A SURVEY OF THE EXTENT OF USE OF FINANCIAL DERIVATIVES BY COMMERCIAL BANKS IN KENYA

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DECLARATION

This research project is my original work and has not been presented for academic purposes in any institution of higher learning.

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This research project has been submitted as part fulfillment of the requirement for the award of a Degree in Masters in Business Administration with my approval as the University supervisor.

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DEDICATION

This study is dedicated to my dearest wife **Serah Njeri** for your encouragement, moral support and tireless effort, surely without you I would not have made it. Levert you were there with your 'SP' to encourage Daddy on his work. To my parents, you have been instrumental in my studies.

Every day in the wilderness,

A gazelle has to run faster than the fastest Lion for it to survive that day...

...A lion has to run faster than the slowest gazelle for it to get its prey

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ABSTRACT

This study sought to determine the extent of use of financial derivatives among commercial banks in Kenya. The research methodology used was a Correlation design and the population of study was Commercial Banks in Kenya listed at the NSE for 2006 to 2010. Secondary data collected was edited for accuracy, uniformity, consistency and completeness and arranged to enable coding and tabulation for final analysis. The study also used multiple linear regressions to analyze the data.

The study found out that a there is indeed a positive relationship between financial derivatives trading and financial performance. In addition, there is also a positive relationship between Return on Assets, Return on Equity, profitability plus other variables as discussed and market share, market price to book value, growth in assets, leverage and dummy. Various variables were used to explain derivatives in use by commercial banks namely profitability, return on assets, return on equity, loan loss allowance and other variables. ROE, ROA, profitability and growth in assets was the main variable explaining the derivatives in use by commercial banks. Capital to total unweighted risk for assets was the least explanatory variable since the relationship with financial performance was weak. As a result, it was clear that most banks balance sheets contained a significant level of derivatives.

The study recommends that another research be done once all the aspects of derivative trading by the banks so that better results can be obtained. This study covers a shorter period which may be giving different results like if for instance a broader period of ten or more years was adopted. The study further recommends that broader areas of study and a bigger population be covered so that bigger and better results can be obtained on other variables that can explain whether financial derivative use has a positive effect on the financial performance. This study was only limited to 10 banks listed NSE.

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ABBREVIATIONS

CBK   -   Central Bank of Kenya

CFOs   -   Chief Financial Officers

GDP   -   Gross Domestic Product

NSE   -   The Nairobi Securities Exchange

ROA   -   Return on Assets

UNDP   -   United Nations Development Programme

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

The 1980s witnessed the rapid introduction of financial innovations in international financial markets. Financial innovations carried traditional finance and banking into sophisticated markets featuring a high degree of liquidity and a wide array of instruments that could share and transfer various sources of risk. The trend occurred in both domestic and international financial markets. Demand for liquidity enhancing and risk management instruments was prompted by increased volatility in the prices of financial assets due to the breakdown of the fixed exchange rate system, the oil shocks and excessive government spending. The innovation and growth in financial markets was further induced by advances in financial theory, breakthroughs in information processing and communication technology, and the deregulation of financial markets (Jorion and Da Silva, 1995).

1.1.1 Financial derivatives

A derivative is a contract between two parties that provides for a payoff from one party to the other based on the performance of an underlying asset, currency or interest rates Chance (2008). The payoff of the derivative is said to be "derived" from the performance of something else often called the underlying "asset". Derivatives can be based on almost any variable from the price of electricity - electricity derivatives, the weather in London weather derivatives, the credit-worthiness of Anglo American Plc-credit derivatives to

the amount of hurricane insurance claims paid in 2003 -insurance derivatives. Derivatives are also referred to as contingent claims the value of the claim being contingent or dependent on the value of the underlying variable.

The marketability, negotiability, and transferability of financial claims create liquidity by expanding the menu of options available to market participants. Derivatives make markets more complete and create important additional social benefits such as the dissemination of uniform prices upon which investment decisions can be made, and the lowering of transaction costs in the capital market (Jorion and Da Silva, 1995).

Duration can also be used and is usually presented as an account's weighted average time to repricing, where the weights are discounted components of cash flow. A bank will be perfectly hedged when the duration of its assets, weighted by rands of assets, equals to the duration of its liabilities, weighted by rands of liabilities. The difference between these two durations is called the duration gap, and the larger the bank's duration gap is, the more sensitive a bank's net worth will be to a given change in interest rates (Schaffer, 1991). The advantages of duration analysis is that it provides a simple and accurate basis for hedging portfolios, it can be used as a standard of comparison for business development and funding strategies, and it provides the essential elements for the calculation of interest rate elasticity and price elasticity (Cade, 1997).

Some banks simulate the impact of various risk scenarios on their portfolios (Schaffer, 1991). In other words, simulation analysis involves the modeling of changes in the

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bank's profitability and value under alternative interest rate scenarios (Payne et al., 1999). The advantages of this technique are that it permits an easy examination of a bank's interest rate sensitivities and strategies (Cade, 1997), and it replicates the same bottom line as duration theory while bypassing the more sophisticated mathematical deviations. The drawback of this approach is that the need for detailed cash flow data for assets and liabilities are not satisfied and computers alone cannot solve the problem of forecasting cash-flow patterns for some assets and liabilities (Shaffer, 1991)

Another approach is to choose interest rate scenarios within which to explore portfolio effects (Schaffer, 1991). Different scenarios must thus be set out and it must be investigated what the bank stand to lose or gain under each of them. Advantages of this approach are that it can be applied to most kinds of risks and that it is less limited by data availability. Schaffer (1991) states that this approach is thus more flexible and it requires less effort. Unfortunately traditional measures of interest rate risk, while convenient, provide only rough approximations at best (Shaffer, 1991) and derivatives must be used in addition.

More recent ways to measure and manage interest rate risk as a result of Innovation in financial theory and increased computerization, along with changes in the foreign exchange markets, the credit markets and the capital markets over time, have contributed to the growth of financial derivatives (Sangha, 1992). Financial derivatives are instruments whose value is derived from one or more underlying financial assets. The underlying instruments can be a financial security, a securities index, or some

combination of securities, indices and commodities (Sangha, 1992).

