

**THE RELATIONSHIP BETWEEN OFF-BALANCE SHEET
ACTIVITIES AND SOLVENCY OF COMMERCIAL BANKS IN
KENYA**

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DECLARATION

This is my original work and has never been presented for any degree award in any other university.

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This research project has been submitted with my approval as the University Supervisor;

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DEDICATION

This research project is dedicated to my loving family, my sisters, colleagues at the workplace and all those who made this project a success. Thank you all.

ABSTRACT

The purpose of this study was to determine the relationship between off-balance sheet activities and solvency of commercial banks in Kenya. To facilitate and to achieve the objectives of the study, secondary data was collected from commercial banks financial statements. A census survey design was employed.

The findings were that there was a great variation on solvency of the commercial banks dues to changes in risk averaging at -0.517 for the five years. The study also found out that liquidity which averaged at 0.373 has a less impact on solvency whereas profitability standing at 0.469 has a moderate impact on solvency of commercial banks. The study therefore concludes that risks of commercial banks as a result of banks including off-balance sheet activities in the trading operations increases overall risks and thus affects solvency and stability and was found to be the main contributor of bank insolvency. This is an indication that change in solvency of commercial banks could be accounted for by changes in risk, liquidity and profitability.

The recommendations were that there is need for commercial banks in Kenya to maintain an adequate level of liquidity which depends on the institution's ability to efficiently meet both expected, unexpected cash flows and collateral needs without adversely affecting either daily operations or the financial condition of the institution. There is need for Commercial banks in Kenya to increase their short term assets it was revealed that increase in banks liquidity positively influence the solvency of the banks. There is need for commercial banks to decrease their operation risk as it was found that risk is negatively associated with solvency of commercial banks

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

The traditional banking business has been to make long-term loans and fund them by issuing short-dated deposits, a process that is commonly described as “borrowing short and lending long.” In recent years, fundamental economic forces have undercut the traditional role of banks in financial intermediation. As a source of funds for financial intermediaries, deposits have steadily diminished in importance. In addition, the profitability of traditional banking activities such as business lending has diminished in recent years. As a result, banks have increasingly turned to new, nontraditional financial activities as a way of maintaining their position as financial intermediaries. One of these activities has been engaging in off-balance sheet activities (Mason, 2009).

The growth off-balance sheet activities in the recent past, that came as a response to the need of corporate and firms for different types of guarantees has had conflicting impact on financial stability and bank soundness. On a first hand, diversification into non-traditional activities has been beneficial to the banking sector specifically by implementing an additional fee income or by constituting new technique for hedging specific risk (Berger, 2009). On the other hand non-traditional activities did influence bank condition by increasing bank exposure to different types of risk and by creating bank incentives to more risk taking (Instefjord, 2005).

In economic terms, off-balance-sheet items are contingent assets and liabilities that affect the future rather than the current shape of a commercial bank's financial statements and do not appear on the banks financial statements, rather they appear as notes to the financial statements. They directly affect future profitability and solvency (Berger, 2009). Consequently, efficient management of these items is central to controlling overall risk exposure in modern commercial banks. An item or activity is an off-balance-sheet asset if, when a contingent event occurs, it moves onto the asset side of the balance sheet. Conversely,⁷ an item or activity is an off-balance-sheet liability if, when the contingent event occurs, it moves onto the liability side of the balance sheet.

Many off-balance-sheet activities involve risks that add to the commercial banks' overall risk exposure. Thus, bank management must pay particular attention to risk assessment procedures and internal controls. However, some off-balance-sheet activities can hedge or reduce the interest rate, credit, and foreign exchange risks of commercial banks (Haupt & Embersit, 2004). According to Hassan (2007), off-balance-sheet activities have both risk-increasing and risk-reducing attributes. In addition, off-balance-sheet activities are now an important source of fee income for many commercial banks. One of the most important choices facing a commercial banks manager is the relative scale of on- and off-balance-sheet activities (Panayiotis, Anthanasoglou, Brissimis, & Mathaios, 2005). In their study on the determinants of bank profitability, they discovered that off-balance sheet activities determine a great deal the profitability and thus the main operations of commercial banks. This is because profitability determines the growth of the commercial banks.

1.1.1 The Off-Balance Sheet activities

Banks could engage in a variety of off-balance sheet activities which include bank acceptances, unused commitments, financial standby letters of credit, performance standby letters of credit, commercial and similar letters of credit, securities, credit derivatives, spot foreign exchange contracts, interest rate contracts, foreign exchange contracts, equity derivative contracts and commodity derivative contracts. These different types of off-balance sheet items present heterogeneous characteristics and thus could impact differently bank risk taking behavior, bank operations which could also affect the banks chances of survival(Nachane & Ghosh, 2002).

These off-balance sheet activities can be classified into two main categories, namely; credits and loan substitutes and derivatives.

Credits and loans substitutes include bank acceptances, loan commitments, letters of credit and loans sold while derivatives include futures, forward, swaps and options. They both provide liquidity and hedging services to corporations¹ while the bank earns a fee income on them.

Many questions could be asked about the relation between credit substitutes and bank risk exposure or bank solvency. Such items are a source of fee income, which enhances the profitability and performance of banks, if everything being is held constant. Avery and Berger (1991), conducted a study in the US and found that loans issued by U.S banks under commitment appear to have slightly better performance on average than other loans, suggesting that such loans generate little risk or that this risk is offset by the selection of safer borrowers and the income generated.

