23.61	52.01	79.69	1
6	2014	7.03	9.8	52	3.51	23.24	56.66	74.62	1
6	2015	5.76	9.11	52.93	2.95	14.78	49.47	75.94	1
7	2005	3.27	7.08	55.41	9.95	23.13	33.34	86.16	0
7	2006	2.24	5.18	65.94	4.88	15.75	24.87	89.77	0
7	2007	1.95	5.65	60.34	4.75	14.16	26.83	83.37	0
7	2008	2.6	5.58	59.12	7.33	11.75	34.04	74.83	0
7	2009	3.36	5.24	51.97	4.23	10.49	27.04	89.53	0
7	2010	3.48	4.73	47.4	3.34	11.4	25.6	85	0
7	2011	3.21	5.08	48.64	4.13	7.72	27.44	82.16	0
7	2012	4.42	5.76	44.48	3.23	11.46	25.43	82.79	0

7	2013	4.57	5.37	39.11	3.03	11.35	52.73	83.62	0
7	2014	4.26	4.86	38.15	2.97	11.26	54.01	82.45	0
7	2015	4.62	5.79	37.73	3.87	13.2	61.93	86.5	0
8	2005	3.09	4.33	55.49	10.86	23.35	73.72	26.8	0
8	2006	2.16	3.71	66.16	8.58	15.37	70.8	29.86	0
8	2007	1.25	3.76	65.43	7.37	9.81	47.93	43.41	0
8	2008	3.58	4.15	54.32	5.11	10.37	58.85	43.54	0
8	2009	3.37	4.47	52.15	4.46	11.8	46.68	47.58	0
8	2010	3.2	4.37	51.45	3.69	10	32.3	59.3	0
8	2011	2.93	4.31	54.65	3.47	11.43	38.66	62.18	0
8	2012	3.83	4.98	45.85	5.14	10.94	36.69	56.51	0
8	2013	3.52	4.32	49.11	4.68	10.36	29.94	55.07	0
8	2014	3.93	4.59	47.18	3.67	12.24	31.7	48.95	0
8	2015	3.57	4.41	46.74	3.24	11.98	26.66	53.4	0
9	2005	2.36	4.98	61.7	2.44	17.29	33.78	71.14	0
9	2006	2.35	4.81	64.33	1.54	13.27	26.85	76.71	0
9	2007	2.6	4.63	57.31	0.8	9.65	29.64	74.52	0
9	2008	3.13	4.69	50.99	1.1	9.13	33.33	81.6	0
9	2009	2.99	4.78	51.34	0.75	11.3	27.32	78.99	0
9	2010	2.87	4.34	50.82	1.14	15	29	74.3	0
9	2011	3.01	5.28	54.48	1.38	13.79	23.69	77.25	0
9	2012	4.14	5.76	47.65	1.31	15.38	32.01	76.08	0
9	2013	4.17	6.09	41.99	1.07	11.46	51.88	82.93	0
9	2014	4.92	7.14	35.47	1.33	12.08	42.2	81.53	0
9	2015	4.85	6.88	37.45	1.27	13.7	47.17	85.17	0
10	2005	2.35	5.15	49.88	8.14	14.08	52.45	51.83	1
10	2006	2.49	4.97	50	9.04	13.32	32.91	65.3	1
10	2007	2.71	4.91	49.69	6.02	11.31	29.91	72.43	1
10	2008	4.19	5.56	41.23	1.85	10.01	28.19	78.53	1
10	2009	4.4	5.81	39.77	1.63	9.31	26.36	78.41	1
10	2010	4.42	5.65	38.48	6.64	10.4	20.6	88.4	1
10	2011	3.98	5.32	42.09	3.39	11.28	43.78	70.22	1
10	2012	4.8	5.06	32.79	2.37	13.22	22.55	75.99	1
10	2013	5.87	6.05	29.09	1.44	14.09	42.55	79.39	1
10	2014	5.05	5.39	34.58	0.88	15.58	42.86	78.69	1
10	2015	5.4	6.3	31.06	0.95	12.16	40.92	95.65	1
11	2005	2.92	4.07	60.48	5.3	15.91	62.39	37.38	1
11	2006	1.42	3.01	74.92	3.93	18.05	64.74	47.74	1
11	2007	4.15	4.04	45.74	4.13	10.81	57.26	46.75	1
11	2008	4.05	4.37	44.2	2.68	23.86	58.85	41.09	1
11	2009	3.77	3.78	41.55	2.39	21.08	62.77	34.38	1

11	2010	7.05	5.12	28.51	0.7	20.2	63.9	56.2	1
11	2011	5.95	4.94	31.86	0.58	24.16	56.02	60.7	1
11	2012	4.64	3.85	38.92	0.61	30.2	60.29	48.34	1