According to Sinkey (2002) the idea behind hedging interest rate risk with derivatives is to offset or reduce losses in cash or spot markets with gains in derivative markets and hedging can be applied to individual assets (a micro hedge) or to a bank's balance sheet (a macro hedge). An example of micro-hedging on the liability side of the balance sheet occurs when a financial institution attempting to lock in the cost of funds to protect itself against a possible rise in short-term interest rates, takes a short (sell) position in futures contracts on certificates of deposit or treasury bills. It will be best to pick a futures or forward contract whose underlying deliverable asset is closely matched to the asset (or liability) position being hedged, to prevent basis risk (uncorrelated prices). An example of a macro-hedge is when a balance-sheet exposure is fully hedged by constructing, for example, a futures position, such that if interest rates rise, the bank will make a gain (Saunders & Cornett, 2003). Instruments of derivatives includes: Futures, Forwards, Options and Swaps. These instruments can be combined with each other to create a synthetic asset or liability which suits any kind of need. This extreme flexibility and freedom widely explain the incredible growth of these instruments on world financial markets (Allayannis and Weston, 2001).

According to Hull (1998), Futures and Forwards are contracts to buy or sell an asset on or before a future date at a price specified today. A futures contract differs from a forward contract in that the futures contract is a standardized contract written by a clearing house that operates an exchange where the contract can be bought and sold, while a

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forward contract is a non-standardized contract written by the parties themselves. The first "futures" can be traced in the Yodoya rice market in Osaka around 1650. These were standardized contracts which met all the qualifications of today's futures. The next major event and most significant was the creation of the Chicago Board of Trade in 1848. Due to its location Chicago had developed as a major storage and distribution for grains but it did not have the storage facilities to store all grains being supplied during the harvest period. Therefore due to the seasonality of grains, prices were highly fluctuating. Another problem was that the facilities were left underutilized when it was not harvest season. A group of farmers created a contract called "to-arrive" contracts which allowed farmers to negotiate prices earlier and deliver the grains later (Chance, 2008).

Options are contracts that give the owner the right, but not the obligation, to buy - in the case of a call option or sell in the case of a put option an asset. The price at which the sale takes place is known as the strike price, and is specified at the time the parties enter into the option. The option contract also specifies a maturity date. In the case of a European option, the owner has the right to require the sale to take place on but not before the maturity date; in the case of an American option, the owner can require the sale to take place at any time up to the maturity date. If the owner of the contract exercises this right, the counterparty has the obligation to carry out the transaction. An option contract can be a Bermudan contract whereby the owner can only exercise his right on specified dates on or before the maturity date (Kolb, 1995).

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Kolb (1995) defines Swaps as contracts to exchange cash flows on or before a specified future date based on the underlying value of currencies/exchange rates, bonds/interest rates, commodities, Securities or other assets. Swaps are generally over the counter contracts with a longer duration than futures and options and satisfy the need of a single client of the bank, a firm or financial institution. They tend to create new investment opportunities in order to hedge against any type of risk or speculation. In these contracts the notional value of the contract does not represent the risk taken by the two or more counterparts by periodical payments.

The risks contained in the bank's principal activities, i.e., those involving its own balance sheet and its basic business of lending and borrowing, are not all borne by the bank itself. In many instances the institution will eliminate or mitigate the financial risk associated with a transaction by proper business practices; in others, it will shift the risk to other parties through a combination of pricing and product design. The banking industry recognizes that an institution need not engage in business in a manner that unnecessarily imposes risk upon it; nor should it absorb risk that can be efficiently transferred to other participants. Rather, it should only manage risks at the firm level that are more efficiently managed there than by the market itself or by their owners in their own portfolios. In short, it should accept only those risks that are uniquely a part of the bank's array of services Elsewhere, Oldfield and Santomero (1997), it has been argued that risks facing all financial institutions can be segmented into three separable types, from a management perspective.

Brigham and Houston (2004) indicate that one of the first formal markets for derivatives was the futures markets for wheat. Farmers were concerned about the price they would receive for their wheat when they sold it in the fall and millers were concerned about the price they would have to pay. The risks faced by both parties could be reduced if they could establish a price earlier in the year. Accordingly, mill agents would go out to the wheat belt and make contracts with the farmers that called for the farmers to deliver grain at a predetermined price. Middlemen came into the picture and trading in futures was established. The Chicago Board of Trade was an early market place. Thus, farmers could sell futures on the exchange and millers could buy them there. This improved the efficiency and lowered the cost of hedging operations.

1.1.2 Commercial banks in Kenya

Commercial banks are licensed and regulated under the Banking Act, Cap 488 and Prudential Regulations issued there-under. There are 44 Commercial Banks in Kenya CBK, (2010). The role of commercial banks in an economy cannot be emphasized more. As pointed out by Scott & Timothy, (2006), commercial banks play an important role in facilitating economic growth. Banks deposits represent the most liquid form of money. On a micro economic level, commercial banks represent the primary source of credit to most small businesses and many individuals. Omutunde, (2002), asserts that that a sound financial system will contain, predominantly, banks with adequate capital to withstand the most probable adverse shocks, and will have staff skilled in assessing conditions and coming up with solutions to manage liquidity, credit, market and other risks

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A process of financial liberalization was initiated in the 90s to make the banking system profitable, efficient, and resilient. The liberalization measures consisted of deregulation of entry, interest rates, and branch licensing, as well as encouragement to state owned banks to get listed on Securities exchanges. With the liberalization came risks that banks needed to manage. It is therefore a suitable time to perform an analysis of the capital investment and financial performance among Commercial Banks in Kenya. The Basel-II norms, which include a move towards better risk management practices, also necessitate such a study CBK, (2010).

1.2 Research Problem

In modern financial management, managers are required to allocate pre-determined capital among multiple projects to diversify corporate risk. Thus, an optimal investment allocation strategy among these projects is critical in a corporate investment decision-making process. While the mean-variance approach is considered a cornerstone of the modern investment theory, (Markowitz, 1959) points out the importance of the downside risk measure in his seminal work. For typical economic agents including managers, downside risk is also more accurate to measure the uncertainty with respect to projects' payoff distributions since they are more concerned with the loss than with extra return.

Derivatives markets can facilitate the management of financial risk exposure, since they allow investors to unbundle and transfer financial risk. Such markets contribute to a more efficient allocation of capital and cross-border capital flow, create more opportunities for diversification of portfolios, facilitate risk transfer, price discovery, and more public information (Olatundun, 2009).

