THE EFFECT OF FINANCIAL DERIVATIVES ON THE FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

BY

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2016

DECLARATION

I declare that this is my original work and has never been presented for a degree in any other university

Signature…………………………..   Date…………………….

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This project has been submitted for examination with my approval as University supervisor.

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ACKNOWLEDGEMENTS

DEDICATION

This study is dedicated to my mum Florence Awino Akun for her tireless effort and sacrifice to ensure I attain university education. My siblings for their guidance, encouragement and caring support. The Almighty God for His unceasing blessings without which it is impossible to accomplish anything.

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LIST OF ABREVIATTIONS

CBA	Commercial Bank of Africa
CBK	Central Bank of Kenya
CFC	Credit Finance Corporation
NSE	Nairobi Securities Exchange
NIC	National industrial credit
OBS	Off balance Sheet Activities
ROA	Return on Assets
ROE	Return on Equity

ABSTRACT

The increasing propensity of commercial banks to take part in derivative activities is one of the notable developments in the present day financial markets. Latterly, the financial innovation improvements, deregulation and development of the financial markets,and banks' margins decreases, due to low-quality loan applicants, motivate the commercial banks to provide advanced services and products to expand their profits. Profits from traditional banking activities has been decresing whilst the competitiveness of markets have been increasing thus forcing banks to undertake derivative activities.The objective of this study was to establish the effect of financial derivatives on the financial performance of commercial banks in Kenya. The study involved an in depth analysis of financial derivatives and its effects on the financial performance of commercial banks and thus descriptive research design was found to be appropriate. Secondary data about the commercial banks' notional amount of derivatives, total assets, liquidity ratio and total shareholders' equity was collected from the Central Bank of Kenya bank supervision annual reports (2011-2015) and analyzed using multiple regression. Statistical Package for Social Sciences (SPSS version 18) was used obtain the regression output. Return on Assets (ROA) was used as the proxy for financial performance while financial derivatives, liquidity ratio and shareholders' equity ratio were the predictor variables.The findings of the study indicated that there is an insignificant relationship between the financial performance (ROA) of commercial banks in Kenya and financial derivatives. Additionally, the negative nature of the relationship means that a unit change(increase) in financial derivatives will result to a decrease in financial perfomance of commecial banks in Kenya.Consequently, therefore,financial derivatives should be properly used in a manner that is instrumental to the goal of a sound and safe banking system in kenya.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Derivatives go back similarly as Antiquity. Derivatives instruments were initially created to promote trade and protect the supply of commodities to cover farmers against crop failures. Over the years, derivatives were being used as a source of funding and also as a means to search for quick profits. In order to protect the supply of commodities and promote trade, both in geographical distance and time, the rulers' codes as a matter of fact demanded a written form of buying, selling and other trade related agreements so as to give sellers and buyers the best conceivable lawful assurance to take part in trade in Ancient Mesopotamia. The primary reason for this was to minimize the "*your word against mine*" saying in the event of disagreements. (Steve and Christian, 2012)

The utilization of derivatives instruments by commercial banks has risen in the previous two decades. In spite of broadly accessible information on derivative utilization, empirical research evidence on its effects is mixed. One conceivable reason to such opposing outcomes is whether the banks utilize derivatives for hedging or trading function. Data unveiled by a wide range of firms, including banking industries and non-financial firms have been used by previous studies in attempting to enhance our comprehension of how the firms utilize derivatives. Distinguishable assumption in almost the greater part of all of this literature has been that firms, including financial firms,

utilize derivatives for hedging. Nevertheless, Faulkender and Chernenko(2011) indicated that non-financial firms utilize derivatives for speculation as well as for hedging.

1.1.1 Financial Derivatives

These are financial instruments that derive their values from the values of other underlying assets, like,interest rates,equities,commodities, foreign exchange and bonds. E.g. a Treasury bond futures contract commits the parties to exchange a Treasury bond at a future date for a predetermined price. The futures contract's value relies on the underlying Treasury bond's value. By the way of illustration, supposing the treasury bond's price increases, the futures contract's value will also increase because futures contract's buyer now qualify to get an asset with a greater value.

The four primary kinds of derivatives instruments are options, forwards, swaps, and futures.The users of these instruments are permitted to fullfill the need for efficient protection against risks caused by the underlying security price changes. That is, those who use derivatives are able to protect themselves against uncertainties in interest and exchange rates, credit worthiness, as well as commodity and equity prices. Clearly, derivative transactions include the transferingof risks from entities who are unable or less willing to manage them to entities that are able or more willing to do so. Derivatives insruments are currently popular amid a large number of both financial and non finacial firms(Nystedt, 2004).

The traditional borrowing and lending activities of the commercial banks exposed them to financial market risk and this is generally the reason why they take part in derivative activities. Financial derivatives present a cost effective approach to manage these financial market risk without attracting extra charges to the commercial banks. Banks can use derivatives to hedge liability and asset positions as the instruments allow them to take a position in the derivative market that is opposite and equal to a planned future or current position in the cash or spot market. Thus, irregardless of the price changes, gains in one market will balance losses in the other.

1.1.2 Financial Performance

This is a test of how properly a firm can utilize the assets from its essential business operations to create incomes. Financial performance is typically utilized as the measure of the general financial health a firm throughout a particular time period. Commercial banks assume a critical part in allocating the country's economic resource as they continuously direct funds from the depositors to investors. Banks need to be profitable in order to ensure sustainable intermediation function. Good financial performance ensures that the shareholders are rewarded for their investment. This, thus, motivates them to bring in additional investment and hence leads to economic growth. Poor banking performance on the other hand result to banking crisis and failure which have negative impact on the economic growth.

De Young and Rice (2004) noted that in recent years, commercial banks have taken advantage of deregulation to make handsome amounts of revenues from non-traditional

banking routines like derivatives usage, securities brokerage, investment banking and mutual funds sales and insurance underwriting and agency. Interest margins that banks earn by intermediating amongst borrowers and depositors keep on being the essential profits source for most commercial banks.

The basic goal of commercial banks is profit but they also have other economic and social goals. There are various ways to ensure the profitability of a bank but according to Quach, (2005), the profitability of a bank is measured using three ratios. The first ratio is the return on equity ratio (ROE), which is the amount that the banks earn relative to the total amount of invested shareholders equity. A high ROE is favorable for a bank as it shows its ability to generate cash internally. According to Khrawish (2011), it shows how efficiently and effectively a bank is utilizing shareholders' funds.

The second ratio is the asset return ratio of the bank's net income to its average total asset and it tests the bank's capacity to create income by using the assets at its disposal. A high ROA shows the bank is efficiently utilizing its resources. The third ratio is the net interest margin ratio which measures the amount of interest lenders are paid and interest income created by banks. Higher bank profitability is associated with a higher net interest margin. This could however also mean riskier lending practices associated with considerable loan loss provision.