11	2013	6.43	4.18	29.37	0.49	25.08	61.45	54.89	1
11	2014	10.39	7.72	23.88	0.6	37.33	79.6	50.06	1
11	2015	7	5.89	20.29	0.58	37.96	97.8	51.12	1
12	2005	3.49	6.59	58.81	0.14	34.2	20.85	89.82	0
12	2006	-4.4	5.77	66.77	9.14	31.66	16.59	90.03	0
12	2007	2.49	6.28	62.51	5.16	25.05	18.2	90.6	0
12	2008	2.7	5.4	62.67	4.57	20.87	46.55	59.83	0
12	2009	3.11	5.22	56.05	5.78	14.66	19.95	66.28	0
12	2010	2.4	5.13	62.91	5.35	9.9	18.2	55.7	0
12	2011	2.45	5.16	68.79	4	8.24	38.95	58.69	0
12	2012	2.45	5.02	68.83	2.38	9.69	42.8	57.02	0
12	2013	2.33	4.95	63.35	1.72	7.03	33.4	58.24	0
12	2014	2.68	5.5	63.2	1.56	6.79	52.6	72.59	0
12	2015	3.22	6.64	55.59	2.51	9.87	40.06	63.8	0
13	2005	0.01	3.66	101.82	0.9	15.03	31.85	83.86	1
13	2006	2.81	1.5	126.38	0.99	17.61	23.99	76.54	1
13	2007	0.14	3.46	97.41	0.9	17.49	35.58	66.56	1
13	2008	0.33	3.85	94.24	0.71	14.03	32.31	70.61	1
13	2009	1.51	4.37	76.45	2.11	12.67	25.37	75.49	1
13	2010	0.52	2.89	84.07	1.91	9.9	27.5	72.4	1
13	2011	1.47	3.21	71.66	1.36	8.97	43.36	68.83	1
13	2012	1.59	3.33	66.58	1.71	9.64	43.33	65.78	1
13	2013	1.29	3.53	70.5	1.65	7.06	16.58	79.97	1
13	2014	1.14	3.35	71.86	2.13	9.87	19.5	78.3	1
13	2015	1.77	4.05	65.6	3.87	8.12	26.42	81.31	1
14	2005	1.79	4.04	61	15.78	16.71	105.75	25.69	0
14	2006	3.29	5.88	49.47	8.36	27.78	70.57	37.48	0
14	2007	2.57	5.21	56.11	6.63	25.74	64.07	44.03	0
14	2008	3.16	5.25	47.25	4.29	23.28	65.82	42.77	0
14	2009	3.55	5.27	39.9	3.15	16.32	53.18	54.12	0
14	2010	3.45	6.47	35.63	4.44	15.4	50.7	55.4	0
14	2011	3.31	5.09	40.08	9.84	15.95	63.01	47.62	0
14	2012	5.65	5.19	22.72	3.32	14.15	66.14	49.61	0
14	2013	4.57	6.23	23.62	2.96	15.22	41.77	60.95	0
14	2014	3.61	4.65	32.12	2.23	14.9	49.2	54.78	0
14	2015	4.81	5.85	22.4	2.18	15.89	44.88	53.6	0
15	2005	1.9	10.19	47.67	52.86	-15.86	3.31	94.08	1
15	2006	2.43	9	44.44	49.77	4.41	7.59	87.64	1

15	2007	2.64	9.88	44.11	31.62	7.32	16.79	90.08	1
15	2008	2.59	10.94	39.4	29.7	9.31	18.92	89.23	1
15	2009	3.89	7.05	52.9	30.04	28.22	26.29	22.54	1
15	2010	4.21	6.94	57.37	18.17	30.2	23.2	26.1	1
15	2011	4.2	6.48	59.86	9.01	32.64	81.97	31.29	1
15	2012	4.49	7.27	56.89	4.21	27.74	50.05	42.9	1
15	2013	3.56	7.4	59.76	3.99	26.49	21.18	49.34	1
15	2014	1.71	7.11	75.39	7.33	27.14	50.71	51.12	1
15	2015	1.92	6.1	75.52	10.08	21.23	33.7	50.2	1
16	2005	1.57	3.37	59.74	12.99	14.52	44.66	47.36	1
16	2006	1.8	4.3	61	14.18	17.05	43.87	54.91	1
16	2007	1.75	4.11	61.96	11.19	14.47	38.68	55.94	1
16	2008	1.65	3.77	58.2	7.86	11.73	35.87	58.1	1
16	2009	2.1	4.01	51.9	8.15	10.98	35.57	56.52	1
16	2010	2.17	4.23	50.41	6.81	9.9	38.5	58.2	1