The classic paper of Modigliani and Miller (1958 & 1963) showed that under conditions of perfect capital markets, and some other conditions, the financial decisions of a firm are irrelevant in the sense that they do not change the total value of the firm. This follows from the fact that shareholders can reverse engineer the financing decisions of the firm on their own account at fair market prices. Corporate risk management with derivatives is part of the financial decisions of the firm, so it is also irrelevant under these conditions.

A study was done by Mutende, (2010) on factors hindering derivatives trading at the NSE. Guay and Kothari (2003) conclude that for most firms, derivatives use is of minor economic significance. In their sample of large firms, slightly more than half report use of derivatives. Among the derivative users, the authors estimate that the median firm hedges only about 3% to 6% of exposures to interest rates and exchange rates risks. This conclusion calls for an investigation of the economic significance of use of derivatives by commercial banks as well as large firms in emerging economies like Kenya. Allayannis and Weston (2004) indicate that firms that use derivatives have a higher market value whereas Graham and Rogers (2002) also allude that firms that use derivatives have more leverage lending. In addition commercial banks Banks typically participate in derivatives markets because their traditional lending and borrowing activities expose them to financial market risk.

Existing empirical evidence is mainly based on developed countries whereas a few empirical investigations had been undertaken in Asian countries to identify the factors effecting the firms hedging polices. There is therefore a gap as far as studying the extent

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of use of financial derivatives by commercial banks in Kenya is concerned. It is evident has not been done fully especially in the emerging markets. In addition, most of the studies conducted have been in developed countries and they are not conclusive. The study therefore will seek to answer the following research question: What are the reasons why commercial banks if any use financial derivatives and does its use influence the performance of the commercial banks??

1.3 Research Objective

To investigate the extent of the usage of financial derivatives among commercial banks in Kenya.

1.4 Research Questions

(i)   What factors influence the choice to use derivatives in hedging risks amongst Commercial banks in Kenya?

(ii)   What are the reasons why commercial banks use financial derivatives, do their use influence the performance of the commercial banks?

1.5 Value of the study

The findings of the study will benefit the general clientele and management of the Kenyan banking system by highlighting the existing financial derivatives and how it influences firm performance. This may also open avenues enabling the development of suitable financial derivatives that meet the industry expectations. The findings would also

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assist regulatory agencies to develop policies and plans that support the strengthening of the banking system and a robust financial derivative market that covers the economy from systemic risks. The academics and researchers would use the findings of the study as a basis for further research in determining the extent to which the derivative markets are deepened in Kenya and the implications thereon

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

It is generally believed that shareholders are able to reduce risk by constructing a well-diversified portfolio. However, existing literature on risk management shows that corporations are using derivative instruments to minimize firms risk exposure. According to (Modigliani and Miller 1958) under perfect capital market conditions, it is useless for a firm to reduce risk by using derivatives. Whereas, theoretical evidence provided by (Stulz 1984) and (Smith and Stulz 1985) had shown that, under certain market frictions, corporations having specific operating characteristics like, higher financial distress costs, tax convexity, growth opportunities, managerial holdings and liquidity constraints, have an opportunity to enhance firm value by optimally utilizing hedging techniques.

2.2 Theoretical review
2.2.1 The Concept of Financial Derivatives

Several studies have examined the use of derivatives by banks. Deshmukh, Greenbaum, and Kanatas (1983) they argue that an increase in interest rate uncertainty encourages depository institutions to decrease their lending activities, which entail interest rate risk, and to increase their fee for service activities, which do not. Therefore, they argue that if interest rate risk can be controlled by derivatives, then perhaps banks that use derivatives would experience less interest rate uncertainty and can increase their lending activities which result in greater returns relative to the return on fixed fee for service activities

Thus their overall profitability would be higher compared to those banks that do not use derivatives to control for interest rate uncertainty (Brewer 1996).

Brewer, Jackson, Moser and Saunders found that there exists a negative correlation between risk and derivative usage for savings and loan institutions. In fact, it was found that S&L s that used derivatives experienced relatively greater growth in their fixed rate mortgage portfolios. (Brewer 1996) These results indicate that financial institutions use derivatives for hedging purposes, which would explain the reduction in the volatility risk with an increase in derivative use. Jason and Taylor (1994), and Stern and Eman (1994) found that trading derivatives for profit is risky and may expose firms to large losses (Brewer 1996) In an earlier study, Katerina Simmons used quarterly Call Report data to examine the pattern of derivative use by banks between 1988 and 1993. She found that banks with weaker asset quality tend to use derivatives more intensely than banks with better asset quality. Simmons found no relationship between duration gap measures and derivative use. Thus, her study provided no indication as to whether banks use derivatives to increase or reduce interest rate risk (Simmons 1995) While some studies indicate that derivatives may be useful to banks because they give firms a chance to hedge their exposure to interest rate risk, others have found that derivatives can impose a significant amount of risk on an institution, resulting in large financial losses It is the goal of this study to determine if banks use derivatives to lessen their exposure to interest rate risk or to gamble speculatively in derivative markets.

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This study argues that banks use derivatives to minimize risk exposure, assuming that banks maximize profits subject to a risk constraint. In theory, a bank's exposure to interest rate risk should have an effect on the size of its derivative holdings if the financial instruments are used for hedging purposes. Furthermore, it is argued that derivative use will vary according to bank size, balance sheet composition, total risk exposure, profitability and appetite for assuming risk.

2.3 Theories of in regards to Financial Derivatives

The following theories are relevant to financial derivatives and are therefore discussed. These are the trade-off theory, the pecking-order theory, market timing theory, debt maturity, stakeholder theory, agency theory, financial economics approach and new institutional economics.

2.3.1 Financial Economics Approach

Financial economics approach to corporate risk management has so far been the most prolific in terms of both theoretical model extensions and empirical research. This approach builds upon classic Modigliani-Miller paradigm (Miller and Modigliani, 1958) which states conditions for irrelevance of financial structure for corporate value. This paradigm was later extended to the field of risk management. This approach stipulates also that hedging leads to lower volatility of cash flow and therefore lower volatility of firm value. Rationales for corporate risk management were deduced from the irrelevance conditions and included: higher debt capacity (Miller and Modigliani, 1963), progressive tax rates, lower expected costs of bankruptcy (Smith and Stulz, 1985), securing internal

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financing (Froot et al., 1993), information asymmetries (Geczy et al., (1997) and comparative advantage in information (Stulz, 1996) The ultimate result of hedging, if it indeed is beneficial to the firm, should be higher value-a hedging premium

Evidence to support the predictions of financial economics theory approach to risk management is poor. Although risk management does lead to lower variability of corporate value (Jin & Jorion, 2006), which is the main prerequisite for all other effects, there seems to be little proof of this being linked with benefits specified by the theory One of the most widely cited papers by (Tufano, 1996) finds no evidence to support financial hypotheses, and concentrates on the influence of managerial preferences instead. On the other hand, the higher debt capacity hypothesis seems to be verified positively, as shown by (Faff and Nguyen, 2002), (Graham and Rogers, 2002) and (Guay, 1999).

