

**THE EFFECT OF ASSET QUALITY ON THE RISK ADJUSTED RETURNS
OF TIER ONE BANKS IN KENYA**

BY

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DECLARATION

I, the undersigned, declare that this research proposal is my own work and has never been presented in any other university or college for a degree or any other award.

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

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DEDICATIONS

I dedicate the research paper to my lovely wife Kawira for her unwavering support during this period.

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LIST OF ABBREVIATIONS

CBK	-	Central Bank of Kenya
CMA	-	Capital Markets Authority
CBA	-	Commercial Bank of Africa
MPT	-	Modern Portfolio Theory
NPA	-	Non Performing Assets
LLP	-	Loan Loss Provisioning
ROA	-	Return on Assets
ROE	-	Return on Equity
GDP	-	Gross Domestic Product
RAROC	-	Risk Adjusted Return on Capital
ASEAN	-	The Association of Southeast Asian Nations
CAMEL	-	Capital Adequacy, Asset Quality, Management, Earnings, Liquidity

ABSTRACT

The main aim of the research was to study the effect of asset quality on the risk adjusted returns of tier one banks in Kenya. The issue of problem loans and how they affect overall bank performance came under investigation. The research focussed on tier one commercial banks in Kenya since they hold almost half of the banking industry assets in Kenya. Using the causal research methodology the study employed data from six commercial banks that are classified by the regulator as having first tier status using a composite metric of loan book size, amount of deposits and number of customers. The study found a positive relationship between asset quality and the risk adjusted returns which conforms to previous studies that have found that lower credit risk increases profitability. It is useful from the findings of the research paper to consider if operating on scale generates efficiency that can compensate for excessive risk taking in lending.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The recent banking crisis in Kenya where three banks collapsed in a period of less than a year has highlighted the importance of stability in the banking sector. While the main factor attributed to the collapse was mostly fraud and corporate governance previous banking crisis in the history of our country can be traced back to problem loans, Waweru (2009). This research paper therefore aims to investigate the quality of assets in the banking industry in Kenya and how it affects performance.

As a direct consequence of the failure of small banks there was an influx of deposits to the six largest banks in Kenya as a safe haven in the times of uncertainty. The question then begs about the relative stability of these banks and performance. This research is partly an answer to such arising questions bearing in mind the market power wielded by these banks controlling about 49.9% of the bank assets (CBK, 2014).

This chapter aims to look at the effect of asset quality on performance as measured by risk adjusted returns. The biasness of profitability as a measure has been documented widely and this research aims to address this gap by using the risk adjusted returns as a proxy for performance.

1.1.1 Asset Quality

Asset quality is a measure of the total risk tied to assets owned by an individual or a corporate body. This terminology is common in the banking industry to determine the value of assets at risk and points to how much provisions banks have to make for loan losses. The asset quality comprises credit risk related to the loan and investment

portfolio and includes real estate, other assets and off balance sheet items such as bank guarantees and letters of credit. When evaluating asset quality various aspects are taken into consideration including but not limited to potential counterparty or issuer default in a contractual agreement and the adequacy of loan loss provisions. Asset quality should be viewed in an enterprise risk framework whereby all other risks that may affect the value of the asset are taken into consideration for example the compliance, regulatory, operational and strategic risks.

When there is a high loan delinquency or past due loans that results in a ballooning level of non-performing assets this erodes the income for the bank and has a negative impact on returns. Therefore it is very critical for the level of delinquency to be correctly measured or determined to be able to manage and mitigate this risk. Delinquency, also referred to as the portfolio at risk is the total number of the loans outstanding that have either the principal or instalment unpaid for a period of more than 30 days. The ratio indicates a measure of weak management control and gaps in institutional capacity (CM Mutie, 2005).

The issue of problem loans or non-performing assets (NPA) has been of concern to banks the world over and is always a risk associated to lending. There are various aspects of NPA that previous research has touched on which include and are not limited to macroeconomic determinants of bank asset quality, bank specific variables , loan loss provisioning and the business cycle or pro-cyclical management of bank non-performing assets and the role of information systems and technology in managing NPAs. There is also the issue of governance of banks and how it affects the lending policies and therefore affecting asset quality (Reddy, 2015).

Scheicher (2002) looked at the correlation between credit risk on one hand and the macro-economic variables on the other in the context of the Austrian economy. The study used simple regression analysis to measure relationship between Loan Loss Provisioning (LLP) and potential justifying causes or factors. The study found that the following macro-economic variables have an impact on the LLP: an increase in the short term interest rate, an erosion of business confidence, deteriorating stock market indices and a fall in the industrial output. The study recommends for further investigation a multifactor model that links credit risk to the overall condition of the economy.

Garnic (2014) carried out a study in Bosnia Herzgovina from a pool of seventeen banks in a ten year period on internal bank specific origins of credit risk. The methodology of the study was multivariate panel regression to establish the effect of variation in the various sources of credit risk. The empirical results advocate that a compelling relationship exists between credit risk and the following variables: operational inefficiency, bank performance (ROE), credit expansion and the rate attracted by deposits while other variables such as loans to deposit ratio, solvency, market power, bank performance (ROA) and cash reserve ratio are not that important in terms of influencing the credit risk.

A study whose objective was to examine whether the NPAs in Private and Public Banks in India exhibit pro-cyclical behaviour was carried out by Durafe (2016). The earlier studies indicated that during phases of economic expansion nonperforming assets decreases and while in contraction it tends to increase. The results of the research were that when there is a rise in the Gross Domestic Product, NPA decreases and vice versa. The rationale behind this is that during periods of economic growth there are less financially distressed debtors and therefore a lower NPA for financial

firms according to Rajan & Dhal (2003). On the other hand a decline in economic output leads to high NPA. In addition, in recessionary times the banks tend to be pessimistic and claw back on lending while increasing their provisions on loans.