The relation between bank risk exposure and derivative products differ according to the way such items are used. Banks buy and purchase derivatives mainly to respond to the clients' needs or to hedge specific risk. Alternatively derivatives could also be used to speculate and to take market positions. When banks sell derivatives to corporations and other commercial banks to help them in hedging financial exposure, they act as dealers taking fees and making the difference between their bid and ask prices on purchases and sales. Using derivatives in such a manner could have both rewarding and penalizing impact. According to Jason and Tylor (2000), the speculative use of derivatives subject banks to higher rather than lower risk exposure and can lead to significant financial losses that may threaten the solvency of commercial banks. Kaufman (1999) pointed out that there are several risks inherent in the growing use of derivatives. In particular, Kaufman in his study describes how the marketability of assets exposes assets of commercial banks to financial losses due to the changing circumstances of the market. The risks subject the asset to market risk and warn about the "illusion of liquidity which is the belief that anything can be bought and sold at any moment in time at a fee.

Hassan and Khasawneh, (2009) tested the impact of different derivatives on the riskiness of several U.S. bank holding companies. They found that among the derivatives contracts, swaps are the major contracts that are incorporated in market risk valuation. Results show that such contracts are viewed as risk reducing tools. Concerning the other types of derivatives the study shows that futures, forwards, and options do not seem to have a major effect in valuation of bank market risk. However, they find a significant positive relationship between these three types of derivatives and market systematic risk.

Jay Choi and Elyasiani (1996) found that the use of derivative contracts by commercial U.S. banks creates a significant additional potential systematic risk beyond the level that reflects a bank's traditional financial statement exposures. Lepetit, (2007) conducted a study concerning the risk diversification impact of using off-balance sheet items on bank performance and return, show that European banks expanding into non-interest income activities presented higher risk and higher insolvency risk than banks which mainly supplied loans.

1.1.2 Solvency of Commercial Banks

Commercial banks operate by attracting depositors who place various amounts of money in a bank for a predetermined interest rate. The bank advertises a rate that will attract the greatest amount of deposits and once the money is on deposit, the bank then advertises a loan rate based on the risk of that money in the economic environment (Mason, 2009).

Solvency is often referred to as solvency risk (Rose, 2002) and is what banks consider long-term viability of banks to remain liquid and profitable. If a bank takes on bad loans or its security portfolio declines in value, then its capital accounts, which are designed to absorb these losses, become stressed. If investors or depositors become aware of this problem, they may withdraw their funds and the bank will become insolvent and close its doors.

In the context of off-balance sheet activities, banks have taken to selling these products to corporate clients with an aim of increasing the income portfolio as well as diversify portfolio risks. As such, banks might engage in nontraditional financial activities that promise higher returns but carry greater risk. A new activity that has generated particular concern recently is the expanding role of banks as dealers in derivatives products. There

is a fear that in seeking new sources of revenue in derivatives, banks may be taking risks that could ultimately undermine their solvency and possibly the stability of the banking system (Mason, 2009)

Prices and yield on bank stocks and on large uninsured deposits can serve as an early warning sign of a bank headed toward insolvency (Rose, 2002).

According to Khambata (2001), engagement in the off-balance sheet activities also help to improve the commercial banks' scope of operations, and diversification of product lines and earnings. Nevertheless, according to Hassan et al. (1993), off-balance sheet activities such as guarantees will increase banks' risk because the bank is obligated to make payments in future under certain circumstances, which may appear to be unfavorable to the bank. Besides, off-balance sheet activities can lead to increase in credit risk because these activities provide an opportunity to increase leverage significantly without additional regulatory requirements (Bennett, 2003). In addition, off-balance sheet activities such as involvement in derivatives trading might increase interest rate and foreign exchange exposures as well as increase the volatility of the banks, which will indirectly, affect the banks' profitability and solvency in the long run.

1.1.3 Off-balance sheet activities and Solvency of Commercial banks

Off-balance sheet activities lead to commercial banks insolvency from the fact that they increase the risks especially credit and market risks due to their nature in the sense that they are undertaken by the banks as commitments or contracts whose obligations are to be fulfilled at a future date. Though they generate income through fees and commissions,

bank managers are taken to task to ensure that the return generated well covers for the risks added by engaging in the off-balance sheet activities (Rose, 2002)

Karim and Chan, (2007) in their report note that incorporation of off-balance sheet activities in valuation of credit risk of commercial banks reduces and diversifies the risk portfolio. However when distinguishing between fee based and trading revenues, he found that it is almost the fee based revenues that presented the positive link with bank insolvency.

Consequently, expansion of off-balance sheet activities relative to on-balance sheet assets by the banks increases crisis probability. Duran and Lozano, (2012) also concurs with Karim and Chan, (2007) but notes that the crisis is scaled off by the improved profitability and diversified risk portfolios and if all the commitments are honoured by the banks clients' liquidity is also improved from increased income.

Additionally, John & Murphy (2006) found that off-balance sheet activities such as involvement in derivatives trading might increase interest rate and foreign exchange exposures as well as increase the volatility of the banks, which will indirectly affect the banks' profitability in the long run. As such, in order to respond to increased pressure provided by non-banking firms and foreign commercial banks, commercial banks are trading in futures, options and swaps. These are off-balance sheet activities or instruments which have allowed banks to transfer the duration of their balance sheet in order to manage without incurring additional capital requirements (Hundman, 2003). However this has not stopped banks to increase impressively the extent to which they do

business off the balance sheet. Boyd and Graham (1994) argue that, if account is taken of the relative movement of bank transactions from on to off-balance sheet, the widely acknowledged decline in the share of intermediation by traditional figures is turned into a moderate increase.

1.1.4 Commercial Banks in Kenya

The Kenyan banking industry is one of the broadest and most developed in sub-Saharan Africa with 49 financial institutions, comprising 43 commercial banks, 1 mortgage finance company and five deposit-taking microfinance institutions (Central Bank Annual Supervision Report, 2012). These institutions, along with the Kenya Post Office Savings Bank, make up Kenya's formal banking sector and serve 22.6 percent of Kenya's adult population, according to Financial Access household survey (Beck, Fuchs, Getenga, Getenga, Gatere, (2010). Kenya's financial sector is mostly dominated by commercial banks, though the level of bank penetration is still low. Commercial Banks are licensed and regulated pursuant to the provisions of the Banking Act and the Regulations and Prudential Guidelines. By December 2012 there were 43 registered commercial banks (Central Bank, Financial Stability Report, 2012).