2.3.2 Agency Theory

Agency theory extends the analysis of the firm to include separation of ownership and control, and managerial motivation. In the field of corporate risk management agency have been shown to influence managerial attitudes toward risk taking and hedging Smith and Stulz, 1985) Theory also explains a possible mismatch of interest between shareholder management and debt holders due to asymmetries in earning distribution, such can result in the firm taking too much risk or not engaging in positive net value projects (Mayers and Smith, 1987). Consequently, agency theory implies that defined hedging policies can have important influence on firm value (Fite and

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Pfleiderer, 1995). The latter hypotheses are associated with financing structure, and give predictions similar to financial theory. Managerial motivation factors in implementation of corporate risk management have be empirically investigated in a few studies with a negative effect (MacCrimmon and Wehrung, 1990); (Geczy et al., 1997). Notably, positive evidence was foui however by (Tufano 1996) in his analysis of the gold mining industry in the US. Financial policy hypotheses were tested in studies of the financial theory, since both theories give similar predictions in this respect. All in all, the bulk of empirical evidence seems to against agency theory hypotheses however. Agency theory provides strong support for hedging as a response to mismatch between managerial incentives and shareholder interests.

2.3.3 New Institutional Economics

A different perspective on risk management is offered by new institutional economics The focus is shifted here to governance processes and socio-economic institutions that guide these processes, as explained by (Williamson, 1998). Although no empirical studies of new institutional economics approach to risk management have been carried out so far, the theory offers an alternative explanation of corporate behavior. Namely, it predicts that risk management practices may be determined by institutions or accepted practice within a market or industry. Moreover, the theory links security with specific assets purchase (Williamson, 1987), which implies that risk management can be important in contracts which bind two sides without allowing diversification, such as large financing contract or close cooperation within a supply chain.

If institutional factors do play an important role in hedging, this should be observable in the data. First of all, there may be a difference between sectors. Secondly, hedging may be more popular in certain periods-in Poland one might venture a guess, that hedging should become more popular with years. A more concrete implication of this theory is that shareholders may be interested in attracting block ownership by reducing company risk. Here New Institutional Economics is similar in its predictions to agency theory. However this theory also suggests that firm practices may be influenced by the ownership structure in general.

2.3.4 Stakeholder Theory

Stakeholder theory, developed originally by (Freeman, 1984) as a managerial instrument, has since evolved into a theory of the firm with high explanatory potential. Stakeholder theory focuses explicitly on equilibrium of stakeholder interests as the main determinant of corporate policy. The most promising contribution to risk management is the extension of implicit contracts theory from employment to other contracts, including sales and financing (Cornell and Shapiro, 1987). Therefore stakeholder theory provides a new insight into possible rationale for risk management. However, it has not yet been tested directly. As stated by (Judge, 2006), investigations of financial distress hypothesis by (Smith and Stulz, 1995) provide only indirect evidence of stakeholder theory as a rationale for risk management

2.3.5 Trade-off theory

The trade-off theory as first developed by (Modigliani and Miller, 1963) argues that firms have optimal debt ratios based on the trade-off between the tax deductibility of interest expenses and the costs of financial distress. The findings of (Graham and Harvey, 2001) and (Brounen et al. 2004) are that most companies do have a target range, but only a few of them have a strict target. The trade-off theory of capital structure supposes that in order to maintain a target range, firms should be constantly rebalancing their target to keep up with stock price changes. However, observed target ratios may be changing over time even though firms do have a set range (Fisher et al., 1989). Transaction costs and fees for issuing debt affect the decisions of only half of the Chief Finance Officers when they choose the appropriate amount of debt for their firms. The practice of trade-off theory of capital structure is not widely used.

2.3.6 Market Timing Theory

(Loughran and Ritter, 1995) and (Spiess and Affleck-Graves, 1995) find that firms experience long-term underperformance in the period following equity issues. Moreover, (Stein, 1996) shows that managers can time the market to maximize existing shareholders' wealth. (Baker and Wurgler, 2002) expand the market timing theory to long-term capital structure. The theory they present states that "capital structure evolves as the cumulative outcome of past attempts to time the equity market.

Market timing theory argues that managers do not rebalance their debt ratio, which implies that equity issues, during high market valuations, tend to have long-

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lasting effects on capital structure. However, some CFOs use debt when their equity was being undervalued by the market. (Graham and Harvey, 2001) argue that the relatively low support for many capital structure theories indicates that there is either a problem with the theories or that practitioners are ignoring them. It may be argued that no single theory is good enough, and that these theories are complementary rather than competing (Chazi, 2009).

2.4 Derivatives

Derivatives are financial contracts whose value is derived from the value of an underlying asset. Typically, derivatives are traded within national and international markets and are commonly used in relation to currency, interest rates and commodity prices. For investors, derivatives provide a method of managing risk and uncertainty in the investment process. This is a rapidly expanding financial sector and there is a large, and expanding, number of derivative products available to investors (Cullen, 1995).

Derivatives can be classified according to whether they can be traded or are "over the counter" products. The former tend to be standardized products which can be traded on a central exchange with price varying with supply and demand. The latter are customized products designed by a financial intermediary, usually an investment bank, for the particular requirements of a client. They are not usually tradable (Eadie, 1995)

2.4.1 Futures

A futures contract is a standardized contract made on a domestic or international commodity exchange providing for the future delivery of a specified quantity of a commodity, commonly agricultural or industrial output, currency of financial instrument, at a specified time and price (Fox-Andrews and Meaden, 1995).

One of the key features of a futures contract is that it requires the payment of an initial deposit, or margin, to open a position or contract. The margin payment is essentially a financial performance bond from the buyer. The margin is of benefit to both contracting parties as it limits the initial financial exposure of the buyer and provides the seller with a form of financial compensation for providing security during the period of contract. Futures contracts are traded through futures exchanges and once a trade is confirmed the transaction is dealt with at an associated clearing house, which will ensure the integrity of the trade and guarantee the completion of the transaction.