1.1.3 Effect of Financial Derivatives on Financial Performance

The increasing propensity of banks to take part in derivative activities is one of the notable developments in the present day financial markets. Latterly, the financial

innovation improvements, deregulation and development of the financial markets,and banks' margins decreases, due to low-quality loan applicants, motivate the commercial banks to provide advanced services and products to expand their gains. Profits from traditional banking activities has been decresing whilst the competitiveness of markets have been increasing thus forcing banks to utilize derivative activities.Hasan and Ebrahim(2004) found out that the betterment of the banks non-interest earnings was as a result of developing new sorts of financial instruments.

OBS activities such as derivatives, commitments and guarantees are at times the primary revenues sources of the bank. Commercial banks can evade taxes or regulatory costs and generate high earnings by participating in derivative markets due to the fact that deposit insurance premiums and reserve requirements are not enforced on off balance sheet activities. Nevertheless, these activities can attract market,credit and operational risks and other risks, which may influence liquidity and solvency of the commercial banks. Conversly, notable increase in commercial banks' derivatives activities might be due to increased credit,interest and foreign exchange rate risk exposures, banks encountered in international and domestic markets. Financial derivatives provide a means to hedge these risks without needing to make comprehesive adjustments to their statement of finacial position.

Managing risks by using financial derivatives is less costly and could substitute for expensive capital and give banks the flexibility to achieve their desired risk exposures without changing their original business objectives. However, financial derivatives also

expose investors to additional risks. Entering a position in derivatives does not need much initial investment, but future cash flows given fluctuation of the underlying assets could be huge due to the high leverage behind the contracts. Thus, speculating and inappropriate hedging with derivatives have the potential to cause severe financial losses and even bankruptcy.

1.1.4 Commercial Banks in Kenya

Commercial banks are financial intermediaries that symbolize a vital and robust part of the business world as they serve as the global economy's financial resources mobilization points. An efficient, well-functioning, and well-developed banking sector is a critical requirement for investment and saving decisions required for fast economic growth. This is because a system by which the most efficient and profitable projects of a country are continuously and systematically funded is provided by the banking sector. Commercial banks channel the needed funds from surplus spending to deficit spending units in the economy and this enables them to execute monetary policy and provide a means for facilitating payment for services and goods in the international and domestic trade.

The traditional lending and borrowing activities of the commercial banks expose them to financial market risk and this is generally the main reason why they participate in the derivertive markets.Commercial banks can evade taxes or regulatory costs and generate high earnings by participating in derivative markets due to the fact that deposit insurance premiums and reserve requirements are not enforced on off balance sheet activities. Nevertheless, off balance sheet activities can attract market,credit and operational risks

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and other risks, which may influence liquidity and solvency of the commercial banks. Conversly, notable increase incommercial banks' derivatives activities might due to increased credit, foreign exchange and interest rate risk exposures, ecountered by the banks in international and local markets. Financial derivatives provide a means to hedge these risks without requiring them to make comprehesive adjustments to their statement of financial position.

1.2 Research Problem

The commercial banks are working on innovative ways to achieve profits instead of traditional methods, and hedging of systemic risks by using financial derivatives because of the uncertainty and high volatility in the global and domestic financial markets. Compared to on-balance sheet asset-liability management, managing risks by using financial derivatives, normally known as off-balance sheet activities, gives the commercial banks the flexibility to attain their preffered risk exposures without changing their original business goals.derivative use is also less costly could substitute for expensive capital. However, financial derivatives also expose investors to additional risks. Entering a position in derivatives does not need much initial investment, but future cash flows given fluctuation of the underlying assets could be huge due to the high leverage behind the contracts. Thus, speculating and inappropriate hedging with derivatives have the potential to cause severe financial losses and even bankruptcy.

There are 42 licensed commercial banks in Kenya. Kenya's derivatives market got a boost after The Nairobi Securities Exchange (NSE) recently signed up six Banks who will act as clearing members in readiness for the derivatives Market. The Co-operative bank of Kenya, Stanbic bank, CBA bank, NIC bank, Barclays bank of Kenya and Chase bank have already signed up as clearing members and a number of other banks are scheduled to sign up in the near future.

Greenbaum Kanatas and Deshmukh, (1983) indicated that commercial banks that utilize derivative can face less uncertainty in interest rates and thus increse their lending activities which then lead to higher returns compared to the fixed fee for service activities return.This is possible if the interest rate risk can be managed using derivatives. The total gain of commercial banks that utilise derivatives to control uncertainty in interest rates would therefore be higher than those that do not. Stern and Linan (1994) and Jason and Taylor (1994) indicated that derivative trading for the purpose of profit is very risky and can subject the firm to large amount of losses and as stated by the study conducted by Pandey (2005) derivative contracts have developed rapidly from uncomplicated financial futures to a broad range of complex and exotic securities all over the world. According to Tsetsekos and Varangis, 1997; Ilyina, (2004) the use of derivatives can promote the financial risk exposure management because they enable investors to transfer and unbundle financial risk.

Kamenchu (2013) stated that trade liberation and legal framework are the major factors hindering and slowing down the adoption the use of derivatives in Kenya. According to

Njoroge(2013)Kenyan companies commonly use swaps and forward contracts. The companies' utilize swaps when they are planning to exchange cash flows in the future while forward contracts are used to hedge against their imports and exports. Nzuki (2010) indicated that Kenyan oil companies commonly utilize a hybrid of derivatives, predominantly forward contracts and futures market. As they appear to think about the price volatility of crude oil. Gitogo(2013) indicated that a relationship exists between the commercial bank's financial performance and financial derivatives although his study focused only on a time frame of 1 year. My study tends to fill the gap by focusing on a time frame of 5 years (2011-2015) so as to get more reliable findings.

The utilization of derivatives by companies in the emerging markets for hedging purposes has increased over the last few years. The derivative market has therefore faced a swift growth in the recent times. Even though derivative utilization data is more broadly accessible in the developed countries, empirical literature on if the utilization of derivative results to a rise in the financial performance of a company is nevertheless debatable mostly in the developing world.Previous literature mostly focuses on determining how a firm's risk level of is altered by derivatives as derivatives are contracts used to manage risks. This study will focus commercial banks which many studies have not covered. Literature on how commercial bank's financial performance is affected by derivatives is limited even though inappropriate derivative activities usually result to a large amount of trading losses that could lead to bankruptcy and financial difficulty and thus this study will answer the question do financial derivatives affect the financial performance of commercial banks in Kenya.

1.3 Objective of the Study

To determine the effects of financial derivatives on the financial performance of commercial banks in Kenya.