Malik et al (2015) analyses the impact of innovation on Assets quality of the local commercial banks. The study involved cross sectional time series data of the top five banks in Pakistan across a five year period beginning 2006. In Pakistan the banking innovation can be traced back to 2000 but E-banking was actually implemented in 2007. The result obtained is that e-banking plays a significant role in the development and up gradation of assets quality in the banking Industry. This is consistent with other researchers whose findings have validated that bank efficiency leads to a decrease in NPAs.

Earlier studies have shown that good corporate governance practices have a positive impact on the asset quality. By looking at the problem loans or the non-performing assets of a bank you can be able to evaluate the operational efficiency. Operational efficiency is an indicator of the management's ability to contain the non-performing assets held by a bank. High levels of corporate governance standards are essential to manage the NPAs. The conclusion therefore is that better corporate governance leads to operational efficiency and lower levels of NPA. The link between privatisation and improve performance can therefore be viewed in this context (Inam, 2014).

1.1.2 Risk Adjusted Returns

The non-structural approach to evaluation of bank performance has mainly focussed on certain financial ratios which include the following return on-equity, return-on-asset or the proportion of fixed costs to total costs. On the hand others have used performance measures based on the firm market value that have inherently valued risk

at the market price for example Tobin's q-ratio (computed as the ratio of market to book value of the assets of a company); the Sharpe ratio (computed as a ratio of the excess return from the risk free rate to the volatility of the returns generated as denoted by the standard deviation; or the event cumulative abnormal return, CAR (the model that forecasts the bank returns in relation to a specific market event for example a merger or acquisition).

Traditional measures of bank performance rely on the Return on assets (ROA) and Return on Equity measures of profitability. The short coming of this approach is that it does not take into account endogenous risk taking and is therefore seriously biased. Hughes and Mester (2013) in their paper argue that in order to measure the productivity of a bank it is vital to take to account the risk taking by the bank. The research goes on to expound that a bank may reduce credit risk for a given output by increasing monitoring and screening which is labour intensive and thereby cutting down on profits. Such action by the bank despite the lower profitability leads to lower probability of distress thus improving the risk profile. A better risk profile means a lower discount on the expected cash flows and thus maximizing firm value. Previous studies have highlighted the agency conflicts between management and other stakeholders. Results from these studies indicate that factors aligned with market discipline are linked to firm performance. The larger banks are prone to excessive risk taking on the assumption that they will be bailed out and therefore undermine the stability of the banking system (P Hughes, 2013).

Various studies have been done on the factors that affect bank profitability which are both bank specific and macroeconomic factors. Molyneux and Thornton (1992) in a study of bank performance across eighteen European countries in the period 1986-1989 applied a simple linear equation to study these factors. The study found a

positive correlation between both bank consolidation and nominal interest rate with the return on invested capital. The results were in line with previous studies by Bourke (1989) but different on the aspect of government ownership. While Molyneux and Thornton (1992) found positive relationship between government ownership and bank returns, Bourke (1989) found a negative relationship. The results also showed a negative relationship between bank returns and liquidity. Miller and Noulas (1997) in a study of the relationship between credit risk and profitability established a negative relationship between the two variables. When loans are generated with more risks it leads to losses which negatively impact the bottom-line.

The RAROC concept of modern risk management in financial institutions was first developed by the Banker's Trust (1970). RAROC stands for Risk Adjusted Return on Capital. This informed every level of decision making at the bank including performance management and risk management. At first the model was applied to the trading book to manage market risks and liquidity risks. Later on the model was extended to encompass other risks including the loan book and credit risks. The challenge with credit risk lies in the valuation of illiquid loans or marking to market and hence having a forward looking model to evaluate and manage the credit risk. This research seeks to evaluate the asset quality as determined by parameters such as non-performing loans provisions and impairment and how they affect bank performance as measured by the risk adjusted returns for the loan portfolio.

1.1.3 Effect of Asset Quality on Risk Adjusted Returns

Kaaya and Pastory(2013) conducted a study to investigate the relationship between credit risk and bank performance which employed panel data from 11 banks in Tanzania. The results were conclusive that an increase in credit risk tends to lower firm performance.

Li and Zou (2014) carried out a research to find out the connection between credit risk management and bank returns of commercial banks in Europe. The research was carried out from 47 commercial banks from 2007 and 2012. The findings are that credit risk management has a positive effect on the bottom line.

Poudel (2012) in a study of 31 Nepalese banks aimed at exploring the parameters of credit risk that affect bank performance found the default rate of loans as the biggest predictor of bank performance and therefore has an implication on credit risk management strategies. The study also found that credit risk management contributes to 22.60% of bank performance with other factors contributing to 77.40% of bank performance. This brings out a relevant issue to our study concerning to what extent credit risk affects profitability. The other issue is that of non-interest income and the role it plays in bank profitability.

Kolade and Ojo (2012) explored the quantitative effect of credit risk on profitability of Nigerian banks over a period of 11 years using panel data for five banks that control about half of the industry's assets. The findings are a negative relationship between credit risk and bank profitability.

1.1.4 Risk Adjusted Returns and Asset quality in the Banking Industry in Kenya

Globally we have had the turmoil of 2008 that led to collapse of various banks and government bail outs of other institutions. This was mainly due to banks holding illiquid toxic assets related to the mortgage sub-prime and excessive risk taking. Indeed the crisis was tied down to unscrupulous lending. The ASEAN crisis of 1998 is also well documented as being attributed to policies that created efficient lending

disincentives and therefore created asset bubbles that eventually resulted in a credit squeeze once the inflated prices collapsed (Crotty, 2009).