2.4.2 Options

An option is the right to buy or sell a good within a stipulated time period at a price that is fixed when the option is bought

2.4.3 Swaps

A swap is a contract between two parties to exchange cash flows for a specified period of time and normally involves either interest rates or currencies. Basically, two parties enter

an agreement in which each undertakes to pay the other's liabilities, although a wide number of variations are possible.

2.5 Financial Derivatives and Risk

Growing globalization has encouraged many corporations to extend their businesses beyond the geographical boundaries in order to benefit from competitive advantage and economies of scale. Penetration into new markets has increased the firm's profitability, on one hand, and on the other it has also increased the variability in net income because of various financial risks. A different justification for corporate risk management had been provided by Bessembinder (1991) that hedging provides an incentive for the firm to decrease financial distress costs by reducing the opportunistic behavior of equity holders Purnanandam (2008) found that firms' decision to use derivatives was positively influenced by leverage whereas highly leveraged firms had lower tendency towards derivative usage. Highly leveraged firms are more likely to use derivatives and highly growth oriented firms, with low debt ratio, are also more inclined towards the derivative usage.

By considering investment and financing decisions in accordance with firms' hedging policies, Froot et al (1993) had proved mathematically that derivatives will be beneficial for firms in two different situations first, when external financing cost exceeds opportunity cost of internal financing and second, when correlation between investment expenditures and firms' cash flows were negative. Bachelier (1900) provided a derivation for a probability density function which was later to be known as a Weiner process

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(Brownian motion process with drift) which is the concept of Random Walk of prices in the markets. The Option valuation model based on this process was quite similar to the better known and more recently developed Black-Scholes option pricing model. The modern Black-Scholes option pricing model was developed in 1973 by Fischer Black, Robert Merton and Myron Scholes when they improved the version by Bonness model. Regulators and banks employ a wide variety of techniques to measure and manage interest rate risk (Feldman & Schmidt, 2000)

A traditional measure of interest rate risk is the maturity gap between assets and liabilities, which is based on the repricing interval of each component of the balance sheet. To compute the maturity gap, the assets and liabilities must be grouped according to their repricing intervals. Within each category, the gap is then expressed as the rand amount of assets minus those of liabilities. Although the maturity gap suggests how a bank's condition will respond to a given change in interest rates (Schaffer, 1991), and thus permits the analyst to get a quick and simple overview of the profile of exposure (Hudson, 1992), the downside of this approach is that it doesn't offer a single summary statistic that expresses the bank's interest rate risk. It also omits some important factors, for example, cash flows, unequal interest rates on assets and liabilities, and initial net worth (Schaffer, 1991).

2.5.1 Interest Rate Risk Exposure

In theory, banks can benefit from derivative markets because derivatives, like insurance, can be used to hedge against risk. Carefully chosen derivative deals can reduce interest

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rate risk inherent in banking activities because the pre-existing interest rate risk can sometimes be offset by a counterbalancing derivative risk. Therefore, if derivatives are used to hedge against interest rate risk, then the volume of derivatives held by a bank should be negatively related to the current interest rate risk experienced by the bank.

2.5.2 Credit Risk Exposure

The ratios of loan loss reserves to loans and noncurrent loans to loans are indications of the quality of assets held by a bank. Each bank must maintain an allowance for loan and lease loss that is adequate to absorb estimated credit losses associated with its loan and lease portfolio. A bank with relatively risky assets would be required to hold a relatively larger loan loss reserve balance. It can be argued that investors would view a bank with a relatively high loan loss reserve or a bank with a relatively high balance of non-current loans as one of high risk. Thus the bank might have a difficult time raising additional capital as needed to manage interest rate risk in the traditional manner.

Furthermore, a riskier loan portfolio may be an indication of management's predilection for risk that might be carried over into derivative dealings. If management has greater tendencies towards risk then they might be more likely to assume the risk involved in speculating with derivatives. Banks in either situation would theoretically be more likely to use derivatives. However, it would be difficult to discriminate among those that are using derivatives prudently to manage interest rate risk and those that are speculating. On the other hand, it has been argued that banks that hold a relatively risky portfolio of assets would avoid using derivatives in order to avoid regulatory scrutiny (Simmons 1995).

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Therefore, the direction of the relationship between derivative use and bank credit risk is ambiguous.

2.5.3 Size of Asset Portfolio

In theory, large banks are more likely to be involved in derivative use for several reasons. First, derivatives are very complex instruments and require careful management and analysis. Smaller banks may not have the resources to devote to understanding the complexities of these instruments. Furthermore, transaction fees involved in trading derivatives decrease with increased volume of purchases. Thus larger banks that can afford to make larger transactions pay relatively smaller transactions fees. Finally, larger banks are more likely to have greater exposure to market risk particularly because of the differences in their borrowing sources. Large banks tend to use instruments, such as jumbo Commercial Deposits, whose price and yields vary with the market on a day-to-day basis. Therefore, the relationship between derivative use and asset size is expected to be positive.

2.5.4 Other Characteristics-Bank Profitability

Deshmukh, Greenbaum, and Kanatas (1983), alluded that banks who can manage interest rate risk using derivatives will be less constrained in their lending activities and will thus be able to invest in higher risk higher yielding assets. Derivatives free banks from the restrictions imposed by traditional internal hedging by allowing the bank to separate its choice of assets or sources of funding from considerations of market risk. Therefore, derivative use is expected to have a positive relationship with bank

profitability. Banks are required to hold a percentage of capital based on the risk embedded in their asset holdings.

2.5.5 Nairobi Securities Exchange

In a relatively short time, several African countries have developed securities market. With only eight active securities market in 1980, the number of African securities market increased to 18 by the end of 2002 (UNDP, 2003) and is currently 26 (Moin, 2007). As a corollary, African securities markets vary substantially in institutional and market infrastructural characteristics. Smith et al. (2002) classify African securities market into four groups:- South Africa the largest and the oldest securities market in Africa; A group of medium-size markets, consisting of Egypt, Kenya, Nigeria, Morocco, Tunisia and Zimbabwe; A group of small, but rapidly growing markets, consisting of Botswana, Cote d'Ivoire, Ghana, Namibia and Mauritius and a group of very small markets, consisting of Libya, Malawi, Mozambique, Sudan, Swaziland, Tanzania, Uganda and Zambia, which are struggling to take-off.