16	2011	2.23	3.77	51.52	4.88	13.58	46.85	54.13	1
16	2012	2.25	3.47	49.94	3.56	11.28	23.8	53.95	1
16	2013	3.03	4.62	44.39	3.54	11.5	33.93	59.82	1
16	2014	2.52	3.48	49.1	2.7	14.47	31.67	54.38	1
16	2015	3.77	5.05	40.63	1.82	14.18	32.07	62.2	1
17	2005	0.91	7.07	75.71	33.78	10.34	25.04	75.37	1
17	2006	0.82	8.42	58.69	36.22	11.73	0	81.65	1
17	2007	0.92	6.73	72.91	32.04	13.53	31.26	76.41	1
17	2008	1.55	7.38	71.36	23.83	14.05	25.46	83.29	1
17	2009	1.09	6.59	78.13	15.48	12.53	19.38	88.26	1
17	2010	1.42	5.81	71.14	10.28	10.5	27.7	103.5	1
17	2011	1.92	6.29	58.05	8.1	30.9	20.72	118.62	1
17	2012	2.15	4.78	48.22	5.85	22.06	35.23	122.31	1
17	2013	3.05	5.95	47	5.2	18.34	51.51	135.07	1
17	2014	2.23	4.79	50.36	6.79	17.03	44.84	131.9	1
17	2015	2.59	5.46	47.74	8.4	14.44	42.48	132.44	1
18	2005	5.16	7.74	49.82	9.58	20.91	37.98	74.22	1
18	2006	4.6	8.24	48.2	8.76	16.84	20.83	82.69	1
18	2007	3.92	6.32	66.83	7.51	18.21	30.42	66.16	1
18	2008	4.07	7.54	58.46	6.37	16.98	29.26	70.08	1
18	2009	4.81	8.03	57.78	6.31	15.37	21.6	71.8	1
18	2010	5.01	8.44	55.92	5.17	16	23.9	73.8	1
18	2011	5.22	8.74	54.42	5.27	17.21	38.67	75.23	1
18	2012	6.33	10.67	50.16	4.36	18.24	42.78	78.92	1
18	2013	6.37	9.93	49.37	4.29	14.97	25.01	75.14	1
18	2014	5.67	8.49	47.6	3.95	14.96	28.55	64.33	1

18	2015	5.8	9.69	48.4	5.15	11.5	23.83	71.44	1
19	2005	-18.1	4.86	65.39	37.13	18.89	25.07	78.51	1
19	2006	-1.47	3.76	65.91	38.39	21.05	19.25	72.28	1
19	2007	0.11	1.73	85.23	32.45	9.5	28.81	55.65	1
19	2008	0.47	3.03	64.72	38.97	16.25	29.83	62.45	1
19	2009	1.16	2.82	59.03	35.73	18.86	29.26	65.19	1
19	2010	0.63	2.69	84.65	40.05	16.3	33.3	60.6	1
19	2011	-8.25	2.58	141.89	22.48	10.55	35.9	56.99	1
19	2012	0.7	3.41	77.78	16.53	10.68	64.42	45.88	1
19	2013	0.45	2.6	95.92	7.55	15.48	34.36	68.48	1
19	2014	4.83	0.14	254.31	4.52	13.71	45.57	65.04	1
19	2015	2.97	2.44	143.97	7.2	19.05	43.69	72.82	1
20	2005	4.24	5.11	81.53	7.5	12.18	51.33	65.12	0
20	2006	4.08	5.64	80.39	7.64	12.49	48.59	66.26	0
20	2007	3.93	6.17	79.26	7.79	12.8	45.84	67.41	0
20	2008	3.77	6.7	78.12	7.93	13.11	43.1	68.55	0
20	2009	3.12	6.1	72.94	10.85	11.6	45.69	67.77	0
20	2010	5.53	9.05	75.13	6.54	15.5	30.7	77.5	0
20	2011	2.57	8.82	81.09	5.27	14.8	30.95	73.17	0
20	2012	2.48	8.27	71.5	8.15	13.45	42.52	64.08	0
20	2013	2.01	9.05	77.17	9.44	16.13	24.97	76.16	0
20	2014	2.24	10.14	70.49	12.38	14.21	22.08	72.55	0
20	2015	4.04	10.23	66.75	6.9	14.84	27.83	80.73	0
21	2005	3.04	4.9	37.73	8.24	30.86	83.58	28.68	0
21	2006	2.04	3.85	57.43	6.9	32.22	76.79	30.63	0
21	2007	1.72	3.67	58.61	3.4	23.59	68.99	38.33	0
21	2008	3.19	4.72	38.52	3.58	21.88	63.66	44.18	0