While the commercial banks have faced difficulties over the years for a multitude of reasons, the major cause of serious financial problems continues to be directly related to credit standards for borrowers, poor portfolio risk management or lack of attention to changes in the economic circumstances and competitive climate (Central Bank Annual Supervision Report, 2012). The credit decision should be based on a thorough evaluation of the risk conditions of the lending and the characteristics of the borrower.

Foreign owned banks are be viewed as likely sources of financial vulnerability due to their exposure to foreign finance, though stress tests and financial soundness indicators showed that the foreign banks operating their subsidiaries in Kenya were stable and sound as there was no evidence that the share of foreign banks (in terms of core capital) changed fundamentally between 2007 and 2010.

Commercial banks in Kenya shift to non-interest income as banks in Europe, the USA and or India. This has redefined the current and the future of banking, with far reaching implications on bank resource allocation for bank supervision and risk management. There is mixed literature about the effect of a shift to fee based activities on profitability and risk profile of banks in Kenya. Bank size seems to determine expansion into fee-based services. If fee based income lowers volatility of bank profits, this may suggest advantages for mergers and acquisitions and a move to create universal bank models. According to Rudi (2000), who concentrated more on the shift in banking regulation and supervision the shift, will complicate the whole banking industry as new rules will have to be devised.

1.2 Research problem

In today's highly competitive market, commercial banks may turn to off-balance-sheet activities to earn increased fee income to offset declining profitability on their traditional intermediation business. They seek to provide their clients with a fuller range of financial services, giving them added flexibility in tapping capital and credit markets by allowing them to better hedge their exposures. According to Bank for International Settlements, derivatives allow credit risk to be more easily transferred and potentially more widely

dispersed across the financial market (Bank for International Settlement, Consultative Document, 2007). Further banks regulators are also faced with a question of diversification of revenue by engaging in off-balance sheet activities and whether the diversification delivers benefits for banks and make them resilient to adverse effects on income and bank earnings shocks. (Vallascas, 2011).

Various studies have concluded that the relation between a bank's level of off-balance-sheet activity and its risk position is unequivocal i.e. the larger the off-balance sheet activity is, the lower its risk position should be. Nevertheless, recent bank failures suggest that the off-balance-sheet activity -risk relation is not so clear.

There is conflicting evidence on whether the engagement in off-balance sheet activities has an effect on bank stability.

In Europe, Mercieca, (2007) investigates whether the observed shift to off-balance sheet activities improves performance of small European credit institutions. Using a sample of 755 small banks for the period 1997-2003, the study found no direct relationship between trading in off-balance sheet items and performance of commercial banks within and across business lines and an inverse association between non-interest income and bank performance.

In the US, Stiroh, 2004 investigating if non-interest income as a result of engaging in off-balance sheet activities is the answer for reducing over-reliance on interest income, finds that the shift to noninterest income for US banks is associated with higher risk and reduced risk-adjusted returns. In particular the findings indicate that in terms of bank risk and return, there is a clear negative association between non-interest income shares and

profits per unit of risk. Trading activities appear to be the biggest drag on profit per unit of risk and suggest that continued expansion may ultimately lower risk-adjusted returns, while fiduciary income is associated with higher profit per risk and more stable net income growth.

In Malaysia, Karim and Chan (2007) conducted a study to analyze how the off-balance sheet activities of the locally-owned commercial banks affect the banks' performance in terms of banks' exposure to various types of risks, bank's profit, and the banks' leverage. The results indicate that the relationship between the off-balance sheet activities and interest rate risk, unsystematic risk, and overall risk of the banks is insignificant. Nevertheless, the results indicate that market risk is significantly influenced by the off-balance sheet activities. In terms of banks' performance, it is found that the stock return is negatively related to off-balance sheet activities. Moreover, there is no significant relationship between off-balance sheet activities and return on equity, leverage, and liquidity ratio.

Since no study has been conducted in Kenya on the effect of off-balance sheet activities on the operations of Commercial banks there is a knowledge gap which will be filled by this study. Coupled with the fact that the existing literature seems to be conflicting there is need to find out whether off-balance sheet activities are worth it for commercial banks or are a major cause of their non-performance and failure. This study will seek to fill that knowledge gap.

1.3 Objective of the study

To determine the relationship between off-balance sheet activities and solvency of Commercial banks in Kenya.

1.4 Value of the study

The results of this study will be useful to the following;

Commercial banks in Kenya-It will seek to provide useful information on proper utilization and management of the contingent assets and liabilities to maximize the profitability and liquidity of commercial banks in Kenya. Bank managers can be in a better position to hedge the various risks associated with off-balance sheet activities.

Banking Sector-The information will also spread to other areas of the banking sector in order to improve the performance of the banking industry as a whole. Banks will also be able to effectively manage their assets and ensure that there is maximum utilization of the contingent assets and liabilities. This will be through increased income from the off balance sheet activities.

Corporations-Corporate managers and directors will use the information to maximize on the offers given by commercial banks to enhance trading for their corporations. This will in turn help in the growth of the economy.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers the studies of other scholars on the area of study. This area of study is of critical role especially to bank managers and managers of corporations dealing with Commercial banks and therefore various scholars have been interested in this area to unravel why off-balance sheet activities had increased tremendously in the recent past and how they affect banks operations.