In Kenya, dealing in shares and Securities started in the 1920's when the country was still a British colony. However the market was not formal as there did not exist any rules and regulations to govern stock broking activities. In 1954 the Nairobi Securities Exchange was then constituted as a voluntary association of stock brokers registered under the Societies Act

2.6 Summary

In the Kenyan context, many publications throw light over financial derivatives adopted by Commercial Banks in Kenya. However these studies don't show the extent to which financial derivatives are used by commercial banks in Kenya. The purpose of this study is to study the extent to which financial derivatives are in use among Commercial Banks in Kenya applicable in Kenyan context. This study also establishes whether banks in Kenya use the strategies laid down by the regulator and other International bodies like the Basel Committee.

In summary all activities pursued by a company are inherently risky, although to a different degree. Decisions made at present will show their full consequences only in the future and are affected not only by the behavior of competitors, customers, suppliers, or regulators, but also by the state of nature. Even the best evaluated decisions can lead to losses in unforeseen circumstances. In capital investment, therefore, corporate risk management becomes critical when managers make investment allocation decisions. This risk is at the core of corporate activities and companies have to ensure that they can bear the risks they are facing and identify and adopt global best practices.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

The study attempts to determine the extent to which commercial banks in Kenya use financial derivatives in hedging against risk.

3.2 Research Design

The study will employ a correlational design for this study. According to Orodho (2003) this type of design enables the researcher to assess the relationship that exists between two or more variables. It analyzes the correlation between two or more variables.

3.3 Population of the study

Mugenda and Mugenda (1999), defines population as an entire group of individuals, events or objects having common observable characteristics. The target population of the study shall be listed Commercial banks at the Nairobi Securities Exchange (NSE) between 2006 and 2010 (Appendix II). There are ten listed commercial banks in Kenya five of which are locally owned either by the government, the public and other individual investors.

3.4 Sampling

Gay (1992) states that 10% of a population is considered minimum while Kilemi (1995) States that the minimum sample size in research is 30 from randomly selected cases. With this in mind, 35% of each category of companies is considered as an appropriate sample size. Therefore since only 10 commercial banks are listed at the NSE the researcher will carry out the study on all the ten banks

3.5 Data Collection

Data will be collected from secondary sources. Data on size (Assets/ Sales) and Market value will be collected from the financial statements of the Target firms. The information sought from the foot notes of the financial statements also include financial instruments with off balance sheet risk (futures, options, Swaps, Forwards) Firms report the face, contract or motional amount of the financial instruments together with information on the credit and market risk of those instruments and the related accounting policy. Annual reports of the banks will be obtained between 2006 and 2010 which is the study period. All the banks under study are assumed to have been continually in business between 2006 and 2010 to ensure that the sampling frame is current and complete.

3.6 Data Analysis

This study adopts regression analysis. Panel data analysis is performed by using regression model which will help establish the relationship between the Use of derivatives in corporate risk hedging and the value of the firm as the dependent variables.

This study will use the following model in order to analyze the determinants of derivative use among commercial banks listed at the NSE. The independent variables include: net interest margin, return on assets, capital to total assets un-weighted for risk, loan loss allowance to loans, total assets. Other variables are non-current loans to loans and a trend variable based on quarterly real GDP. The dependent variable is the ratio of derivatives to total assets.

The below model estimates the determinants of derivative use by commercial banks based on pooled time series, cross sectional quarterly data for 10 banks for the period 2006 to 2010. A total of 10 cases will be observed. The data will be obtained from the Nairobi Securities Exchange (NSE) and published financial statements for banks submitted to the CBK from 2006 to 2010. The sample banks are diversified geographically and by size.

3.7 Models specification

3.7.1 Conceptual Model

Ratio of Derivatives to total assets $= f(X_1 + X_2 + X_3 + X_4 + X_5 + e$ ....Eq (i)

Where X_1 = Net interest margin

X_2 = Return on assets

X_3 = Capital to total assets un-weighted for risk

X_4 = Loan loss allowance to loans

X_5 = Total assets

e = Error term

3.7.2 Analytical Model

This will be derived from the conceptual model depicted in equation (i) above

Ratio of Derivatives to total assets $= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$

Where

$\beta_1 X_1$, = Net interest margin

$\beta_2 X_2$, = Return on assets

$\beta_3 X_3$, = Capital to total assets un-weighted for risk

$\beta_4 X_4$ — Loan loss allowance to loans

$\beta_5 X_5$, — Total assets

e — Random error time

β_0 — Autonomous variable

β_i — Coefficient of variables

The above variables will be measured as follows:-

Exposure to interest rate risk is measured as net interest margin, the difference of interest income and interest expense relative to assets. This index measures the sensitivity of the return on assets to changes in market yields. Wright and Houpt (1995) used net interest margin to trace the threat of interest rate risk to commercial banks over a nineteen year period. They found that from 1976 to 1995, net interest margins of the banking industry have shown a fairly stable upward trend while savings and loan institutions exhibited highly volatile margins. (Wright 115) If derivatives are, in fact, used to hedge

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interest rate risk then banks that use derivatives will be less exposed to interest rate risk and have a lower net interest margin.

However, in the first model, which lags net interest margin, the coefficient on net interest margin is expected to be positive. This would indicate that banks that faced a high net interest margin in the previous quarter would increase their derivative holdings in the current quarter to hedge this exposure to risk.

The variables used to measure credit risk are the ratios of non-current loans relative to loans and loan loss reserves to loans. If a bank has more credit risk, it would have less access to additional capital and may therefore be more likely to use derivatives. Thus the coefficient on non-current loans to loans is predicted to be positive and the coefficient on loan loss reserves to total loans is also predicted to be positive. On the other hand, the use of derivatives may be perceived by regulators as risky, and banks with weak asset quality might be subject to more scrutiny or restrictions by regulators when they attempt to use derivatives, thus discouraging the use of derivatives by such banks. (Simmons 1995) This might indicate a negative sign on both coefficients. Therefore the sign on this variable is ambiguous.