21	2009	4.58	5.76	29.46	4.49	22.94	71.7	41.25	0
21	2010	4.73	5.91	26.05	5.71	22.2	70.5	43.6	0
21	2011	3.96	5.12	25.92	3.53	28.31	72.94	41.28	0
21	2012	5.02	4.9	23.92	2.17	31.52	80.18	43.27	0
21	2013	4.18	4.73	22.88	2.31	35.5	66.92	36.44	0
21	2014	2.44	3.14	35.23	1.56	34.15	62.9	48.52	0
21	2015	4.08	4.64	22.54	1	32.68	75.75	41.9	0
22	2005	1.74	5.29	62.41	8.03	18.16	27.89	52.41	0
22	2006	2.83	5.79	62.86	6.12	17.15	36.08	59.41	0
22	2007	2.42	5.46	65.75	5.25	14.94	41.55	58.94	0
22	2008	2.61	6.53	69.96	7.43	14.99	37.14	63.81	0
22	2009	3.01	6.68	62.65	5.52	14.17	37.76	65.74	0
22	2010	3.31	6.74	63.58	4.86	17.9	37.3	66.5	0
22	2011	2.87	6.31	61.24	5.61	17.4	64.43	53.19	0

22	2012	4.6	6.71	54.14	4.28	16.4	44.18	63.21	0
22	2013	4.11	6.01	56.7	2.86	14.72	42.61	67.23	0
22	2014	2.92	4.59	57.95	3.34	12.68	38.18	61.7	0
22	2015	2.94	5.55	62.18	4.32	87.8	24	66.79	0
23	2005	0.5	6.71	90.34	46.51	21.96	46.94	68.36	1
23	2006	-3.28	5.68	125.87	55.59	22.75	37.79	56.66	1
23	2007	-0.41	7.18	105.63	26.92	20.4	36.8	66.11	1
23	2008	0.47	7.57	86.13	24.05	18.58	29.25	64.82	1
23	2009	0.63	7.75	79.84	19.78	16.05	20.38	70.21	1
23	2010	1.82	7.91	78.78	19.1	13.9	16.5	75.8	1
23	2011	1.78	7.46	75.86	13.04	12.88	37.07	72.98	1
23	2012	2.46	5.92	69.95	10.98	9.02	33.29	72.8	1
23	2013	1.61	5.65	77.92	8.29	9.53	107.77	69.17	1
23	2014	0.98	5.18	77.45	10.81	10	84.74	75.03	1
23	2015	-5.83	6.41	137.63	11.68	10.4	125.16	83.65	1
24	2005	3.26	4.86	47.24	7.73	26.95	52.77	60.22	0
24	2006	3.6	5.54	54.13	4.01	21.87	38.22	80.92	0
24	2007	2.97	5.28	55.2	5.9	22.97	53.65	60.48	0
24	2008	2.37	5.39	55.82	9.4	18.86	42.81	73.52	0
24	2009	1.5	4.66	75.43	6.52	18.68	46.41	56	0
24	2010	-0.18	6.13	73.02	7.74	20.9	36.9	62.8	0
24	2011	1.66	6.4	76.5	12.65	18.45	39.07	74.27	0
24	2012	-0.34	2.85	93.64	19.42	11.25	31.42	54.56	0
24	2013	0.53	3.03	90.67	6.8	10.03	30.37	58.1	0
24	2014	-4.72	2.43	194.78	7	11	28.99	58.15	0
24	2015	0.84	5.32	79.42	11.26	4.52	22.51	65.16	0
25	2005	-26.49	1.63	296.96	0	117.6	13.86	164.43	0
25	2006	-1.53	5.39	546.88	4.78	54.51	13.23	49.21	0
25	2007	-1.74	3.36	893.94	3.59	48.99	9.6	52.85	0
25	2008	1.95	1.33	241	2.4	43.46	81.97	56.48	0
25	2009	1.55	0.28	698.57	1.2	37.93	71.68	60.12	0
25	2010	-7.65	2.91	246.56	0	43.9	56.1	56.4	0
25	2011	-2.1	5.67	131.24	0.27	18.87	27.67	77.05	0
25	2012	-0.59	6.13	104.41	2.26	14.63	95.89	76.07	0
25	2013	1.2	6.17	81.97	6.33	12.44	5.04	65	0
25	2014	2.75	8.69	69.88	3.31	11.65	7.42	80.65	0
25	2015	2.48	7.79	71.98	5.72	10.01	12.45	81.9	0
26	2005	4.08	8	56.4	39.63	53.19	56.45	107.13	1
26	2006	4.35	7.91	54.99	38.58	88.36	92.13	110.32	1