1.4 Value of the Study

1.4.1 Regulators

The study's findings will supply the regulators with deeper understanding that can be used to facilitate best practices and regulatory policy formulation. The regulators like the Capital Markets Authority, Central Bank of Kenya and Kenya Bankers Association can use this study's findings, recommendations and conclusions to enact and improve regulation and operation procedures of financial derivatives in Kenya.

1.4.2 Scholars and Researchers

Scholars will find this study's findings to be significant as it will provide an up to date and top notch information on how the commercial bank's financial performance is affected by the use of financial derivatives. Fellow researchers will also find this study's findings to be of significance as they will rely on it for further proof and knowledge on how the commercial bank's financial performance is affected by the use of financial derivatives.

1.4.3 Investors

The this study's findings will benefit investors and potential investors as they will be able to determine how commercial bank's financial performance is affected by the utilization of financial derivatives and thus make better financial decisions.

1.4.4 Practitioners

Management teams of banking institutions can this study's findings to understand and appreciate the necessary environment for financial derivatives to thrive. The study also sheds light on major criticisms, shortcomings and risks that are associated with financial derivatives instruments. In general, commercial banks practitioners and other participants in the Kenyan financial sector can utilize the findings to better the nature, organization and capital outlay of their present and future financial derivatives investments.

1.4.5 Commercial Banks

The commercial banks will utilize this study's findings and recommendations to allocate resources to the areas that will spur growth of financial derivatives and deliver greater returns to their shareholders.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the existing literature related to the subject of the study as described by different scholars, authors, analyst and researchers. Literature review presents the study with a clarification of the theoretical rationale of the problem under study and also previous research finding that relate to the problem at hand. The literature is reviewed from periodicals, published books, working papers and reports. This chapter explains the theoretical orientation and empirical framework.

2.2 Theoretical Review

The theories reviewed here are capital structure irrelevance theory, financial intermediary theory and the risk management theory

2.2.1 Capital Structure Irrelevance Theory

Modigliani and Miller (1958) developed the capital structure irrelevance theory which implies that in a perfect world, a commercial bank's hedging activities and how the bank is financed does not affect the equity value of the bank. Nevertheless, market imperfections produce incentives for firms to hedge so that they can reduce the cost of financial distress,increase their after-tax cash flow, and lower other costs like the agency cost, cost of asymmetric information and expensive external financing cost.

According to Smithson, Nance and Smith (1993) and Smith and Stulz (1985)in a firm with a convex expected corporate tax liability function and whose main objective is value maximizion, when the pretax income is relatively high, hedging can result to a reduced tax liability. An increase in the pre tax income will result to a increase in the benefits of hedging if theafter tax cash flow functionis made more concave by the tax function. Concurrently Stulz and Smith (1985) imply that hedging can result to reduced expected cost of bankruptcy as the financial distress probability decreases with the reduced variation in cash flow.Stein Scharfstein and Froot (1993) indicated that the demand for costly external financing is reduced due to increased cash flows from hedging Therefore, hedging activities of commercial banks' encouraged by thier wish to lower the future investment's expensive external financing needs.

2.2.2 The Financial Intermediary Theory

The objective of intermediation theory is to clarify the existence of financial intermediaries. In essence, the existence of financial intermediaries is as a result of absence of complete information at the right time, presence of high cost of transaction and the regulation method.Diamond (1984) developed the financial intermediary theory which argues that banks should not take risks that they have no advantage of monitoring orcannot be able to control. Permitting the commercial banks to hedge systematic risks can lead to an additional decrease in the cost ofdelegation to monitor loan borrowers. Therefore, hedging permits banks to get excellent profits from diversification by decreasing the cost of delegation, that acts as a lending incentive.

Diamond (1984) indicated that delegated monitoring do not just presume economies of scale but also provides a reason why depositors don't need to monitor the bank itself. He found out that the bank's moral hazard problem decreases when the bank's size increases and even disappears completely if the bank holds a portfolio of assets that is fully diversified (including derivatives in their portfolio). Thus, the bank holding a portfolio of assets that is fully diversified leads the depositors to hold debt contracts that are risk-free and thus they do not need to continuously monitor the bank.

2.2.3 The Risk Management Theory

The theory of risk management (Stulz, 1996 and Froot 1993) argues that in order to bring down the costs related to expensive external funding banks utilize hedging strategies. In an unfavorable external environment the banks may find coming up with external funds to be expensive (Admati(2012). A bank partly avoids the need for refinancing by hedging undiversifiable risks (Froot 1993), mostly exchange and interest rate risks and thus reducing its cost of funding.

Thakor and Boot(1991) imply that banks that have substantial off balance sheet activities (e.g. loan commitments) reduce their risks exposures relative to those that lend on a spot market. This depends on the perception that a bank is locked into the current interest rate loan commitment locks into, which reduces the bank's borrowers asset substitution problem incase future interest rates increases. In case the financial derivatives hedging purpose prevails, it is expected that greater derivatives utilization is connected with less uncontrollable risk exposures of a bank.

Nevertheless, using financial derivatives to hedge also has a disadvantage. In the event that banks participate in the credit derivatives market, the informational value of a bank loan stops to exist (Morisson 2005). More precisely, the bank is not exposed to the borrower's prospective default anymore if it gets credit default protection. Hence, the bank can no longer engage in its borrowers screening and monitoring, and thus an increase in its risk. The primary business of banks with large sizes is trading and generating financial derivatives together with other innovative financial products (Marinč and Boot 2008). The banks' involvement in derivatives markets might therefore be triggered by a motive to make profit rather than by hedging goals.

2.3 Determinants of Financial Performance

2.3.1 Capital Structure

Smithson, Nance and Smith, and (1993) and Stulzand Smith (1985) indicated that in a firm with a convex expected corporate tax liability function and whose main objective is value maximizion, when the pretax income is relatively high, hedging can result to a reduced tax liability. An increase in the pre tax income will result to a increase in the benefits of hedging if theafter tax cash flow function is made more concave by the tax function.

Smith and Stulz (1985) also indicated that hedging can lead to a decrease in the expected bankruptcy cost as because with decreased cash flow variation, the probability of financial distress decreases. Stein, Scharfstein andFroot (1993) indicated that the demand for expensive external financing is reduced as a result of increased cash flows from

hedging Therefore, hedging activities of commercial banks' encouraged by thier wish to reduce the future investments' expensive external financing.