The return on assets ratio is used to measure the profitability of a bank. A bank with higher profits would be more likely to have used derivatives because derivatives can be used to hedge loss in income associated with interest rate risk exposure allowing banks to take on more profitable investments. The capital to assets un-weighted for risk ratio

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is also included in the model. It can be argued that a bank that is not well capitalized may be more likely to use derivatives because derivatives can transform the duration of the balance sheet without incurring additional capital charges. Thus the sign on this variable would be negative. However, since I used a ratio un-weighted for risk, it will increase with riskiness. Therefore the sign on this variable is expected to be positive. Bank size is measured by the amount of total assets. The coefficient on this variable is expected to be positive because a larger bank is more likely to use derivatives than a smaller bank, as discussed in the theoretical section. A measure of quarterly real GDP was included in the model as a trend variable to control for cyclical economic changes that might affect all banks' incomes.

CHAPTER FOUR
DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, the data collected during the research was analyzed and reported. This study was executed to achieve the stated objectives. The general objective of the study was to establish the extent of the use of Financial Derivatives among commercial banks in Kenya Descriptive results were first presented, followed by the analytical model results. A discussion of results was later presented in a separate section.

4.2 General Information

The general information sought in the study included the banks listed and the ones not listed at the NSE, market share of the listed banks, capital base, whether the banks' balance sheet contains financial derivatives and which financial derivative is in use more, level of income, net interest margin, ROA, capital to total assets unweighted for risk, percentage of derivatives to total assets, loan loss allowance to total loans, financial derivatives and risk and other variables that explains the extent of the use of financial derivatives among commercial banks in Kenya.

Table 4.2.1 Listed Versus Unlisted Banks

Bank Category	Number	Percentage
Listed	10	23
Not listed	34	77
TOTAL	44	100

Source: Author (2012)

Figure 4.1 Listed versus the unlisted banks
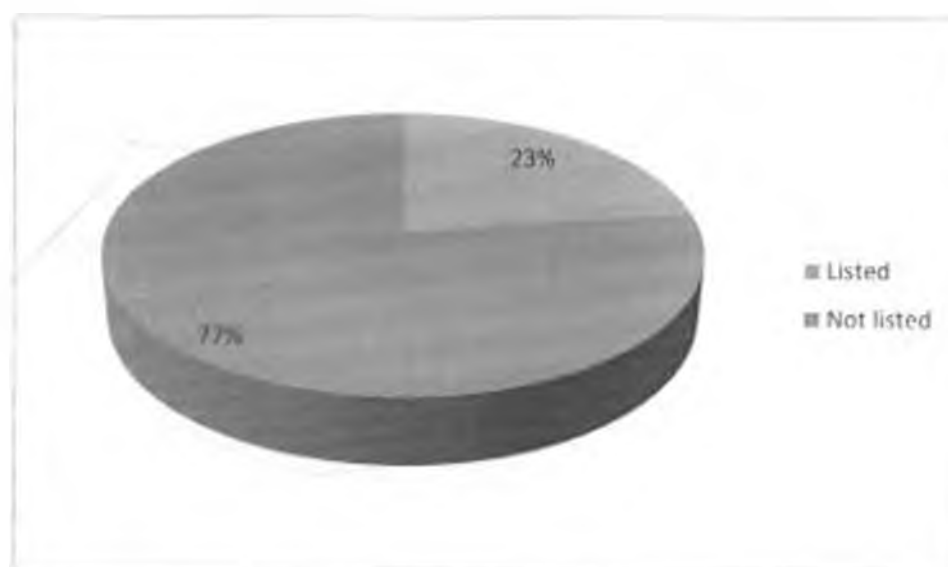
Source: Author (2012)

As seen in both table 4.2.1 and figure 4.1 above, there are 10 listed banks and 34 unlisted banks forming 23% and 77% respectively. It was easy to carry out a census survey on all the banks since the population was small. Data collection from the financial reports was done and regressed to get the results as discussed below

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4.2.1 Level of Income

Table 4.2 Level of Gross income/ Profitability

Level of income	Number	Percentage
Below 10 billion	3	30
Over 10 billion	7	70
Total	10	100

Source: Author (2012)

Figure 4.2 Level of Gross income/ Profitability
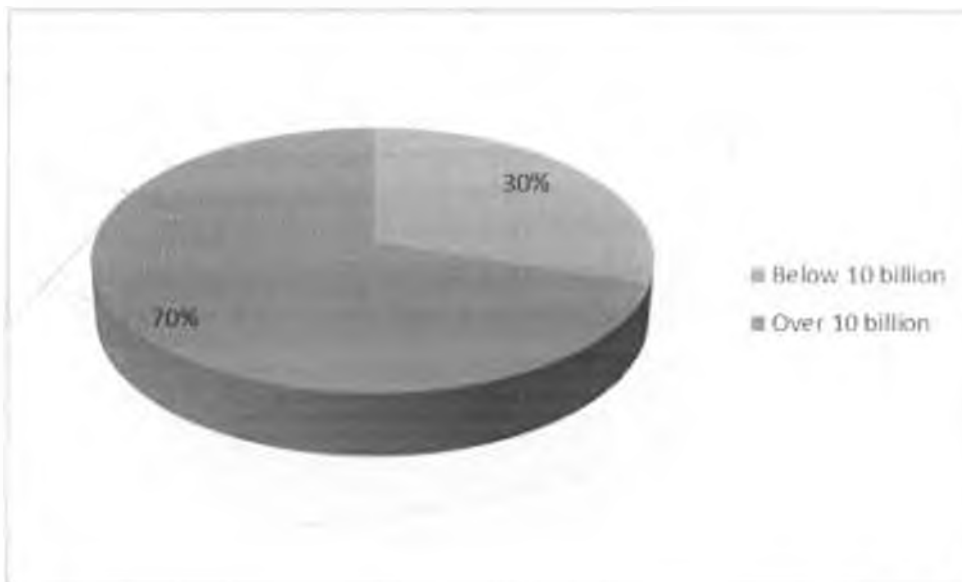
Source: Author (2012)

Both table 4.2.2 and figure 4.2 above shows that 70% the listed banks had a gross operating income of over Kshs 10 billion while 30% below Kshs 10 billion This indicates that the majority of the listed banks income is above Kenya shillings 10 billion and most of them are the market leaders.