26	2007	6.08	6.71	8.92	16.87	61.11	53.65	94.99	1
26	2008	3.9	6.46	57.29	12.24	50.49	41.44	88.91	1

26	2009	3.17	5.27	51.15	7.04	36.87	9.92	91.1	1
26	2010	2.56	4.09	51.35	10.55	28.5	13	91.1	1
26	2011	1.15	3.58	77.99	11.92	23.76	45.59	113.8	1
26	2012	2.14	3.77	47.66	12.38	25.49	51.66	85.27	1
26	2013	1.28	2.88	59.72	16.86	23.44	37.61	90.02	1
26	2014	0.66	2.01	70.15	13.67	21.71	38.22	81.85	1
26	2015	1.81	3.52	43.32	11.5	19.76	26.93	73.3	1
27	2005	1.82	5.64	53.77	13.91	15.69	49.86	51.61	0
27	2006	-0.61	4.44	65.84	14.44	17.31	32.03	46.94	0
27	2007	1.24	5.06	81.55	11.1	13.22	22.56	53.37	0
27	2008	1.55	5.38	75.05	10.66	14.92	22.49	58.3	0
27	2009	1.29	5.42	74.34	6.95	12.62	20.49	65.79	0
27	2010	0.97	5.98	76.29	4.97	11.5	19	74.9	0
27	2011	0.87	5.28	78.13	7.79	13.27	32.91	59.39	0
27	2012	1.74	5.5	63.81	8.77	12.29	41.34	55.91	0
27	2013	2.12	5.59	61.15	5.84	13.79	30.14	57.37	0
27	2014	2.03	4.45	68.02	3.6	12.49	51	61.91	0
27	2015	1.61	4.32	70.42	2.42	12.1	34.15	54.27	0
28	2005	0.78	4.4	69.7	24.92	14.61	27.65	74.35	0
28	2006	0.3	3.85	70.81	23.63	15.17	30.88	72.34	0
28	2007	-0.11	4.24	80.94	19.14	13.78	28.12	75.94	0
28	2008	1.15	4.99	68.34	13.76	15.03	38.04	66.96	0
28	2009	0.72	5.05	58.59	12.57	14.58	38.54	61.91	0
28	2010	2.11	5.72	65.96	8.13	15.1	34.2	65.5	0
28	2011	2.67	5.24	61.9	4.28	15.41	50.47	61.64	0
28	2012	6.2	3.99	36.47	3.98	15	57.06	56.58	0
28	2013	2.78	4.67	55.76	2.19	21.25	46.42	62.54	0
28	2014	1.68	3.94	70.06	2.92	23.4	44.34	52.93	0
28	2015	2.82	5.2	54.03	5.35	23.49	41.34	60.28	0
29	2005	1.45	7.08	53.31	24.8	28.1	17.07	77.16	0
29	2006	0.07	4.44	71.29	16.71	21.51	19.34	82.92	0
29	2007	0.75	4.69	87.54	12.24	21.32	28.69	76.27	0
29	2008	1.09	4.17	81.26	13.24	15.86	26.82	72.33	0
29	2009	1.51	4.41	72.37	9.37	12.47	28.93	71.82	0
29	2010	1.7	3.78	71.51	0.44	9.6	27.6	72.9	0
29	2011	0.93	2.96	79.64	2.74	11.63	34.08	66.42	0
29	2012	6.26	2.74	20.41	9.03	9.91	46.23	61.81	0
29	2013	2.79	3.75	57.75	3.93	11.47	37.08	67.56	0
29	2014	0.84	2.32	69.7	9.84	14.25	34.01	63.05	0
29	2015	2.47	4.35	60.22	7.8	14.78	36.29	64.2	0
30	2005	1.27	4.63	62.03	33.4	25.41	32.23	80.56	0

30	2006	1.29	5.18	61.91	28.63	25.08	25.88	87.77	0
30	2007	1.27	4.44	60.23	25.47	23.11	21.73	82.55	0
30	2008	0.98	4.87	57.44	36.17	21.7	36.69	74.08	0
30	2009	0.45	4.17	63.17	29.09	23.25	35.19	72.4	0
30	2010	0.79	5.88	49.59	23.36	22.5	29.2	77.5	0
30	2011	1.69	5.22	45.95	19.23	18.51	37.61	71.37	0
30	2012	1.39	3.56	60.77	16.23	19.36	36.51	67.89	0
30	2013	1.92	5.12	52.34	6.35	14.95	31.06	79.93	0
30	2014	1.9	4.2	60.71	5.97	15.11	32.85	68.81	0
30	2015	2.99	5.72	55.04	5.52	14.66	33.02	76.95	0