The recent Kenyan bank crisis of 2016 has led to three banks being placed under receivership namely Dubai bank, Imperial bank and Chase bank. While debate has focused on the corporate governance and fraud issues that led to their collapse, the lending policy within these banks are the main attributes that brought down the banks. The study aims at an analysis of tier 1 bank in Kenya with an objective of finding the correlation if any of the quality of their loan book and the bank returns. The research paper mostly focuses on the loan book as a bank's primary asset that generates cash flow returns and seeks to assess quality using a variety of metrics including but not limited to ratio of non-performing loans and impairment provisions etc. Risk adjusted return is a metric that allows the comparison of the subject banks in the study to be compared from the shareholder perspective whose end game is maximization of their returns for a given level of risk. This is as opposed to profitability which is not as broad a measure on performance as risk adjusted returns is since it does not take account of the risk.

The banking industry in Kenya has 43 commercial banks and is overseen by the CBK. The total net assets in the Kenyan banking sector stood at Ksh. 3.2 trillion as at the end of 2014. There were 27 local private commercial banks and 3 local publicly listed commercial banks which accounted for about 64 per cent and 5 per cent of the total banking assets respectively. The banking sector comprised of 13 banks that are foreign owned which accounted for about a third of the sector's assets (CBK, 2014).

Depending on the customer deposits, net assets, number of deposit accounts, capital and reserves and loan accounts the Kenyan banks fall into three categories. A large

bank is one that has a weighted composite index of 5% and above. A bank with between 1% and 5% is classified as mid-tier bank according to this classification. A small bank is one that is below 1% in terms of this composite index. For the period ended December 2014 there were just 6 banks falling into this category of tier one status with a market share of 49.9%. There were 16 middle tier banks that control about 41.7% market share and 21 banks in the last tier with 8.4 per cent market share. CBA moved from the second tier to top tier while CFC Stanbic Bank moved to the second tier from the top tier. Similarly, some banks changed positions within their respective peer groups. In the large peer group we have Kenya Commercial Bank, Equity Bank, Co-operative bank, Barclays Bank, CBA and Standard Chartered Bank (CBK, 2014).

The banking sector registered enhanced performance during the year ended Dec 2014. Pre-tax profits increased by 12% while the total net assets grew by 18.4%. The total deposits also grew by a similar margin of 18.4%. The sector also experienced a strong capital base due to retained earnings and new capital influx. However, asset quality registered a decline with the non-performing loans (NPLs) ratio increasing from 5.2 per cent in December 2013 to 5.6 per cent in December 2014. The increase in NPLs was partly attributed to the residual impact of high interest regime in 2012/2013 and subdued economic activities witnessed in the period ended December 2014. The total net assets recording an increase of 18.4 per cent from Ksh. 2,703.4 billion in December 2013 to Ksh. 3,199.4 billion in December 2014. The loans and advances, government securities and placements which accounted for 58.8 per cent, 20.8 per cent and 4.6 per cent of the total net assets respectively remained the main components of the banks' balance sheet (CBK, 2014).

The lag effects of high interest regime in 2012/2013 and subdued economic activities witnessed in the period ended December 2014 impacted negatively on the quality of loans and advances. As a result, non-performing loans (NPLs) increased by 32.4 per cent to Ksh. 108.3 billion in December 2014 from Ksh. 81.8 billion in December 2013. Similarly, the ratio of gross NPLs to gross loans increased marginally from 5.2 per cent to 5.6 per cent in December 2014. The banking sector registered improved performance with pre-tax increasing by 12.2 per cent from Ksh. 125.8 billion in December 2013 to Ksh. 141.1 billion in December 2014 (CBK ,2014).

1.2 Statement of the Problem

A key interest among top tier banks has been how to deliver better returns to shareholders one of them being improving the quality of the loan book. The modern portfolio theory tries to explain risk and return by asserting that if you want more returns you should bear a higher risk. In this research we test this assertion by looking at how credit risk as measured by asset quality influences bank returns. This research focusses on the loan portfolio of the tier one banks which are assumed by virtue of size to have well diversified loan portfolios in terms of individuals, regions and industries that they operate in. In measuring risk adjusted return we do not look at profitability passé but also the risk assumed in generating the returns. We further explore in this research proposal if high returns witnessed in the top tier of the banking industry in Kenya exist in spite of worsening asset quality or due to prudent credit risk management. The Merton model is used to analyse a corporation's risk of default and therefore useful in judging asset quality of individual loans at the micro level. Credit analysts make use of the model during the loans origination and evaluation process for corporates.

In Kenya research has been conducted on the effect of quality of assets on bank performance (CM Mwangela, 2015).The study found a positive correlation between Loan Loss Provisioning and the Return on Assets. The studies focussed on all the banks but none has concentrated on the top tier banks. Locally three banks have collapsed in a period of less than a year beginning 2015 begging the question of bank stability and if the answer lies in the tier one banks. This research addressed one aspect tied to stability which is asset quality.

Various empirical studies have been conducted on the effect of asset quality and performance for example (Miller and Noulas,1997).Most of them have focussed on the traditional measures of performance which is mainly profitability (Swamy,2012).The findings of these empirical studies have been that of a positive correlation between asset quality and bank performance.

The key research question to be addressed is the following; what is the effect of loan book quality on the risk adjusted returns for tier one banks in Kenya? The expected results are that the higher asset quality or credit risk efficiency is expected to yield higher risk adjusted returns. There exists a gap in measuring the effect of asset quality on performance by using a risk adjusted metric as opposed to profitability which has been done before. In principle the investors will expect to be rewarded with a higher risk premium for the level of risk they assume according to (Sharpe, 1964).