2.3.2 Risk and liquidity Management

Risk management of a firm impacts its financial performance. Choi and Elyasiani (1996),Flannery and James (1984) found out that if the large banks' foreign exchange and interest risk are measured as stock return's sensitivity to interest and foreign exchange rate risk derivative reduce these risks. Hartarska and Shen (2013) indicated that during the 2008 financial crisis derivatives assisted agricultural banks boost their profitability and lower their sensitivity to credit risk and interest risk

Liquidity is also a determinant of banks financial performance and it is the ability of the bank to meet its obligations. Dang (2011) suggest that a positive relationship exists between banks profitability and adequate level of liquidity.

2.3.3Economic Conditions

Derivative instruments have increasingly become a crucial part of commercial banks portfolio of assets that they use to mitigate their interest and foreign exchange rate risk exposure. As volatility of interest rates continues to increase, commercial banks have acknowledged the benefits of interest rate swaps and futures in decreasing risk and attaining optimal financial performance.

2.4 Conceptual Framework

Independent Variables   Dependent Variable
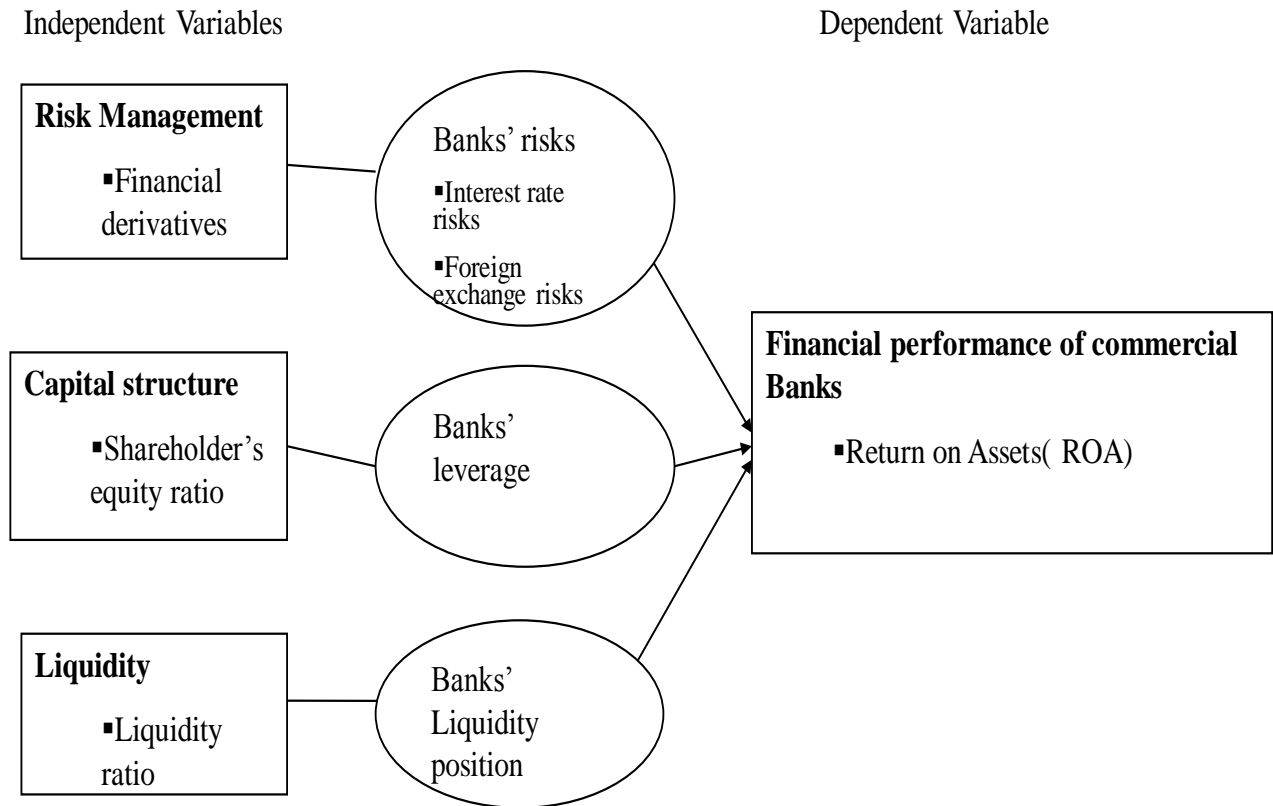
Figure 1: Conceptual Framework

2.5 Empirical Review

Kanatas, Deshmukh and Greenbaum (1983) indicated that commercial banks that utilize derivative can face less uncertainty in interest rates and thus increse their lending activities which then lead to higher returns compared to the fixed fee for service activities return.This is possible if the interest rate risk can be controlled using derivatives. The

total profitability of commercial banks would therefore be higher relative to the banks in which derivatives are not used to control for interest rates uncertainty.

Moser, Brewer, Saunders and Jackson conducted a study and found out that for savings and loan institutions, a negative correlation exists between risk and derivative activities. They found that there was a substantial increase in fixed-rate mortgage portfolios of savings and loans (S&Ls) and thus indicating that derivatives are utilized by the financial institutions for the purpose of hedging , which therefore clarify the decrease in the risk volatility due to increase in derivative usage.

Rosen and Gorton (1995) found out that the net income changes as a result of to the interest rate changes is partly neutralized by the opposite changes in net incomes from hedging interest rate risk by using swaps, and therefore derivatives assist in managing most of the uncontrollable risks at commercial banks. Moser and Zhao (2009b) indicated that both the off- and on-balance sheet risk management methods of banks efficiently and effectively decrease the interest rate sensitivity of bank stocks.

Choi and Elyasiani (1996),James and Flannery (1984) found out that derivative reduce large bank's interest and foreign exchange risk if the risk is measured as stock returns sensitivity to foreign exchange risk and interest rate risk respectively. Hartarska and Shen (2013) indicated that during the 2008 financial crisis derivatives assisted agricultural banks boost their profitability and lower their sensitivity to credit risk and interest risk.

Other studies indicated that commercial banks risks increases when they use derivatives. Hirtle (1997), Elyasiani and Choi(1997), found out that large dealer BHCs stock returns were more sensitive to uncertainties in interest rate than the other BHCs and that the interest rate sensitivity of stock returns is increased by interest rate derivatives. Angbazo (1997) found out that while off-balance sheet activities increased banks' exposure to on-balance sheet liquidity risk and interest rate risk these activities also enhance profitability of the bank by permitting activities otherwise restricted with equity or debt financing.

The results about how bank performance is affected by derivatives are mixed and this probably because it is not easy to differentiate in practice hedging and speculating derivative activities and that above studies focused on large banks which have considerable speculating derivative activities and market making that permit them to lessen, if not evade, non-hedging derivative activities disruptions.