31	2005	0.93	3.19	56.07	10.45	30.71	41.74	58.59	0
31	2006	1.25	2.99	56.49	2.63	26.12	48.03	61.41	0
31	2007	2.94	3.91	51.06	1.61	24.64	54.99	53.33	0
31	2008	2.98	3.88	55.18	0.57	22.34	52.59	59.32	0
31	2009	3.66	4.47	49.25	0.31	21.18	43.21	69.63	0
31	2010	3.81	5.23	45.7	0.37	18.6	31	75.8	0
31	2011	4.22	5.9	43.93	0	18.41	31.06	76.3	0
31	2012	5.03	5.96	39.78	0	22.16	33.64	68.82	0
31	2013	4.31	6.16	44.23	0	18.44	39.82	67.64	0
31	2014	4.68	6.39	40.35	0	14.96	43.42	69.19	0
31	2015	4.24	5.72	39.51	0	16.88	32.08	90.81	0
32	2005	-1.83	0.43	282.66	1.52	32.9	76.34	18.83	0
32	2006	6.53	1.18	260.19	5.55	30.64	70.7	23.89	0
32	2007	4.23	1.93	237.71	3.58	28.39	65.06	28.95	0
32	2008	-1.93	2.68	215.24	1.61	26.14	59.42	34.01	0
32	2009	9.63	3.42	192.77	0.36	23.88	53.79	39.07	0
32	2010	1.66	4.44	179.8	1.92	21.63	51.8	37	0
32	2011	-3.42	4.68	145.11	0.9	21.89	36.57	62.88	0
32	2012	-2.5	5.46	130.55	7.32	16.91	41.81	52.03	0
32	2013	1.28	6.09	82.26	12.67	10.46	29.34	54.51	0
32	2014	2.95	8.07	69.51	13.85	11.98	20.23	61.73	0
32	2015	1.86	7.52	77.51	6.87	13.08	24.61	72.6	0
33	2005	1.92	4.66	64.04	7.18	38.14	83.74	19.85	1
33	2006	1.26	3.61	73.83	4.51	24.95	73.9	27.23	1
33	2007	3.1	5.53	55.45	4.13	28.58	83.96	27.73	1
33	2008	3.1	5.4	53.71	3.26	32.39	82.08	29.69	1
33	2009	3.29	5.38	50.74	4.3	31.22	78.58	32.08	1
33	2010	3.68	5.93	49.35	5.21	28.6	67.9	39.6	1
33	2011	3.9	5.66	46.04	5.34	28.3	72.44	34.99	1
33	2012	3.05	4.29	51.25	3.33	35.17	77.32	33.06	1
33	2013	2.91	4.94	53.61	2.73	31.32	35.26	38.89	1

33	2014	4.24	6.52	40.33	2.81	45.38	68.32	30.05	1
33	2015	4.3	6.12	39.7	2.07	26.34	62.66	36.26	1
34	2005	5.27	13.41	58.18	3.66	36.81	34.41	128.12	0
34	2006	4.06	12.24	70.35	4.18	30.72	15.26	127.56	0
34	2007	1.39	9.97	86.99	4.38	26.64	32.03	125.22	0
34	2008	2.91	10.5	77.78	3.54	17.33	24.18	113.53	0
34	2009	2.7	10.99	76.86	8.33	15.09	22.36	113.19	0
34	2010	-6.04	9.64	113.58	17.58	15.9	14.7	128.3	0
34	2011	-4.05	13.53	101.68	21.44	21.07	23.87	108.59	0
34	2012	1.44	11.4	86.67	17.63	20.24	25.66	96.3	0
34	2013	2.75	11.77	66.2	10.67	16.49	24.95	104.78	0
34	2014	3.21	13.73	64.99	10.87	18.4	33.91	104.59	0
34	2015	4.22	10.59	63.42	4.98	16.4	22.06	91.53	1
35	2005	8.21	7.26	91.93	25.76	69.45	221.88	130.86	0
35	2006	8.45	5.87	93.84	20.67	69.09	60.33	73.25	0
35	2007	2.9	9.84	70.8	23.14	67.55	53.62	135.21	0
35	2008	1.8	7.93	68.99	22.31	62.09	58.11	103.18	0
35	2009	1.99	7.96	72.21	22.89	61.99	85.09	66.53	0
35	2010	3.55	8.88	66.39	22.56	56.2	80.2	75.5	0
35	2011	3.18	9.94	70.93	20.4	65.71	68.26	89.74	0
35	2012	3.24	7.3	66.18	20.85	59.8	73.27	65.22	0