2.2 Theoretical review

This chapter reviews the various theories that support the proliferation and use of off-balance sheet activities by Commercial banks

2.2.1 Diversification Hypothesis

Financial institutions in recent years have increasingly been generating income from “off-balance sheet” activities and fee income. Albertazzi and Gambacorta (2006) as cited by Uzhegova (2010) noted that the decline in interest margins, has forced banks to explore alternative sources of revenues, leading to diversification into non-traditional financial operations. The concept of revenue diversification follows the concept of portfolio theory by Harry Markowitz (1952), which states that individuals can reduce firm-specific risk by diversifying their portfolios. The proponents of income diversification or product mix for banks argue that diversification provides a stable and less volatile income, economies of scope and scale, and the ability to leverage managerial efficiency across products

(Choi and Kotrozo, 2006). Chiorazzo et al (2008) noted that as a result of trading in loan commitments and letters of credit, as part of the restructuring of commercial banks in Ghana lead to increase in the efficiency and profitability of the banks due to increased income and decreased portfolio risk. They further argued that the diversified portfolio reduces total risks because income from non-interest activities is not correlated or at least perfectly correlated with income from fee based activities and as such diversification should stabilize operating income and give rise to a more stable stream of profits (Uzhegova, 2010).

The opposite argument to diversification to non-traditional banking activities is that it leads to increased agency costs, increased organizational complexity, and more so banking risks. Kotrozo and Choi (2006) mentioned that diversification to off-balance sheet activities resulted in increased credit risk and market risk for commercial banks in the Philippines. They further argued that the benefits of the diversification, being increased income will only be felt by the banks only if the income generated is commensurate to the risks associated with engaging in the off-balance sheet activities. As such, the benefits of diversification and performance of banks would resemble an inverted-U in which there would be an optimal level of diversification beyond which benefits would begin to decline and may ultimately become negative.

2.3 Empirical review

This chapter reviews the literature of other authors on the relationship between off-balance sheet activities and performance of commercial banks.

2.3.1 Off Balance Sheet activities and Risks of Commercial banks

Financial risk in a banking organization is possibility that the outcome of an action or event could bring up adverse impacts. Such outcomes could either result in a direct loss of earnings / capital or may result in imposition of constraints on bank's ability to meet its business objectives. Such constraints pose a risk as these could hinder a bank's ability to conduct its ongoing business or to take benefit of opportunities to enhance its business. Commercial banks are exposed to a variety of risks among them; interest rate risk, foreign exchange risk, political risk, market risk, liquidity risk, operational risk and credit risk (Wolfe and Sanya, (2010).

As the growth of the off-balance sheet activities increased over the recent past, so have the banks' off-balance-sheet risks. There is a more general concern that a number of the off-balance sheet activities may have the effect of concentrating risks within the banking system as a whole which were previously more widely dispersed. This applies particularly to foreign exchange and interest rate risk. At the same time, it is recognized that, while some banks will have increased their risk profiles, other banks, as well as bank customers, now have considerably greater opportunities to limit and control their overall risk exposures and to reduce their cost of borrowing.

A study by Boyd and Graham (1986) examined the risks associated with diversification of banks into non-bank activities for the period 1971-1983. Their study concluded that non-bank activities were positively related to the risk of the banks during the period 1971-1977. They highlighted that the level of association between risk of failure and non-bank activities increases when there is no tight regulation on non-bank activities. As a

result, the positive relationship between the two variables disappears when there are more stringent rules and regulations.

According to Yusuf et al., individual types of risk associated with most off-balance-sheet business are in principle no different from those associated with on-balance-sheet business. It therefore suggests that off-balance-sheet risks cannot and should not be analyzed separately from the risks arising from on-balance-sheet business, but should be regarded as an integral part of banks' overall risk profiles. Approaching off-balance-sheet activities in this way has the additional merit of recognizing their value when they serve to hedge risks present within the balance sheet. Off-balance-sheet risks can be analyzed from two angles which are mostly influenced by off-balance sheet activities namely; market or position risk and credit risk.

Hassan (1993) examined the relationship between off-balance sheet activities and market risk of large commercial banks of the United States. He found that off-balance sheet activities contribute to the overall diversification of the bank portfolio risk. Nevertheless, off-balance sheet items do not influence the market risk of banks and this may be due to the reason that off-balance sheet items are not a concern of well-diversified stockholders. Since the off-balance sheet items were developed to meet the demands of corporate and commercial banks treasurers facing volatile financial markets and helping them hedging specific market risk this has led to the conclusion that increasing the scale of off-balance sheet items does not increase market risk and therefore the overall risk exposure and solvency of the bank is not affected. Chaudhry (1994) investigated the impact of off-balance sheet activities on commercial banks' exposure to market-based risk in the United States by

utilizing a two-stage model. He found that larger banks are more efficient in interest rate risk management process as compared to the smaller ones.

Bennet (2003) claims that off-balance sheet activities lead to credit risk since these activities provide an opportunity to increase leverage significantly without additional regulatory requirements. Banks that limit risk by maintaining reasonably matched off-balance sheet portfolio still retain significant counterparty credit risk in off-balance sheet transactions. Cates and Davis, (2005) suggest that credit risk exposure due to off-balance sheet activities can be transferred to other assets of commercial banks. As an example, if a bank buys an option, interest rate risk can be reduced but credit risk can eventually increase. Of the activities that are likely to contribute significantly to credit risk exposure, loan commitments may be the largest contributors.

Hundman, (2003) was of the view that large banks tend to use off-balance sheet activities to a greater extent than small ones. And that those banks with a greater proportion of credit risk exposure are more likely to use off-balance sheet activities than banks with small proportions of credit risk exposure. The credit risk equivalent of off-balance sheet activities almost certainly understates the true level of off-balance sheet assets and their ability to generate income in commercial banks. And it was also researched and found that only activities that regulators think entail significant credit risk exposure are reported in the financial and management reports of commercial banks (Thomas and Jeffrey, 2007).

Khambata, (2001) compared the Japanese banks with the United States and European banks. They found similar results that, the loan commitments are the largest source of credit risk among the traditional off-balance sheet instruments. In addition, they found that the Japanese banks used fewer off-balance sheet instruments as compared to the banks in the United States and Europe, indicating that Japanese banks are more conservative and risk averse as compared to the American and European banks.