Kamenchu (2013) stated that trade liberation and legal framework are the major factors hindering and slowing down the adoption the use of derivatives in Kenya. According to Njoroge(2013) Kenyan companies commonly use swaps and forward contracts. The companies utilize swaps when they are planning to exchange cash flows in the future while forward contracts are used to hedge against their imports and exports. Nzuki (2010) indicated that Kenyan oil companies commonly utilize a hybrid of derivatives, predominantly forward contracts and futures market. As they appear to think about the price volatility of crude oil. Gitogo(2013) indicated that a relationship exist between the commercial banks 'financial performance and financial derivatives and although his

study focused only on a time frame of 1 year. My study tends to fill the gap by focusing on a time frame of 5 years (2011-2015) so as to get more reliable findings.

Mumoki (2009) indicated that the the most frequently used instrument was the forward contract. The money market hedge and the currency swap were also frequently used. Parallel loans (Back-to-back loan), foreign currency denominated debt and cross hedging techniques were moderately used. Futures contract, foreign currency option and leading and lagging techniques were occasionally used. prepayment was the least used technique..

Nasurutia(2013) found out that there was a significant relationship foreign exchange exposure and derivative usage. And that given the negative nature of the relationship it means that a unit change derivative usage will significantly influence a decrease in foreign exchange exposure.consequently, therefore, derivative usage is effective in management of foreign exchange exposure.

2.6 Summary of Literature Review

A number of both international and local studies have been carried out on different features of derivatives financial performance and hedging of commercial banks. Locally though, there is a rarity on studies that explore the relationship of the two.The results about how bank performance is affected by derivatives are mixed and this probably because it is not easy to differentiate in practice hedging and speculating derivative activities and that above studies focused on large banks which have considerable

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speculating derivative activities and market making that permit them to lessen, if not evade, non-hedging derivative activities disruptions.

Some of the previous studies indicate thats derivatives act as a complement to banks' lending activities (Diamond 1984) while others find that derivatives find that derivatives increase commercial banks' riskiness (Gorton and Rosen 1995). Literature on how commercial bank's financial performance is affected by derivatives is limited even though inappropriate derivative activities usually result to trading losses large enough to lead to bankruptcy and financial difficulty.My study tries to fill these gaps in the existing literature and present empirical evidence on how the commercial banks' financial performance is affected by derivatives.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlights the methods used by researchers to undertake the research. These methods include research design, population, sampling, data collection methods and data analysis methods.

3.2 Research Design

Research design is the structure and plan of analysis formulated so as to get answers to research questions (Kerlinger 1986). Mugenda and Mugenda (1999) on the other hand define research design as the outline plan or scheme utilized to obtain answers to the research problems. Descriptive research design entails collecting data which outlines events and then organizing, tabulating, depicting, and describing the collected data and it normally employs visual aids like charts and graphs to assist the reader in understanding distribution of the data (Glass and Hopkins 1984). Descriptive research design will be appropriate for this study because it will involve an in depth study of how the financial performance of commercial banks is affected by financial derivatives.

3.3 Population and Sample

A population is a well-defined or set of people, group of things or households, events, elements, and services, that are being studied (Ngechu 2004). This definition ensures that

population of interest is homogeneous. The target population for this study is the commercial banks who use financial derivatives in Kenya. The population of registered commercial banks in Kenya as at December 31 2015 comprises of 43 banks according to the Central Bank of Kenya.

3.4 Data Collection

Secondary data was used for the purpose of this study and this data was derived from the commercial banks financial statements. Data from the Central Bank of Kenya was also useful in the study. The study period was between2011-2015

3.5 Data Analysis

Both qualitative and quantitative data analysis methods were utilized for this study because both approaches complement each other. Quantitative data analysis includes descriptive statistics. Descriptive data analysis was done by use of measures of central tendency which include means and standard deviations. Qualitative data was analyzed by identifying, examining and interpreting of themes and patterns in the textual data and thus discovering how these patterns and themes help in answering the research question. To present the information, frequency tables, charts, graphs, words and figures were used. Data analysis was done using SPSS and Excel software.

3.5.1 Analytical Model

Regression analysis involves many techniques used for modeling and analyzing various variables with the focal point being the relationship between one or more independent

variables and a dependent variable (Tofallis 2009). A multiple linear regression method of analysis was used in the study as it describes the extent of linear relationship between the dependent variables and a number of other independent variables (Nachmias 1999). This assisted in understanding the changes in the value of the dependent variable when any one of the independent variables is varied while the other independent variables are held constant.

Mathematically the linear regression line was expressed using the following equation

$Performance_{it} = \alpha + \beta_1 DER_{it} + \beta_4 EA_{it} + \beta_6 LIQ_{it} + \varepsilon it$

where:

$Performance_{it}$ = Return on Assetsof bank ith at time t.

DER_{it} = Derivative activities of bank ith at time t. Derivative activities are approximated by the notional value of the contracts. Forwards, swaps and options are combined to be one variable.

EA_{it} = shareholder's equity to total assets of bank ith at time t.

LIQ_{it} = liquid assets to total assets of bank ith at time t.

εit = random error-term.

β_i the systematic risk for bank ith over the period ending at time t

The study employed return on assets as a proxy for profitability. The ratio of equity to total assets was used to control for bank's leverage since the use of debts may lead to better management. The liquid assets to total assets ratio was used to measure the bank's liquidity position.

β_i was used to measure bank's exposure in terms of foreign exchange rate and interest rate risks due to derivative activities. These variables are included since derivative activities have been widely used as a tool for banks in hedging against foreign exchange rate exposures and interest rates risk.

3.5.2 Test of Significance

Correlation coefficient will be used to quantify the strength of linear relationship. The value of the correlation coefficient ranges between +1 and -1. A positive correlation suggests a positive relationship exists between the independent variables and the dependent variable while a negative correlation implies a negative relationship between variables.

In order to test the power of explanation of the entire regression equation, coefficient of determination R^2 will be used. To determine the degree to which changes in an independent variable X can be used to explain changes in a dependent variable Y and also the usefulness in a regression model, ANOVA techniques will be used.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the data obtained as per the research methodology and its analysis. The data was analyzed with the aid of the Statistical package for social sciences (SPSS).The data is presented in tables in subsequent sections.

4.2 Descriptive Analysis

4.2.1 Return on Assets

The cumulative return on assets earned by commercial banks in Kenya yearly between 2011-2015 was obtained from the banking sector survey reports issued by the Central bank of Kenya. Table 4.1 below shows the findings.