1.3 Objectives of the Study

The main objective of the study is to establish the effect of the asset quality of tier one banks in Kenya on the risk adjusted returns.

1.4 Value of the Study

The study is critical in establishing the efficiency of loan portfolios in the banking sector in Kenya as evidenced by a case study of tier one banks in Kenya. The results of this study are vital in establishing if inefficiencies exist in the larger banking sector. It would also inform the pricing regime in the banking sector since the debate has ensued about whether the interest rate spreads in this country are justifiable and whether the regulator should cap interest rates. The results of the study are expected to yield input into the capital allocation decisions of firms as they seek to maximize their returns given a commensurate level of risk.

For regulators the study would help in bank supervision and policy guideline for big banks which pose a risk to the financial systems in case they fail or run bankrupt. The study would also give an insight into the credit portfolio diversification benefits that accrue to a large bank operating on a bigger scale and therefore contributing to the debate for the need for consolidation. The study also aims to address the raging debate on whether profitability in the banking system necessarily equals stability.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature review focusses on the theories that underpin evaluation of bank performance and begins with general view of the loan portfolio as being akin to an investment portfolio. The research is hinged on two theories which are the modern portfolio theory and the Merton model. These theories give us an understanding of the risk-return financial principles that can be applied to the banking industry for the purpose of our research. This is covered under section 2.2 of the literature review.

The research proposal then went deeper into the empirical studies which have been carried out on the topic including the local research on the same in section 2.3 and 2.4. These studies look at the factors that determine asset quality and profitability in banks both internal and on the macro level. The proposal will explore studies on the effect of asset quality on profitability which has yielded both positive and negative correlations between asset quality and performance.

Having laid out the theoretical principals of finance and explored the previous empirical and local studies on the subject of our research comes up with a conceptual model in a diagram that represents asset quality as the independent variable against risk adjusted returns which is the dependent variable. This is represented in section 2.5 and 2.6 of the Literature review. We expect a positive correlation between asset quality and risk adjusted returns based on these models.

2.2 Theoretical Literature Review

The research was premised on two theories which are the Modern Portfolio Theory and the Merton Model. The Modern Portfolio Theory focussed on the risk and return

trade-off for a loan portfolio while the Merton Model was useful in analysing a company's risk of credit default which is applicable to individual loans which make up the overall loan portfolio of a bank.

2.2.1 Modern Portfolio Theory

Modern finance concepts borrow heavily on the work of the economist (Harry Markowitz, 1952) in terms of portfolio management. In his seminal work published in the Journal of Finance he made various key assertions.

All the investors are averse to risk and would avoid risk as much as possible. The theory goes on to define risk as the inconsistencies or variations from expected return. Instead of looking at risk from a micro level the theory considers risk from a portfolio level. Also in adding an individual security or component to your portfolio you consider not just its risk in isolation but the risk it adds to the overall portfolio. This has implications in a loan portfolio that for loan origination one considers how a single loan changes the risk for the entire loan portfolio.

Every investor has a risk tolerance level and there is a point at which this risk and return are at equilibrium. When plotted on a maximization efficiency curve depending on the risk tolerance this point denotes for risk assumed the level of commensurate return. Risk and return go together according to this theory. In general investors require higher returns for assuming greater risk. The theory posits that diversification of a portfolio can reduce risk. If applied to a loan portfolio diversification of credit risk means lending to different geographical regions, industries and different business lines.

Nobel laureate William Sharpe came up with a scale to compute the risk adjusted returns of an investment. It is derived by subtracting the zero-risk rate from the

expected rate of return for an investment and dividing the result by the standard deviation of the returns. The Sharpe ratio allows us to deduce if higher returns are due to astute investment or merely as a result of excessive risk taking. An investor would be interested to know the level of risk assumed in generating the returns and that is where the Sharpe ratio is useful. An increase in the Sharpe ratio means an increased risk adjusted return and vice versa. Stocks have traditionally had a higher Sharpe ratio than treasury bonds. A negative Sharpe ratio is interpreted to mean that the investor would have been better off holding liquid assets. The whole point of the ratio as compared to traditional performance metrics is to look at return not in isolation but with a risk perspective. This ratio can be applied to an evaluation of bank performance (Hughes and Mester, 2013)

2.2.2 Merton Model

The Merton model (1974) is used to determine the probability of default of an entity at a given point in time. This probability is calculated by subtracting the face value of a firm's debt from the projected market value of the firm and then dividing the difference with the projected volatility of the firm. From this we can then derive the distance to default which is the probability that the value of the firm will fall below the face value of its debt. The market value of equities is already available but the challenge comes with valuation of debt otherwise it would be trivial to use this model. The model requires very rigid assumptions regarding the asset, i.e. that returns are normally distributed and market value of assets follow a random pattern akin to a Brownian motion.

One view of measuring credit risk is the one where a default event is characterized by a firm's asset value depreciating well below the face value of its liabilities, Merton (1974). Credit Portfolio View and KMV base their models on similar empirical

observation that default probabilities and the movements in the distant to default probabilities vary as time goes on. KMV uses an approach that links the default probability to the market value of asset using microeconomic factors. CreditPortfolioView on the other hand suggests a methodology which links macroeconomics factors to the default and transition probabilities. To come up with this model you require default rate data for each country and the industry sectors within the country. An additional limitation of this model is the arbitrary allocation of transition probabilities. Studies have not yet proven of this model is better than the probabilities generated by internal workings of a credit department based on experience and an understanding of credit cycles.