2.3.2 Off Balance Sheet activities and Liquidity of Commercial banks

Liquidity is a commercial banks' capacity to readily meet its cash and collateral obligations at a reasonable cost. Maintaining an adequate level of liquidity depends on the institution's ability to efficiently meet both expected and unexpected cash flows and collateral needs without adversely affecting either daily operations or the financial condition of the institution (Gatev, Schuermann, & Strahan, 2007). A bank's liquidity exists in its assets readily convertible to cash; net operating cash flows, and its ability to acquire funding through deposits, borrowings, and capital injections. When a bank suffers from liquidity problem it is said to have liquidity risk. (Gatev et al., 2007). For all banks, the immediate and dire repercussions of insufficient liquidity makes liquidity risk management a key element in a bank's overall risk management structure.

In a study on US commercial banks, Insterfjord (2005) found that the supplement of liquidity generated from the off-balance sheet activities could have multiple impacts on the banks operations. This liquidity could be reinvested into new assets and new loans in a way that enhance the diversification of the bank's asset portfolio, or it could be used to acquire

and to invest in new risky projects. Insterfjord, (2005) also examined the effect of off-balance sheet activities on liquidity and leverage ratio of commercial banks by investigating the impact of off-balance sheet activities on banks' current and liquidity ratio. The liquid asset ratio is used to measure the liquidity of the banks. It is computed by dividing total liquid assets by total liabilities.

Doran (2004), conducted a study on Japanese commercial banks to measure bank's liquidity and leverage, debt to equity ratio is calculated by dividing total liabilities by shareholders' equity. The effect of off-balance sheet activities on the liquidity and leverage ratio of the locally-owned commercial banks was investigated by studying the impact of off-balance sheet activities on the banks' liquidity ratio. The liquid asset ratio was employed to measure the liquidity of the banks, while the debt to equity ratio is used to measures the banks' leverage. Results indicated that the off-balance sheet activities do not have a significant impact on the banks' leverage ratios in term of debt to equity and liquidity ratio and thus the liquidity of the bank is not affected. Thus the commercial banks would still remain solvent despite the increase in the scale of off-balance sheet activities.

2.3.3 Off Balance Sheet activities and Profitability of Commercial banks

The fee and commission income is the income charged by the bank for services such as account management, payments, asset management or financial advisory. Thus banks earn a fee income from trading in off-balance sheet assets and liabilities. With this notion in mind and holding other factors constant researchers have indicated that an increase in off-balance sheet items in the banks' operations could lead to extra income and thus increased profitability.

Stiroh (2004) examined the relationship between the scale of the off-balance sheet items and the volatility of bank revenue and profit and found that bank's non-interest income is more volatile than the traditional income and there is little evidence of diversification effects of non-interest income on bank's revenue and profit, even though there is a correlation between the growth rates of net interest income and non-interest income. Further, he found that non-interest income activities and risk-adjusted profits are not related. In addition to the analysis done on the risks associated with the off-balance sheet activities, empirical investigation has also been done on the changing patterns of the structure of banks' income with the inclusion of off-balance sheet activities.

Davis and Tuori (2000) analyzed the structure of banks' income in Organization for Economic Cooperation and Development (OECD) countries for the period 1979-1995, using data on bank profitability. They found evidence of changes in the income structure from interest income to non-interest income, with rapid growth of off-balance sheet activities in most of the European Union countries. In addition, their results indicate that larger banks tend to maintain high levels of non-interest income and thus higher profitability.

2.4 Chapter Summary

The above chapter reviewed the relevant literature on relationship between off-balance sheet activities and operations of commercial banks. This study analyzes the effect of off-balance sheet activities of commercial banks, on the banks' performance in terms of banks' exposures to various types of risks, banks' profit, and the banks' leverage and liquidity. Most studies indicated that indicate that the relationship between off-balance

sheet activities and total risk, interest rate risk, and market risk of the banks are insignificant and that there is no significant relationship between risk of failure of banks and the non-banking activities.

However, no study has been done in Kenya and this study will seek to fill that knowledge gap.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter outlines the general methodology to be used in this study. It specifies the research design, target population and data collection procedures, instruments and data analysis procedures.

3.2 Research Design

The research design employed in this study was descriptive survey method. According to Kothari (2004), descriptive research attempts to describe systematically a situation, problem, phenomena and provides information about the current condition between the variables under study.

Census survey design was employed with a focus on quantitative characteristics, reason being the commercial banks in Kenya a few and therefore choosing a few may not be representative of the population. The basic idea behind survey methodology is to measure variables by collecting secondary data from the financial statements of commercial banks and then to examine relationships among the variables. In most instances, surveys attempt to capture attitude or patterns of past behavior.

3.3 Target Population

Borg and Gall (2000) define the target population or the universe of a study as all the members of a real or hypothetical set of people, events or objects to which an investigator wishes to generalize the results of the research study. Mugenda and Mugenda (2003)

define the population as an entire group of individuals, events or objects having common observable characteristics. The target population was 42 Commercial banks registered in Kenya. (Appendix B).

3.4 Data collection

Secondary data was used in the study. Secondary data is data that already exists and had been collected or even analyzed for other purposes other than the purpose of the current study. The data was in form of numerical values, ratios and percentages depending on each variable under study. Secondary data was used in the study and was extracted from audited financial statements of commercial banks. The financial statements included annual reports, balance sheets, Income statements and disclosure statements of commercial banks in Kenya. These reports were accessed from the commercial Banks Websites, Kenya Bankers Association and Central Bank of Kenya as well as published reports from newspapers. The period of study was from 2008-2012 covering five years. And in some instance the researcher approached the particular commercial bank to access the missing reports to fill the gaps.