Table 4.1 Return on Assets

Year	2011	2012	2013	2014	2015
ROA (%)	4.40	4.70	4.70	3.40	2.90

Source: Research Findings

Commercial banks financial performance over the period covered by the study was highest in the year 2012 and 2013, during which the return on assets stood at 4.70% in both the years. The lowest ROA recorded over the entire period was 2.90% in 2015 and a ROA of 3.40% and 4.40% was recorded in 2014 and 2011 respectively.Figure 4.1 below further illustrates the trend in the commercial banks' performance over the study period.
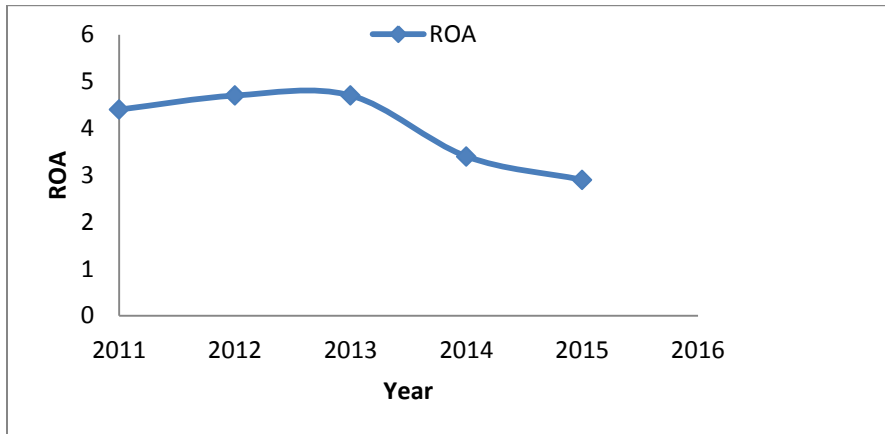
Fig.4.1: Return on Assets, 2011-2015

Source: Research Findings

4.2.2 Financial derivatives

One of the determinants of commercial banks' financial performance has been cited as the banks risk management. Financial derivatives present a powerful tool for managing risks faced by commercial banks in conducting their ordinary businesses. The data on financial derivatives cumulatively held in the Kenyan banking sector was obtained from the CBK bank supervision annual reports. These are tabulated as follows.

Table 4.2 Financial Derivatives

Year	2011	2012	2013	2014	2015
Financial derivatives(forwards, swaps and options) (Ksh M)	183291	256778	225868	267049	336233

Source: Research Findings

Financial derivatives notional value was highest in 2015 where the value stood at Ksh. 336,233,000 and lowest in 2011 where the value was Ksh. 183,291,000.the notional value

of the contracts stood at Ksh.256,778,000,Ksh.225,868,000, Ksh.267,049,000 in 2012, 2013, and 2014 respectively. . The figure below best illustrates this trend.
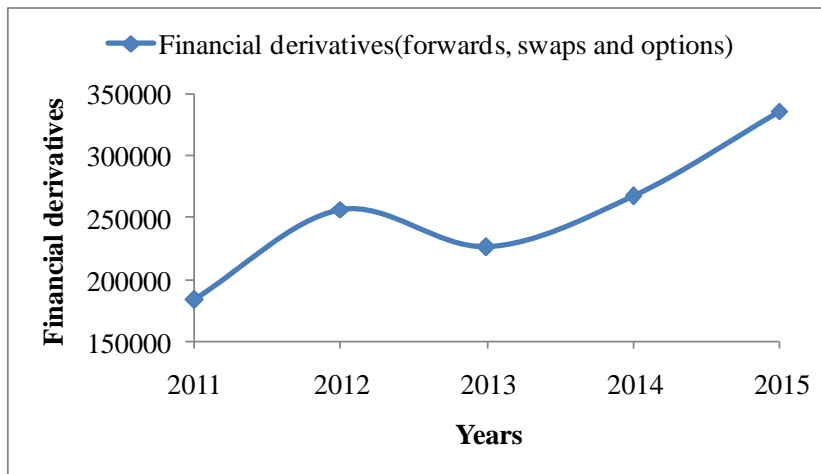
Fig.4 2: Financial Derivatives, 2011-2015

4.2.3 Liquidity Ratio

As a measure of commercial bank's ability to meet obligations when they fall due, liquidity exerts an impact on financial performance through affecting costs related to financing. The Kenyan commercial banks' liquidity was measured by the liquidity ratios as indicated in the reports issued by the industry regulator. These are tabulated as shown below, alongside a visual illustration of the periodic trend.

Table 4.3 Liquidity Ratio

Year	2011	2012	2013	2014	2015
Liquidity ratio (%)	37.0	42.0	38.8	37.8	38.3

Source: Research findings
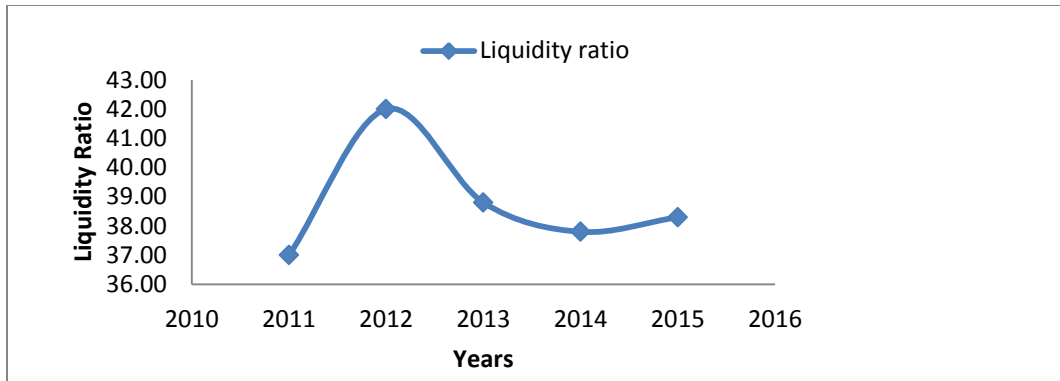
Fig. 4.3: Liquidity Ratio, 2011-2015

Source: Research Findings

The banking industry's liquidity was satisfactory throughout the study period given that the liquidity ratio in all the years remained above the 20% minimum level required by the regulations. This further pointed to the stability of the sector. Liquidity was highest in 2012, during which the average liquidity ratio for the banking sector stood at 42%.This was followed by a decline to 38.8% in 2013and a further decline to 37.8% in the year 2014 before the increase to 38.3% in 2015.This Liquidity ratio was lowest in the year 2011, as indicated by the figure which stood at 37.0%.

4.2.4Shareholder's equity ratio

Considering the use of debts maylead to better management, the ratio of total equity to total assets(shareholders equity ratio) is used to control for bank's leverage.This data was obtained from the annual reports issued by the industry regulator. Tabulated below are the findings.