2.3 Empirical Literature Review

In a study of Ghanaian banks (Al Alhassan, 2014) looks at the factors that contribute to the worsening of asset quality of Ghanaian banks during a time of financial turmoil collecting data from 25 banks over a period of 5 years. Market concentration, bank size and income diversification were found to have a positive impact on bank asset quality, while bank interest spread and credit growth impact negatively on bank portfolio quality. The empirical findings back the opinion that the macro-economic environment is a key factor in explaining problem loans. More specifically the conclusion is that inflation rate and exchange rate depreciation has a negative impact on asset quality. However, economic expansion leads to improved asset quality of banking industry. The results show that GDP, inflation rate and exchange rate have an immediate impact on the asset quality.

In India studies have been done before that focus on the factors that determine asset quality and profitability, Vighneswara Swamy (2012). The findings from the study

were that as the banks grow bigger in size they increase efficiency and gain better managerial competence over the NPAs. In this light of this, there is a case for amalgamation of banks to maximize on their operational efficiency this is because the bigger banks have exhibited better management of NPA levels. Closer home in East Africa research has been conducted on credit risk and bank performance in Tanzania by Indiael Kaaya and Dickson Pastory(2013)The findings were conclusive that the increase in credit risk tends to lead to decline in bank performance.

Previous studies clearly indicate an increase in non-performing assets leads to lower cost efficiency (Mohd Zaini Abd Karim et al, 2010). The findings are compatible with the studies by Altunbas et al. (2000), Fan and Shaffer (2004), and Girardone et al. (2004) that found that NPAs lead to slack in the banking sector. In a study on the impact of competition and risk on bank yield in China (Yong Tan, 2016) the results did not find any strong impact of competition and risk on bank yields in the Chinese banking and financial sector.

(Poudel, 2012) looks at the effect of credit risk on bank returns and found that default rate is the most significant forecaster of a bank's financial performance. Kargi (2011) has evaluated the impact of credit risk on bank returns and performance of Nigerian banks. The study employed financial ratios of credit risk and bank performance over a period of five years using various descriptive statistics and mainly regression analysis. The outcomes revealed that managing of credit risks has a meaningful impact on the yields of Nigerian banks. It concluded that banks' yield is negatively influenced by the levels of credit, non-performing assets and deposits thereby making them prone to bank runs and distress.

Absus Samad (2012) has looked at the credit risk elements of the bank failure in the US. According to the paper credit risk is measured by the quality of a bank's loans. They include the net write off to loans, loan loss provision to net write offs ,loan loss allowance to underwritten loans,(loan loss allowance to long term loans and long term loans to total loans.

Financial ratios are widely accepted in assessing financial performance over time. To gain valuable insight into a firm analysts use a combination of various ratios and tools. Apart from this quantitative data they also make use of qualitative analysis (Barnes, 1987). Ratios are a product of the sum total of decisions made by the firm and also reflect the external conditions of operating in the firms external environment (Benishay, 1971).Earlier studies of the use of ratios has centred around the prediction of failure . These bank failure prediction tools are used by regulators as a surveillance mechanism against bank collapse. Stuhr and Van Wicklen (1974), Sinkey (1975), and Hanweck and Simon (1980) identified ratios that are popular now known as the CAMEL Rating System. Using this system the bank's financial health and condition can be judged based on these criteria. These criteria are given identical weights although examiners are given leeway to vary the weights of the criteria depending on the circumstances.

2.4 Local Research on the Topic

Locally there have been studies related to asset quality and bank performance. A study has been done on the effect of quality of assets on bank performance for all commercial banks Nzoka (2015). The positive relationship between asset quality and financial performance of commercial Banks in Kenya was confirmed through the

analysis results obtained .None of a study has been conducted for tier 1 banks which represent a significant market share of 49.9% as of December 2014.

(Moraa, 2014) conducted an internal factor analysis of the six biggest commercial banks in Kenya. The findings revealed that bank size in terms of assets, operational efficiency, capital adequacy and strength, ownership, and the ratio of loans to total assets are the major significant determinants of the profitability of the top tier commercial banks.

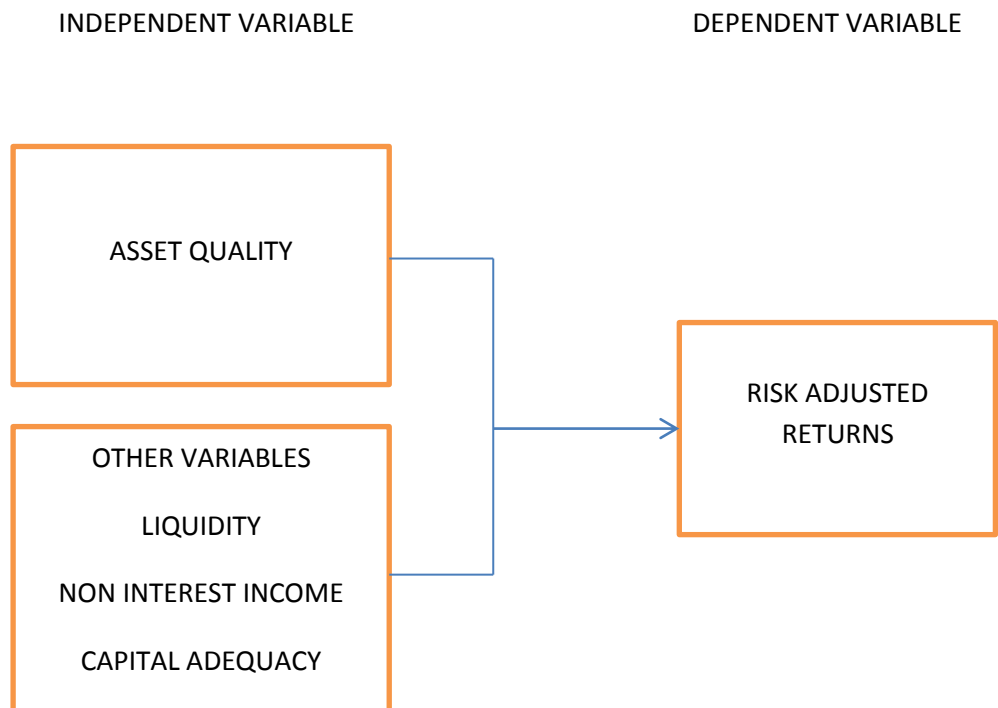
(Kiganda, 2014) did a case study on the effect of macro-economic factors on bank returns by using Equity bank in Kenya as an example. The key findings of the study were that macroeconomic factors are not important in determining bank returns. The same conclusion was made by Ongore and Kusa (2013). They however found that corporate governance affects commercial bank performance in Kenya.