3.5 Data analysis and presentation

Data analysis is the process of systematically searching, arranging, organizing, and breaking data into manageable units, synthesizing the data, searching for patterns, discovering what is important and what is to be learned.

Solvency of commercial banks was measured using the current ratio which was derived by dividing the current assets and current liabilities. Ratios for the five years were derived.

Risk was measured using the standard deviation of the returns from the time series data gathered. This was monthly data and annual standard deviation was calculated from the same data collected from the income statement.

For liquidity, liquidity ratio was calculated for the period under study and an annual ratio was generated for each of the five years. Liquidity ratio was calculated from all liquid assets divided by the total assets of the bank.

Profitability ratio used Return on Assets ratio which was calculated by dividing net income and total average assets. This was calculated using annual data to generate ratios for the five years.

The researcher observed the behavior of each of these variables at each scale of the off-balance sheet activities on an annual basis.

The data obtained above was then be regressed against the current ratio obtained for each bank for the five years to determine whether the current ratio is driven by any of the variables. This was to help determine whether the scale of the off-balance sheet activities has any impact on the operations and soundness of the banks through the impact on the variables that drive solvency of the commercial banks.

Interpretation and analysis of data was done using descriptive analysis, correlation analysis and regression analysis. The data was collected, coded and entered into the computer, after which analysis will be done.

3.5.1 Operationalization Model

The following multiple regression model will be used.

$$Y = \beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \epsilon$$

Where,

Y = Solvency of commercial banks

X_1 = Risk of commercial banks

X_2 = Liquidity

X_3 = Profitability

β_0 = the constant

β_{1-3} = regression coefficients or change in Y by each change in χ

ϵ = error term

The operationalization of variables will be as shown in the below table.

Objective	Variable	Indicators	Scale	Tools of analysis	Type of Analysis
To examine the relationship between off-balance sheet activities and solvency of commercial banks in Kenya	Solvency of Commercial banks	- Risks - Liquidity - Profitability	Nominal Ordinal	Frequency distribution Tables & percentages	Descriptive

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND PRESENTATION

4.1 Introduction

This chapter presents the research findings to determine the relationship between off-balance sheet activities and solvency of Commercial banks in Kenya. The effect of off-balance sheet activities on risks, liquidity and profitability of commercial banks was observed taking into account the value of off-balance sheet items in the commercial banks financial statements. The study was conducted on commercial banks where secondary data from the period of 2008 to 2012 was used in the analysis. The regression analysis was done for the five years period. Out of the 42 commercial banks data was obtained for 32 commercial banks, this being 76%.

4.2 Regression Analysis

4.2.1 Regression Analysis 2008

Table 4.1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.857 ^a	.735	.717	1.99461

Source(Author, 2013)

Adjusted R^2 is called the coefficient of determination it show how change in the independent variable results to changes in the dependent variable. From data, the value of adjusted R^2 is 0.717. This implies that, there was a variation of 71.7% of amount solvency of the commercial banks dues to changes in risk, liquidity and profitability at 95% confidence interval, this is an indication that 71.7% of change in solvency of

commercial banks could be accounted for by changes in risk, liquidity and profitability. The study also found that there is a strong positive relationship between risk, liquidity and profitability and solvency of commercial banks as shown by correlation coefficient of 0.857.

Table 4.2: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.506	.205		1.159	.330
	Risk	-.390	.724	-.368	-.937	.418
	Liquidity	.789	.182	-.750	-2.275	.107
	Profitability	.607	.410	.991	2.386	.097

Source(Author, 2013)

The established regression equation was for years 2008

$$Y = 0.506 - 0.390X_1 + 0.789X_2 + 0.607X_3$$

From the above regression model holding risk, liquidity and profitability to constant zero, the solvency of commercial banks would stand at 0.506, a unit increase in risk would lead to decrease in solvency of commercial banks by 0.390 units, a unit increase in liquidity would lead to increase in solvency of commercial banks by 0.789, also a unit profitability would lead to increase in solvency of commercial banks by a factor of 0.607.

4.2.2 Regression Analysis 2009

Table 4.3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.972 ^a	.945	.891	.88133

Source(Author, 2013)

Adjusted R^2 is called the coefficient of determination it show how change in the independent variable results to changes in the dependent variable. From data, the value of adjusted R^2 is 0.891. This implies that, there was a variation of 89.1% of amount solvency of the commercial banks dues to changes in risk, liquidity and profitability at 95% confidence interval, this is an indication that 89.1% of change in solvency of commercial banks could be accounted for by changes in risk, liquidity and profitability. The study also found that there is a strong positive relationship between risk, liquidity and profitability and solvency of commercial banks as shown by correlation coefficient of 0.972.

Table 4.4: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.639	.396		3.133	.052
	Risk	-.400	.884	-.823	-4.792	.017
	Liquidity	.138	.193	1.00	6.448	.008
	Profitability	.173	.085	.545	2.984	.058

Source(Author, 2013)

The established regression equation was for years 2009

$$Y = 0.639 - 0.400X_1 + 0.138X_2 + 0.173X_3$$

From the above regression model holding risk, liquidity and profitability to constant zero, the solvency of commercial banks would stand at 0.639, a unit increase in risk would lead to decrease in solvency of commercial banks by 0.400 units, a unit increase in liquidity would lead to increase in solvency of commercial banks by 0.138, also a unit profitability would lead to increase in solvency of commercial banks by a factor of 0.173.

4.2.3 Regression Analysis 2010

Table 4.5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.951 ^a	.905	.811	2.01670

Source(Author, 2013)

Adjusted R² is called the coefficient of determination it show how change in the independent variable results to changes in the dependent variable. From data, the value of adjusted R² is 0.811. This implies that, there was a variation of 81.1% of amount solvency of the commercial banks dues to changes in risk, liquidity and profitability at 95% confidence interval, this is an indication that 81.1% of change in solvency of commercial banks could be accounted for by changes in risk, liquidity and profitability. The study also found that there is a strong positive relationship between risk, liquidity and profitability and solvency of commercial banks as shown by correlation coefficient of 0.951.