35	2013	4.02	7.31	57.47	8.88	40.95	34.23	64.01	0
35	2014	3.66	6.27	61.46	9.9	36.27	27.15	65	0
35	2015	2.34	7.24	65.74	13.15	30.04	44.18	57.2	0
36	2005	0.92	6.12	88.76	36.93	31.61	41.63	85.83	1
36	2006	0.89	5.89	79.63	50.15	34.56	47.14	74.84	1
36	2007	0.99	6.77	74.58	16.65	26.98	40.94	77.18	1
36	2008	1.4	3.65	58.02	21.26	23.94	63.4	53.1	1
36	2009	1.82	4.18	64.34	18.61	37.75	52.91	56.11	1
36	2010	1.93	4.87	64.33	10.77	38.2	57.1	60.1	1
36	2011	1.36	4.83	75.88	17.43	31.22	61.55	53.22	1
36	2012	7.34	3.45	33.24	16.52	30.92	60.91	48.71	1
36	2013	2.38	4.1	59.45	12.52	40.41	59.09	56.26	1
36	2014	1.24	1.72	69.27	9.49	41.97	66.35	45.03	1
36	2015	1.23	3.86	66.83	8.3	37.94	63.26	48.57	1
37	2005	2.67	5.46	63.94	3.71	47.93	85.74	28.55	0
37	2006	2.71	5.02	61.94	4.13	45.55	78.52	31.2	0
37	2007	0.72	5.24	78.75	11.42	59.05	86.11	30.29	0
37	2008	0.19	5.31	88.85	5.62	55.21	82.33	32.49	0
37	2009	2.77	5.62	58.9	4.27	39.61	70.29	28.9	0
37	2010	3.25	5.3	50.02	4.06	40.1	68.5	26.2	0

37	2011	4.22	6.41	45.6	3.04	53.18	85.55	32.92	0
37	2012	4.34	6.11	43.65	2.34	34.29	83.05	37.36	0
37	2013	4.62	6.33	41.38	1.7	27.96	50.31	46.1	0
37	2014	6.5	8.38	28.71	9.07	32.59	74.71	60.4	0
37	2015	6.19	8.04	31.1	7.79	29.36	60.39	61.06	0
38	2005	0.23	0	89.91	17.72	30.12	77.04	50.83	0
38	2006	0.09	0	68.78	11.93	21.21	48.14	60.05	0
38	2007	1.5	0	55.63	14.08	23.47	24.89	74.56	0
38	2008	1.43	6.78	83.76	22.37	22.86	46	71.3	0
38	2009	2.1	6.84	65.7	13.12	25.39	55.49	60.38	0
38	2010	-0.14	5.63	88.52	10.77	22.6	46.8	62.5	0
38	2011	0.83	7.29	75.57	8.32	29.81	56.74	33.21	0
38	2012	3.53	6.38	52.24	16.87	28.83	32.27	54.93	0
38	2013	-0.75	6.15	95.86	9.95	27.93	83.1	67.8	0
38	2014	-0.34	6.27	103.78	8.63	24.14	77.8	61.07	0
38	2015	-0.56	7.11	99.14	7.45	25.18	65.03	72.93	0
39	2005	-10.91	1.49	68.51	76.76	52.97	20.91	232.54	1
39	2006	-22.63	-0.04	279.69	83.24	52.5	27.87	85.28	1
39	2007	-6.23	1.16	95.45	70.42	37.09	58.9	57.45	1
39	2008	-4.49	2.23	129.82	59.41	64.2	41.6	56.52	1
39	2009	10.43	2.66	29.58	45.99	49.57	58.78	76.12	1
39	2010	2.98	3.15	60.12	31.42	52.7	45.8	72.9	1
39	2011	1.08	3.05	76.85	19.6	37.49	43.75	74.09	1
39	2012	4.01	3.22	42.08	11.18	29.54	40.36	72.21	1
39	2013	3.8	3.87	43.9	11.13	30.7	145.52	76.83	1
39	2014	1.79	1.94	62.19	10.72	27.27	142.19	72.79	1
39	2015	0.83	4.28	76.64	8.27	25.25	137.86	74.88	1
40	2005	2.29	5.1	57.79	21.58	28.14	14.63	55.9	0
40	2006	0.89	3.41	77.14	23.49	27.5	38.38	50.88	0
40	2007	2.84	5.27	53.35	13.87	24.74	56.94	50.74	0
40	2008	2.94	5.15	65.11	2.54	30.27	38.1	84.42	0
40	2009	3.04	5.88	67.51	2.45	37.16	26.73	87.98	0