Kithinji (2010) has assessed the impact of credit risk on the bank returns in the Kenyan banking industry. The study covered a five year period from 2004 to 2008. The study concluded that most of the bank profits were not influenced by the amount of credit and level of NPAs, therefore suggesting that other variables other than credit and non-performing assets affect bank profitability.

2.5 Summary of Literature Review

Based on the theory and empirical studies we expect a positive correlation between the asset quality of tier one banks in Kenya and the risk adjusted returns as a measure of performance. Although previous research has been done on the subject most studies have focussed on the profitability measures but none of them have quite captured the endogenic risk in generating these returns.

2.6 Conceptual Model



EFFECT OF ASSET QUALITY ON RISK ADJUSTED RETURNS

Figure 1.1 Diagram of the conceptual model depicting the effect of asset quality on risk adjusted returns with asset quality and other variables e.g. liquidity being the independent variables and the risk adjusted returns being the dependent variable.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The research design employs secondary data from the banking industry and uses regression analysis to analyse data for six banks over a period of ten years. This chapter outlines the methodology that was used in conducting the research. Section 3.2 presents the research design. Section 3.3 discusses the target population for the study. Section 3.4 presents data collection and finally Section 3.5 discusses the data analysis.

3.2 Research Design

The study used cross sectional time series data from the six commercial banks that make up the top peer group. Secondary data was collected from the financial statements of the various banks. A causal research design was adopted and linear regression applied to establish the relationship between the variables. In this case the dependent variable is the risk adjusted returns which measures bank performance on one hand while asset quality is the independent variable as measured by several metrics. An assumption is that the current credit policies for the banks are in line with industry norms and the prevailing state of the economy (Kithinji, 2010) analogous to their assets and managerial efficiency in deploying the assets. The independent variable metrics are loan loss to gross loan, Non-Performing loan, loan loss to net loan, impaired loan to gross loan. Impaired loan measure the portion amount of loan that will not be recovered from the individual

With the above equation the dependent variable is Risk adjusted returns (Y) and the remaining are the coefficients independent variables.

3.3 Population

According to the Central Bank of Kenya Annual Report 2015 there are six banks classified as tier one as having scored above 5% in a composite index of assets, deposits and customer numbers. These banks include the following Kenya Commercial Bank, Equity bank, Co-operative bank, Barclays Bank, Standard Chartered Bank and Commercial bank of Africa. The study involves these six banks that comprise the tier one banks and is a time series study of bank data over a period of ten years.

3.4 Data collection

The research is mainly reliant on secondary data comprising financial statements from the bank's annual reports and the capital markets authority. CBK data was also useful in obtaining secondary data for analysis from their annual report on Bank Supervision. This type of data is mainly quantitative and has been subjected to oversight and evaluation by audit firms and the regulators, CBK and CMA.

Secondary data has an advantage over primary data in terms of time saving, Ghauri (2005). The data was sourced from both online and offline sources. A limitation of this data is that it may be outdated or the accuracy of such data is hard to determine. In this research secondary data was useful and appropriate for the purposes of our research.

3.5 Data Analysis

This section comprises the Conceptual model which is the function that represents the two variables and then goes on to specify the analytical model in the form of an equation and diagnostic tools applied in analysis of the bank data. Linear regression

analysis is used to analyse the quantitative data collected and various diagnostic tools applied to test its validity.

Data analysis is useful in testing hypothesis, describing facts, deriving patterns and has various business applications. Data analysis finds averages of various variables such as profitability, costs and revenues. Data analysis can either be qualitative or quantitative.

3.5.1 Conceptual Model

The nature of the relationship between the two variables was defined by the computing correlation coefficient (r) and coefficient of determination (r²).

The study hypothesis was that Asset Quality had a positive relationship to Risk Adjusted Returns for tier 1 banks in Kenya.

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_n x_n + e \tag{1}$$

Where;

Y—denotes the dependent variable (Risk Adjusted Returns)

α - is the value of the intercept.

β - is the coefficient of the explanatory x variable which is Asset Quality

e - is the error term assumed to have zero mean and independent across time period.

3.5.2 Analytical Model

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + e \tag{2}$$

Where;

Y —denotes the dependent variable (Risk Adjusted Returns) measured as the Sharp ratio

α - is the value of the intercept.

β - is the coefficient of the explanatory x variable.

e - is the error term assumed to represent other variables that determine Risk Adjusted Returns.

x_1 - Ratio of Gross NPAs to Gross Loans & Advances.

x_2 - Ratio of Loan Loss Provisions to Gross Loans & Advances

x_3 - Ratio of Gross NPAs to Total Assets.