Table 4.6: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.569	.388		4.479	.021
	Risk	-.866	.020	-1.276	-5.230	.014
	Liquidity	.050	.929	.755	3.459	.041
	Profitability	.517	.105	1.044	4.173	.025

Source(Author, 2013)

The established regression equation was for years 2010

$$Y = 0.569 - 0.866 X_1 + 0.050 X_2 + 0.517X_3$$

From the above regression model holding risk, liquidity and profitability to constant zero, the solvency of commercial banks would stand at 0.569, a unit increase in risk would lead to decrease in solvency of commercial banks by 0.866 units, a unit increase in liquidity would lead to increase in solvency of commercial banks by 0.050 , also a unit profitability would lead to increase in solvency of commercial banks by a factor of 0.517.

4.2.4 Regression Analysis 2011

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.803 ^a	.644	.589	.62026

Source(Author, 2013)

Adjusted R^2 is called the coefficient of determination it show how change in the independent variable results to changes in the dependent variable. From data, the value of adjusted R^2 is 0.589. This implies that, there was a variation of 58.9% of amount solvency of the commercial banks dues to changes in risk, liquidity and profitability at 95% confidence interval, this is an indication that 58.9% of change in solvency of commercial banks could be accounted for by changes in risk, liquidity and profitability. The study also found that there is a strong positive relationship between risk, liquidity and profitability and solvency of commercial banks as shown by correlation coefficient of 0.803.

Table 4.8: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.419	.158		.638	.569
	Risk	-.488	.235	-.655	-1.569	.215
	Liquidity	.383	.377	.404	1.130	.341
	Profitability	.640	.123	.094	.226	.836

Source(Author, 2013)

The established regression equation was for years 20100

$$Y = 0.419 - 0.488 X_1 + 0.383 X_2 + 0.640X_3$$

From the above regression model holding risk, liquidity and profitability to constant zero, the Solvency of commercial banks would stand at 0.419, a unit increase in risk would lead to decrease in Solvency of commercial banks by 0.488 units, a unit increase in liquidity would lead to increase in Solvency of commercial banks by 0.383, also a unit profitability would lead to increase in Solvency of commercial banks by a factor of 0.640.

4.2.5 Regression Analysis 2012

Table 4.9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.864 ^a	.747	.694	.91671

Source(Author, 2013)

Adjusted R^2 is called the coefficient of determination it show how change in the independent variable results to changes in the dependent variable. From data, the value of adjusted R^2 is 0.694. This implies that, there was a variation of 69.4% of amount

solvency of the commercial banks dues to changes in risk, liquidity and profitability at 95% confidence interval, this is an indication that 69.4% of change in solvency of commercial banks could be accounted for by changes in risk, liquidity and profitability. The study also found that there is a strong positive relationship between risk, liquidity and profitability and solvency of commercial banks as shown by correlation coefficient of 0.864.

Table 4.10: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.304	.188		.964	.406
	Risk	-.449	.094	-.571	-1.538	.222
	Liquidity	.504	.917	.493	1.637	.200
	Profitability	.410	.442	.041	.113	.917

Source(Author, 2013)

The established regression equation was for years 2012

$$Y = 0.304 - 0.449 X_1 + 0.504 X_2 + 0.410 X_3$$

From the above regression model holding risk, liquidity and profitability to constant zero, the solvency of commercial banks would stand at 0.304, a unit increase in risk would lead to decrease in solvency of commercial banks by 0.449 units, a unit increase in liquidity would lead to increase in solvency of commercial banks by 0.504, also a unit profitability would lead to increase in solvency of commercial banks by a factor of 0.410.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

From the analysis and data collected, the following discussions, conclusion and recommendations were made. The responses were based on the objectives of the study. The researcher had intended to determine the relationship between off-balance sheet activities and solvency of Commercial banks in Kenya.

5.2 Summary of Findings and Interpretation

The study was undertaken in order to provide a better understanding of whether off-balance sheet activities have an influence on solvency of commercial banks. The factors that influence solvency of commercial banks i.e. risks, liquidity and profitability were analyzed over five years.

Below table provides a summary of the results

Table 5.1: Summary of results

Summary of regression results						
	Coefficient of determination(R square)	Correlation coefficient	Constant	Risk X1	Liquidity X2	Profitability X3
2008	72%	0.857	0.506	-0.390	0.789	0.607
2009	89%	0.972	0.639	-0.400	0.138	0.173
2010	81%	0.905	0.569	-0.866	0.050	0.517
2011	59%	0.803	0.419	-0.488	0.383	0.640
2012	86%	0.694	0.304	-0.449	0.504	0.410

Source(Author, 2013)

From the findings on the adjusted R squared the study found that there was a great variation on solvency of the commercial banks dues to changes in risk averaging at -

0.517 for the five years. The study also found out that liquidity which averaged at 0.373 has a less impact on solvency whereas profitability standing at 0.469 has a moderate impact on solvency of commercial banks. The study therefore concludes that risks of commercial banks as a result of banks including off-balance sheet activities in the trading operations increases overall risks and thus affects solvency and stability. This is an indication that change in solvency of commercial banks could be accounted for by changes in risk, liquidity and profitability.

The study found that a unit increase in risk would lead to decrease in solvency of commercial banks, a unit increase in liquidity would lead to increase in solvency of commercial banks, and also unit profitability would lead to increase in solvency of commercial banks. The study also found that there was a negative relationship between solvency of commercial banks and risk. This is evident in the negative ratios from the results. The study also found that there was a positive relationship between solvency of commercial banks and profitability and liquidity of the banks.