40	2010	0.91	4.63	72.65	13.46	42	37.4	70.6	0
40	2011	1.39	4.75	76.98	1.9	49.23	51.52	73.62	0
40	2012	5.11	3.97	52.53	1.34	45.57	10.14	79.96	0
40	2013	1.99	4.21	69.7	1.99	39.91	133.55	73.66	0
40	2014	0.79	3.14	79.32	1.63	38.67	71.53	66.98	0
40	2015	0.68	4.8	70.67	16.21	33.6	98.83	82.06	0
41	2005	1.75	7.79	57.68	36.28	72.76	36.45	444.57	0
41	2006	2.03	7.5	72.08	34.52	81.36	42.89	418.2	0
41	2007	-9.14	8.8	89.16	70.39	88.88	42.1	296.47	0

41	2008	-3.21	4.13	112.91	64.69	79.48	65.05	182.6	0
41	2009	-3.83	3.72	95.93	70.79	84.58	101.74	67.03	0
41	2010	-0.57	6.74	56.92	22.67	78.8	68.7	117.1	0
41	2011	-1.33	7.23	80.23	21.8	96.13	96.39	118.61	0
41	2012	-4.84	8.11	124.6	29.44	136.24	21.91	61.48	0
41	2013	-3.67	5.15	138.7	40.6	32.42	107.7	76.92	0
41	2014	1.51	6.02	75.58	10.16	48.07	48.41	107.9	0
41	2015	1.28	5.54	79.35	3.7	82.84	54.06	107.86	0
42	2005	-1.67	3.36	35.18	9.89	19.39	74.8	24.88	1
42	2006	-1.57	3.23	57.8	9.28	18.97	69.34	19.21	1
42	2007	-1.48	3.09	80.42	8.68	16.55	63.89	13.54	1
42	2008	-1.38	2.95	103.05	8.08	15.13	58.44	17.87	1
42	2009	-1.29	2.81	125.67	7.48	13.71	52.99	12.2	1
42	2010	-1.19	2.67	113.23	6.88	122.29	47.54	3.47	1
42	2011	-1.47	3.25	244.87	6.28	106.87	39.94	9.14	1
42	2012	-1.57	2.2	143.63	5.04	91.16	43.55	13.57	1
42	2013	-1.42	1.79	176.02	4.02	85.25	21.32	21.89	1
42	2014	-1.58	0.76	348.16	8.47	43.08	33.33	27.07	1
42	2015	1.49	3.28	203.13	1.55	53.82	17.79	30.74	1
43	2005	1.09	9.56	71.53	18.98	41.59	39.06	109.05	0
43	2006	3.36	13.71	59.34	30.37	40.68	53.01	114.79	0
43	2007	2.52	11.18	60.73	21.67	33.45	32.74	110.37	0
43	2008	1.62	9.21	56.63	26.28	34.54	39.51	92.67	0
43	2009	0.89	8.12	52.18	33.27	29.7	48.31	72.89	0
43	2010	0.41	10.65	57.26	29.98	25.4	32.6	92.8	0
43	2011	0.54	7.58	63.27	27.81	23.83	19.86	116.02	0
43	2012	0.02	6.62	75.22	24.95	26.98	26.37	90.04	0
43	2013	0.9	7.05	67.77	19.06	30	102.67	97.18	0
43	2014	-1.16	11.25	73.22	26.55	35.19	126.62	113.16	0
43	2015	0.53	6.45	55.54	38.91	14.83	126.33	139.74	0

APPENDIX IX: Time Frame

1	Get to know the supervisor	2 days
2	Discuss the research topic proposed	1 days
3	Develop proposal and submit to supervisor for approval	4 weeks
4	Do any correction and take for approval	5 days
5	Defend the proposal	1 days
6	Data collection and analysis	3 week
7	External examiner comment correction	1 week
8	Defense of thesis	1 week
9	Finish and correction of thesis	3 days

APPENDIX X: Budget

Number	**Item**	**Cost(Kshs)**
1	Printing & Photocopying & Binding	20,000
2	Stationary	10,000
4	Library, Data collection & Research Assistant	95,000
5	Miscellaneous	5,000
	Total	**190,000**