3.5.3 Diagnostic tests

This study employed the t-tests, f-tests, and correlation analysis to determine the effect of asset quality on risk adjusted returns for top tier banks in Kenya. An assumption of the Sharpe ratio is that the returns are normally distributed and therefore we have to rule out abnormalities like kurtosis, fatter tails and higher peaks, or skewness. The research chose a confidence interval level of 95% for the regression coefficients.

A summary of descriptive statistics was also carried out for the entire population to establish the sample size which in our case is 60 and is sufficient to reliably reflect the population mean and standard deviations.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the data findings to establish the effect of the asset quality of tier one banks in Kenya on the risk adjusted returns, in particular, section 4.2 covers the descriptive statistics which summarizes the data collected, section 4.3 presents the empirical model for the study, section 4.4 presents the discussion of the study findings in relation to existing literature and section 4.5 covers the summary of the chapter.

From our earlier analytical model we used regression to determine the coefficients of the variables to be able to reach a conclusion on the impact of asset quality on risk adjusted returns. In this chapter we have various tables that summarize the results from this model and in the end of our discussion we came up with findings on the effect of the asset quality and risk adjusted returns.

4.2 Summary Statistics

Section 4.2 presents the research finding on the descriptive statistic of the data collected on the effect of the asset quality of tier one banks in Kenya on the risk adjusted returns.

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Risk Adjusted Returns	60	.17	.76	.3157	.12813
Ratio of Gross NPAs to Gross Loans & Advances	60	.03	2.03	.2581	.33551
Ratio of Loan Loss Provisions to Gross Loans & Advances	60	.04	.94	.2733	.18814
Ratio of Gross NPAs to Total Assets	60	.00	.44	.1184	.11334

Source: Research Findings 2016

From the findings presented in table 4.1 above the study revealed that Risk Adjusted Returns had a mean of 0.3157 and standard deviation of 0.12813, Ratio of Gross NPAs to Gross Loans & Advances had a mean of 0.2581 and standard deviation 0.33551, Ratio of Loan Loss Provisions to Gross Loans & Advances had a mean of 0.2733 and standard deviation of 0.18814 and Ratio of Gross NPAs had mean of 0.1184 and standard deviation of 0.11334.

4.3 Empirical Model

Table 4.1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Significance
1	.874 ^a	.763	.191	.12225	.048 ^b

Source: Research Findings 2016

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. From the findings in the table below the value of adjusted R squared was 0.191 an indication that there was

variation of 19.1% on risk adjusted returns due to changes in Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets at 95% confidence interval. This shows that 19.1 % changes in risk adjusted returns could be accounted to changes in Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table below there was a strong relationship between the study variables as shown by 0.874.

Table 4.2: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.744	3	0.372	3.131	.048 ^b
	Residual	25.662	56	0.329		
	Total	26.406	59			

Source: Research Findings 2016

From the ANOVA statics in the table below, the processed data, which is the population parameter had a significance level of 0% which shows that the data is ideal for making a conclusion on the population parameters as the value of significance (p-value) is less than 5%. The calculated value was greater than the critical value (3.131>1.9861) an indication that there were significant difference between risk adjusted returns and Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets. The significance value was less than 0.05 indicating that the model was significant.

Table 4.3: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.878	-.357		-2.459	.016
	Ratio of Gross NPAs to Gross Loans & Advances	-.305	.097	-.402	-3.145	.002
	Ratio of Loan Loss Provisions to Gross Loans & Advances	-.245	.147	-.182	-1.664	.010
	Ratio of Gross NPAs to Total Assets	-.158	.100	-.183	1.583	-.017

Source: Research Findings 2016

From the above regression equation, it was revealed that holding Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets to a constant zero, risk adjusted returns would stand at 0.878, a unit increase in Ratio of Gross NPAs to Gross Loans & Advances would lead to decrease in risk adjusted returns by a factor of 0.305. A unit increase in Ratio of Loan Loss Provisions to Gross Loans & Advances would lead to decrease in risk adjusted returns by factors of 0.245. A unit increase in Ratio of Gross NPAs to Total Assets would lead to a decrease in risk adjusted returns by a factor of 0.158. The study further revealed that Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets were statistically significant to affect the risk adjusted returns, as all the p value (sig) were less than 0.05%. The study also found that there was a positive relationship between risks adjusted returns and Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets.

4.4 Discussion

The study found that 19.1 % changes in risk adjusted returns could be accounted to changes in Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets. The study revealed that there was there was strong negative relationship between R is the correlation coefficient which shows the relationship between ratio of Gross NPAs to Gross Loans and Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances , Ratio of Gross NPAs to Total Assets and risk adjusted returns. The study further revealed that Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets significantly affect risk adjusted returns. The study finding agree with the findings of Nzoka (2015), who found the positive relationship between asset quality and financial performance of commercial Banks in Kenya was confirmed through the analysis results obtained. Moraa (2014) established the size of the bank, operational efficiency, capitalization, ratio of loans to assets and ownership were the main determinants of bank yields for the top tier commercial banks. Kiganda (2014) concluded that the macro-economic factors were not important in determining bank returns. Ongore and Kusa (2013) found that corporate governance practices were a key determinant of bank profitability. Kithinji (2010) found that non-performing assets and the loan book size had little influence over the profits of commercial banks in Kenya.