From the data collected it was observed that the off-balance sheet items traded by commercial banks in Kenya are letters of credit, guarantees and acceptances, these forming 80% of the off-balance sheet items and the rest being forward contacts and performance bonds forming 20%.

The data also indicated that small and medium sized banks shy away from off-balance sheet items and only trade at low volumes. This could be due to the risk inherent in the off-balance sheet items especially due to default by customers.

The relationship between risks and solvency of commercial banks in the study indicate that as the risks of a bank increase the solvency of commercial banks decrease as indicated by the negative values. The risk factor inherent in the off-balance sheet activities trading causes this phenomena. Thus claim by Hassan (1993), who examined the relationship between off-balance sheet activities and risk of large commercial banks of the United States is confirmed by this study as he found that off-balance sheet activities contribute to the overall increase in portfolio risk and the more they are used in the banks trading activities the higher the risk.

This study therefore concurs with most of the studies conducted which conclude that risks associated with off-balance sheet activities are a major contributor to bank failure.

Profitability and liquidity are positively correlated to solvency of banks. In increase in profitability and liquidity increases solvency of banks as indicated in the above results.

However this study contradicts some of the various studies done ealier especially in the US and UK mostly on profitability and liquidity. The various studies indicate that the liquidity and profitability as a result of off-balance sheet items has no impact on solvency of banks.

5.3 Conclusion

Solvency of commercial banks is a complex phenomenon as when it occurs in one bank can collapse the whole banking system due to bank runs. As such care should be taken by commercial banks in the trading activities to ensure that the banking system is stable and sound. From the analysis above it is evident that the off-balance sheet activities of commercial banks influence the solvency of commercial banks in Kenya. Thus there is

need for bank managers to be able to strike a balance between the risk which was seen as the main contributor and the gains that are achieved from engaging in off-balance sheet items. Special attention should be paid on the risk diversification aspect of the banks risk portfolio and establish whether the risk inherent in engaging in off-balance sheet items lead to reduction or increase in the portfolio risk. Further risk being the major factor in stability of banks should be critically managed and models developed to cope with the negative effects of risks.

5.4 Recommendations

There is need for commercial banks in Kenya to maintain an adequate level of liquidity depends on the institution's ability to efficiently meet both expected and unexpected cash flows and collateral needs without adversely affecting either daily operations or the financial condition of the institution. There is need for Commercial banks in Kenya to increase their short term assets it was revealed that increase in banks liquidity positively influence the solvency of the banks. There is need for commercial banks to decrease their operation risk as it was found that risk is negatively associated with solvency of commercial banks.

5.5 Limitations of the study

Secondary data is easy to collect. However the data faces problems of accuracy and could be outdated to. Though the financial statements for banks are published the data posted on the website of banks was sometimes found to be differing from what was presented during the annual general meeting for banks. A case in point was Paramount Bank which the researcher dropped from the list of data collected due to inconsistency of the financial statements posted on their website.

Further getting the financial statements from banks directly was difficult due to the confidentiality with which banks conduct their affairs. Some staff could not provide the information without consultation and this led to delays in gathering the data. This applied to banks whose financial statements were not in their websites or on any other public domain.

Time was also a limitation especially on data collection and analysis. More time was needed to be able to collect data from all the 42 commercial banks as out of the 42 only 26 have their financial statements posted on their websites. The researcher therefore would have been able to establish whether the remaining would have changed the findings.

5.6 Areas for Further research

There is need to conduct a study on the relationship between off-balance sheet activities and market risk of large commercial banks in Kenya. There is need for a study to be conducted to investigate the impact of off-balance sheet activities on commercial banks' exposure to market-based risk in Kenya utilizing a two-stage model. There is need to conduct a relationship between the scale of the off-balance sheet items and the volatility of bank revenue and profit. The study can also be extended to micro-finance institutions and establish whether the same results will be generated. Further analysis could be performed on risks and off-balance sheet items to determine the percentage of risk contributed by the non-traditional activities.

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APPENDICES

APPENDIX A

AI: Research Instrument

Introduction letter

Dear Respondent,

I am an MBA student at the University of Nairobi. I'm currently undertaking my research project entitled "An Investigation into the relationship between off-balance sheet activities and insolvency of Commercial Banks in Kenya". I will be required to collect the necessary secondary data from all the registered commercial banks in Kenya.

Being one of the said banks, am therefore request you to kindly facilitate the collection of the required data by availing all the necessary financial data that may be useful in the research.

Please note that the information sought is purely for academic purposes and will be treated with utmost confidentiality.

I look forward to your co-operation.

Yours faithfully,

Dainah W. Maina

APPENDIX B

LIST OF COMMERCIAL BANKS

1. ABC Bank (Kenya)
2. Bank of Africa
3. Bank of Baroda
4. Bank of India
5. Barclays Bank
6. CFC Stanbic Bank
7. Chase Bank (Kenya)
8. Citibank
9. Commercial Bank of Africa
10. Consolidated Bank of Kenya
11. Cooperative Bank of Kenya
12. Credit Bank
13. Development Bank of Kenya
14. Diamond Trust Bank
15. Dubai Bank Kenya
16. Ecobank
17. Equatorial Commercial Bank
18. Equity Bank
19. Family Bank
20. Fidelity Commercial Bank Limited
21. Fina Bank
22. First Community Bank
23. Giro Commercial Bank
24. Guardian Bank
25. Gulf African Bank
26. Habib Bank
27. Habib Bank AG Zurich
28. I&M Bank
29. Imperial Bank Kenya
30. Jamii Bora Bank
31. Kenya Commercial Bank
32. K-Rep Bank
33. Middle East Bank Kenya
34. National Bank of Kenya
35. NIC Bank
36. Oriental Commercial Bank
37. Paramount Universal Bank
38. Prime Bank (Kenya)
39. Standard Chartered Kenya
40. Trans National Bank Kenya
41. United Bank for Africa^[2]
42. Victoria Commercial Bank