Table 4.4Shareholder's equity ratio

Year	2011	2012	2013	2014	2015
Total equity to total assets ratio (%)	14.4	15.6	16.1	15.7	15.5

The banking industry's shareholders' equity ratio was lowest in 2011 during which the shareholders equity ratio stood at14.4%. This was followed by an increase to 15.6% in 2012 .The shareholders equity ratio was highest in 2013during which the ratio stood at 16.1%.This was followed by a decline to 15.7% and 15.5 in 2014 and 2015 respectively. This is further illustrated in the following figure.
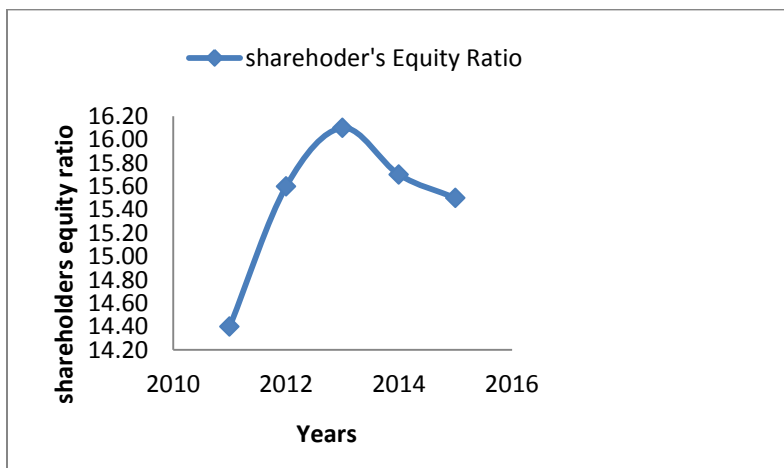
Fig.4 4: Shareholder's equity ratio, 2011-2015

4.3Regression Analysis

In seeking to determine the effect of financial derivatives, liquidity ratio, the shareholder's equity ratio on the ROA of Kenyan commercial banks over the period 2011-2015, the ROA in each year was regressed against each year's financial derivatives, liquidity ratio and the shareholder's equity ratio. The table below summarizes the regression model obtained.

Table 4.5 Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.979[a]	.959	.836	.33324

a. Predictors: (Constant), LIQ, DER, EA

Source: Research Findings

From the table, the commercial banks' ROA and their financial derivatives, liquidity ratio, and shareholder's equity ratio are highly correlated, as suggested by the coefficient of correlation R, whose value of 0.979 indicates a strong positive correlation. A reasonably high portion of the variation in the ROA from year to year is explained by the variation in the financial derivatives, liquidity ratio, and the shareholder's equity ratio from year to year, as suggested by the coefficient of determination's(R Square) value of 0.959.Thus approximately 95.9% of the variation in the dependent variable is attributable to the study's independent variables. The regression model obtained was further tested for significance. Tabulated below are the results obtained.

Table 4.6 ANOVA Summary

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.597	3	.866	7.795	.256[a]
	Residual	.111	1	.111		

Total	2.708	4				

a.   Predictors: (Constant),   LIQ, DER, EA

b.   Dependent Variable: ROA

Source: Research Findings

From the table, the F statistic computed to test the significance of the resulting regression model has a significance value of 0.256. Given that this exceeds the 0.05 significance level at which the model was tested for significance, the model may not be significant in describing the relationship between commercial banks' ROA between 2011-2015 and their financial derivatives, liquidity and shareholder's equity ratios over the same period. Besides the test of significance of the regression model, the coefficients of the regression model obtained were also tested for significance .The results of the significance tests are as tabulated below.

Table 4.7 Regression coefficients

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-4.575	4.593		-.996	.501	-62.933	53.784
	DER	-1.386E-5	.000	-.950	-4.202	.149	.000	.000
	EA	.210	.319	.162	.658	.629	-3.841	4.260
	LIQ	.229	.096	.533	2.378	.253	-.993	1.451

a. Dependent Variable: ROA

Source: Research Findings

From the findings, none of the coefficients of the regression model including the constant, shareholder's equity ratio, financial derivatives and liquidity ratio are significant. The significance values of the t statistic used in testing their significance are above the 0.05 significance level at which the significance tests were performed. Thus, the changes that occurred in ROA of the commercial banks with changes in the other variables that were independent were not significant.

Table 4.7 depicts the numerical relationship between the independent variable and the predictor variables in the following resultant equation:

ROA=-4.575-1.386E-5DER+0.210EA+0.229LIQ

The coefficients and their signs are of particular importance.The regression coefficients

shows that a unit increase in shaereholders equity ratio led to a increase ROA by 0.210 units. Likewise a unit increase in liquidity ratio led to increase in ROA by 0.229 units. On the contrary, a unit increase in financial derivatives led to a decreasein ROA by 1.386E-5 units. From the findings above,financial derivatives have no significant impact on the ROA at 5%level of significance as indicated by the p values; 0.149>.05.

Descriptive statistics was computed for both metcices measuringKenyan commercial banks financial performance of and the resultwere as tabulated below

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	5	2.90	4.70	4.0200	.82280
DER	5	183291.00	336233.00	253843.8000	56416.55361
EA	5	14.40	16.10	15.4600	.63482
LIQ	5	37.00	42.00	38.7800	1.91885

The result for the study period 2011-2015 shows that the total derivative among the 43 commercial banks in Kenya is 253843.800 with a standard deviation of 56416.55361. The total shareholders equity ratio is 15.46 with a standarsd deviation of 0.63482 and the maen forthe commercial banks' liquidity ratio is 38.78 with a standard deviation of 1.981885.

4.3 Interpretation of Findings

The study found that, the commercial banks' ROA and their financial derivatives, liquidity ratio, and shareholder's equity ratio are highly correlated, as suggested by the coefficient of correlation R, whose value of 0.979 indicates a strong positive correlation. A reasonably high portion of the variation in the ROA from year to year is explained by the variation in the financial derivatives, liquidity ratio, and the shareholder's equity ratio from year to year, as suggested by the coefficient of determination's(R Square) value of 0.959.Thus approximately 95.9% of the variation in the dependent variable is attributable to the study's independent variables.

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A strong positive correlation was found between Kenya's commercial bank's ROA, financial derivatives, shareholder's equity ratio and liquidity ratio between 2011-2015.The coefficient of determination was also large, a further affirmation to the high correlation. Despite the strong correlation and high coefficient of determination, the relationship between the study variables was found to be an insignificant one. Many factors apart from those modeled in this relationship exert an impact on the ROA, some of which may have a greater impact than those identified.

Further, the data in respect of the variables comprised largely of aggregated data from the industry regulator. Such an aggregation left year to year comparison as the feasible approach rather than undertaking the analysis on a bank to bank basis which could have led to a more robust result regarding significance of the underlying relationship. The regression coefficients were also found to be insignificant. Considering the fact that the model examined the effects of the various variables on the ROA while holding others constant, the coefficients themselves may not be significant as such. Thus, the effects of the independent variables may become significant when taken in combination and not singly.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings of the study, draws related conclusions and suggests policy recommendations. The study's limitations are also cited with suggestions being offered for further research.