The study found that an increase in Ratio of Gross NPAs to Gross Loans & Advances would lead to a decrease in risk adjusted returns. A unit increase in Ratio of Loan Loss Provisions to Gross Loans & Advances would lead to decrease in risk adjusted returns. A unit increase in Ratio of Gross NPAs to Total Assets would lead to decrease in risk adjusted returns. The study further revealed that Ratio of Gross NPAs

to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets were statistically significant to affect the risk adjusted returns. The study also found that there was a negative relationship between risks adjusted returns and Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets. The study findings were in line with findings of Vighneswara Swamy (2012), who found that as the banks become bigger they are able to better contain their NPAs. Therefore there is a case for amalgamation of banks to reap from this managerial efficiency.

Kargi (2011) the outcomes revealed that managing of credit risks has a meaningful impact on the yields of Nigerian banks. It concluded that banks' yield is negatively influenced by the levels of credit, non-performing assets and deposits thereby making them prone to bank runs and distress.

4.5 Summary

This chapter has reviewed the study findings in line with the objective of the study which was to establish the effect of the asset quality of tier one banks in Kenya on the risk adjusted returns, the chapter has presented the data in systematic manner from the descriptive statistics, empirical model for the study and discussion of the study findings in relation to existing literature.

The conclusions from this chapter were that there is a positive relationship between asset quality and risk adjusted return. That as the levels of NPAs increase there is a decline in the risk adjusted return.

CHAPTER FIVE

SUMMARY AND CONCLUSION

5.1 Introduction

This chapter provides a chapter presents the summary of finding, conclusion and recommendations on the effect of the asset quality of tier one banks in Kenya on the risk adjusted returns.; in particular the chapter covers the section 5.2 covers the Summary of the Study, in section 5.3 chapter presents conclusion, section 5.4 presents the limitation of the study and section 5.5 presents the recommendations.

The chapter tied up the model and theories and came up with conclusions based on the discussions in the previous four chapters. It reached a conclusion that increased asset quality leads to increased risk adjusted returns of banks by a factor of about 20%. This means that there are other factors that significantly affect bank returns that need to be studied for example liquidity.

5.2 Summary of the Study

The objective of the study was to establish the effect of the asset quality of tier one banks in Kenya on the risk adjusted returns. The study employed panel data from the 6 banks in Kenya. The main source of data was published financial statements from the banks. Casual research design and cross sectional regression was employed as the study was keen to establish the relationship between the variables. The study involves these six banks that comprise the tier one banks and is a time series study of bank data over a period of ten years. The research is mainly reliant on secondary data comprising financial statements from the bank's annual reports and the capital markets authority. Linear regression analysis is used to analyses the quantitative data

collected and various diagnostic tools applied to test its validity. Data analysis can either be qualitative or quantitative.

The study found that 19.1 % changes in risk adjusted returns could be accounted to changes in Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets. The study revealed that there was a strong relationship between R is the correlation coefficient which shows the relationship between ratio of Gross NPAs to Gross Loans and Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances , Ratio of Gross NPAs to Total Assets and risk adjusted returns. The study further revealed that Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets significantly affect risk adjusted returns.

The study found that unit increase in Ratio of Gross NPAs to Gross Loans & Advances would lead to a decrease in risk adjusted returns. A unit increase in Ratio of Loan Loss Provisions to Gross Loans & Advances would lead to a decrease in risk adjusted returns. A unit increase in Ratio of Gross NPAs to Total Assets would lead to a decrease in risk adjusted returns. The study further revealed that Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets were statistically significant to affect the risk adjusted returns. The study also found that there was a negative relationship between risks adjusted returns and Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets.

5.3 Conclusion

The study found that changes in risk adjusted returns could be accounted to changes in ratio of gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets. The study revealed that there was strong negative relationship between Gross NPAs to Gross Loans and Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances, Ratio of Gross NPAs to Total Assets and risk adjusted returns. The study further revealed that Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets significantly affect risk adjusted returns. The study established there was a positive relationship between risks adjusted returns and Ratio of Gross NPAs to Gross Loans & Advances, Ratio of Loan Loss Provisions to Gross Loans & Advances and Ratio of Gross NPAs to Total Assets. Thus the study concludes that asset quality of tier one banks in Kenya affect the risk adjusted returns.

5.4 Limitations of the Study

In attaining its objective, the study was limited to six Tier I banks in Kenya. Secondary data was collected from the bank financial statement, Central banks of Kenya publication and Capital Market Authority report. The study was also limited to the accuracy and veracity of the data collected. In as much as the data was verifiable since it came from banks, CBK and CMA publications, it nonetheless could still be inaccurate or manipulated.

The study was limited to establishing the effect of the asset quality of tier one banks in Kenya on the risk adjusted returns. The duration of the study was ten years between 2006 and 2015. A more extensive period of the study would have incorporated periods of various economic magnitudes. This would have given a broader timeframe

to address the problem and provide better focus. The study was limited to six commercial banks in Kenya in Tier I in order to establish the effect of the asset quality of tier one banks in Kenya on the risk adjusted returns.

5.5 Recommendations for Further Research

The study sought to establish the effect of the asset quality of tier one banks in Kenya on the risk adjusted returns. The study recommends that a similar study should be done on Tier II and Tier III commercial banks in Kenya. The study recommends that a study should be done on the relationship between asset qualities of tier one banks in Kenya on bank efficiency. The study recommends that a study should be done on the relationship between capital adequacy and stability of commercial banks in Kenya.

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APPENDICES

LIST OF TIER 1 BANKS IN KENYA

1	KENYA COMMERCIAL BANK
2	EQUITY BANK KENYA LTD
3	CO-OPERATIVE BANK OF KENYA
4	BARCLAYS BANK OF KENYA
5	STANDARD CHARTERED BANK OF KENYA
6	COMMERCIAL BANK OF AFRICA