5.2 Summary

This study was carried out with the objective of establishing the effect of financial derivativesonthe fiancial performance of commercial banks in Kenya. To achieve theabove objective, a regression analysis was conducted whereby ROA was regressed against financial derivatives ,shareholders eqiuty ratio and liquidity ratio of commecial bankis in kenya between 2011-2015. Data for both the dependent and predictor variables were obtained from CBK.

When the analysis of the relationship between the individual independent variables and ROA was carried out, financial derivatives were found to have anegative relationship with ROA meaning that an increase inderivatives resulted in a corresponding decrease in ROA and vice versa (refer to table 4.6). The relationship between financial derivative and

ROA was in addition found to be insignificant at as indicated by the p-value (0.149>.05.).Thiscrucial finding is consistent with the literature and is in particular consonance with Choi and Elyasiani (1997 and Flannery and James (1984); among others.

5.3 Conclusion

The study's results indicated that there was aninsignificant relationship financial derivatives and the Kenya commercial banks financial performance(ROA). Additionally, given the negative nature of the relationship it means that a unit change(increase) in financial derivatives will result to a decrease in financial perfomance of commecial banks in Kenya.Consequently, therefore,financial derivatives should be properly utilized in a manner that is instumental to the goal of a sound and safe banking system in kenya.

The relationship between financial derivative and ROA was in addition found to be insignificant at as indicated by the p-value (0.149>.05.).Thiscrucial finding is consistent with the literature and is in particular consonance with Choi and Elyasiani (1997 and Flannery and James (1984); among others.Some of the previous studies indicate thats derivatives act as a complement to banks' lending activities (Diamond 1984) while others find that utilizing derivatives increases the commercial banks'riskiness (Gorton and Rosen 1995).

The results about how bank performance is affected by derivatives are mixed and this probably because it is not easy to differentiate in practice hedging and speculating

derivative activities and that above studies focused on large banks which have considerable speculating derivative activities and market making that permit them to lessen, if not evade, non-hedging derivative activities disruptions.

5.4 Limitations of the Study

The data used in assessing the relationship between the study variables was aggregated data provided by the industry regulator CBK. Such data could not allow an analysis at the bank level, making it difficult to ascertain the manner in which the variables changed from bank to bank as a result of the different characteristics of each bank. In addition such an aggregation left year to year comparison as the feasible approach rather than undertaking the analysis on a bank to bank basis which could have led to a more robust result regarding significance of the underlying relationship

The study period chosen covered only 5 years, which may not be adequate for generalization of the findings to a longer time period. Further, there was marked variation in this same period in the banking industry resulting from differences in the regulatory regime from year to year, number of banking institutions, macroeconomic and competitive circumstances alongside others. These differences were not accounted for, and could thus serve to limit the assumption of homogeneity among all the years selected for the study.

Despite the strong correlation and high coefficient of determination, the relationship between the study variables was found to be an insignificant one considering the fact that

the model examined the effects of the various variables on the ROA while holding others constant, the coefficients themselves may not be significant as such thus, the effects of the independent variables may become significant when taken in combination and not singly. Many factors apart from those modeled in this relationship exert an impact on the ROA, some of which may have a greater impact than those identified while the model only included the three (financial derivatives, liquidity ratio and the shareholder equity ratio).

The focus of this study was on the three financial derivatives used by the commercial banks in Kenya which are forwards swaps and options. The study looked at the effect of the three financial derivatives as one variable and failed to study the effect of each financial derivative separately.Forwards, swaps and options were combined to be one variable in this study.

Financial derivatives affect the large banks and the small banks differently due to difference in capital structure, asset base, amount of risks taken and many more. In contrast to large banks, small banks hold more liquid assets have more conservative capital structures and are more cautious to risky investments. This study did not separate the large and the small banks and looked at all the 43 commercial banks in Kenya.

5.5 Recommendations

The study recommends that derivative accounting and valuation procedures and derivative educational programs be established and embraced to demystify Kenya's

derivative market. This would enable the finance offices to understand each and every hedging practice advantages and disadvantages as currently most commercial banks do not have a steady policy on derivative utilization and financial risks management is merely left on the whims and devices of managers and thus making investors incur agency costs.

Clearly, the banking system's soundness is an issue of essential concern to society. The study therefore recommends that regulatorscarefully and continously monitor the banks'derivative activities to assure that the increasingly popularinstruments are used in a manner that is instumental to the goal of a sound and safe and banking system.

5.5.1 Policy Recommendations

This study recommends that sound risk management process such as ensuring that procedures and policies that delineate clearly the lines of responsibility for managing risk.

This study also recommends that commercial banks put in place adequate risk measuring systems and appropriately create structured limits on risk taking.

5.5.2 Suggestions for Further Research

A study should be carried out replicating this study, using data in respect of specific commercial banks. This may allow an examination of how the variables relate at the bank

level in addition to yielding insights concerning bank specific factors that may exert an impact on the financial performance.

Research should also be conducted incorporating a longer period exceeding the 5 years that were used in this study .This would improve the generalizability of the study findings to diverse settings. It should also include robust mechanisms for controlling for the differences occurring between clusters of various years due to a diverse set of circumstances. Such control of differences may strengthen the basis of the resultant findings.

Considering the fact that the model examined the effects of the various variables on the ROA while holding others constant, the coefficients themselves may not be significant as such thus, the effects of the independent variables may become significant when taken in combination and not singly and also many factors apart from those modeled in this relationship exert an impact on the ROA, therefore study that includes other factors which may have a greater impact than those identified should be conducted. Thus, the effects of the independent variables may become significant when taken in combination and not singly.

Further research could also be conducted to determine the effect of financial derivatives on the financial performance of commercial banks in Kenya by looking at each derivative separately as in this studyforwards, swaps and options are combined to be one variable.

The effects of financial derivative on the financial performance on the large and small banks should be looked at separately.

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Year	ROA (%)	Liquidity Ratio (%)	Financial Derivatives (KSH. M)	Shareholders' Equity (KSH. M)	Total Assets (KSH. M)	Shareholder's equity ratio (%)
2011	4.4	37	183291	286,450	1,988,846	14.4
2012	4.7	42	256778	357,037	2,289,649	15.6
2013	4.7	38.8	225868	426,496	2,656,639	16.1
2014	3.4	37.8	267049	501,733	3,199,396	15.7
2015	2.9	38.3	336233	540,578	3,492,643	15.5

Raw data

Source: CBK website (www.centralbank.go.ke)