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4.2.2 Market share

Table 4.3 Market share

Market share (%)	Number
0-4	4
4-7	2
8-11	3
12-15	1
Total	10

Source: Author (2012)

Figure 4.3 Market share
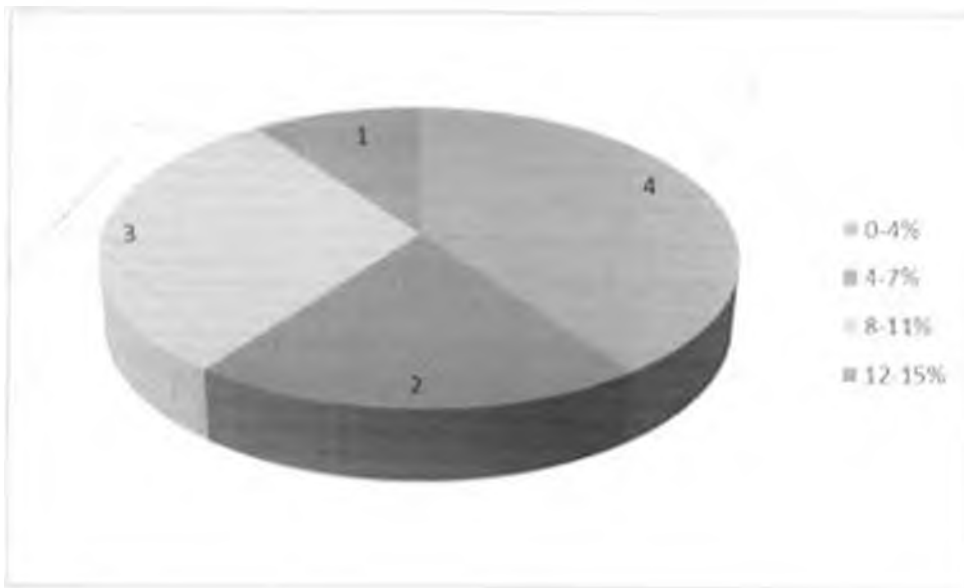
Source: Author (2012)

From the above table 4.2.3 and figure 4.3, majority of the listed banks i.e. 4 have a market share of 0-4%, then 3 of 8-11%, 2 of 4-7%, and lastly 1 of between 12-15%.

4.2.3 Capital base

Table 4.4 Capital base

Capital base	Number	Percentage (%)
Below 1 billion	0	25
1bln – 10 billion	2	58
Above 10 billion	8	17
Total	10	100

Source: Author (2012)

Figure 4.4 Capital base
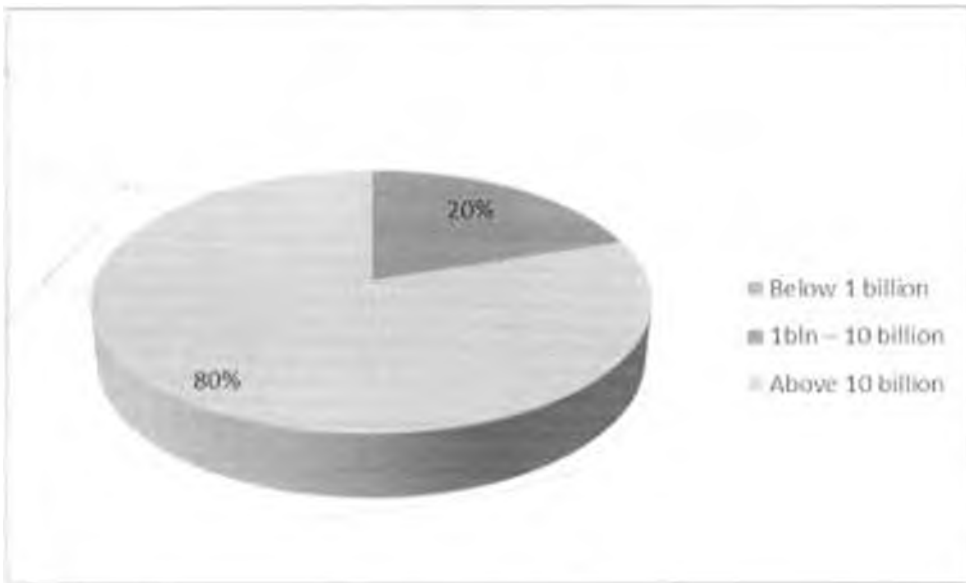
Source: Author (2012)

From the above table 4.2 4 and figure 4.4, 80% of the banks have total capital of above Kenya shillings10 billion while 20% between Kenya shillings 1 billion to 10 billion. None of the listed banks have a total capital base of below Kenya shillings 1 billion. This implies that majority of the listed banks' capital base is above 10 billion shillings.

4.2.4 Type of financial derivative

Table 4.5 Type of financial derivative

Type of financial derivative	Number	Percentage (%)
Forward deals	9	90
Futures	0	0
Options	0	0
Swaps	0	0
Total	10	90

Source Author (2012)

Figure 4.5 Type of Financial Derivative
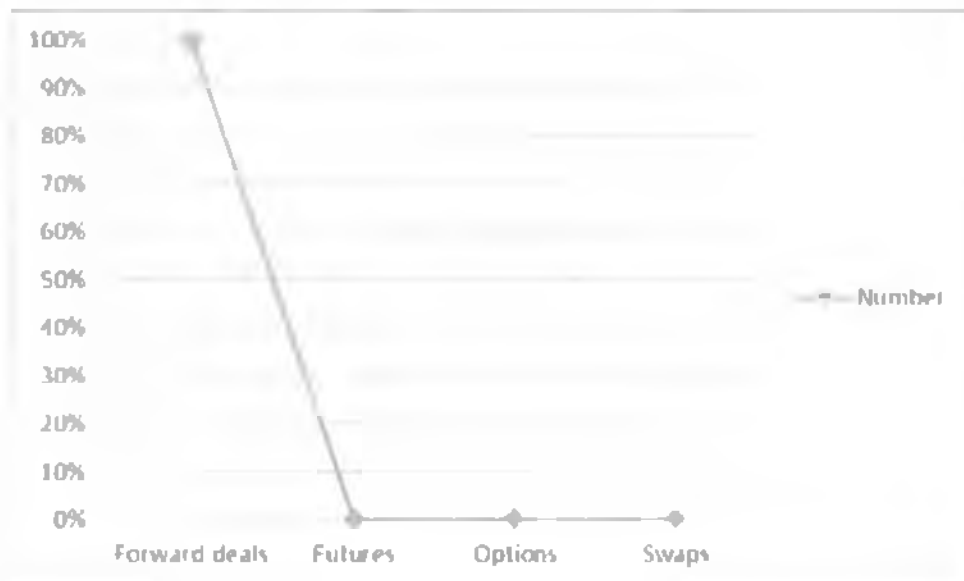
Source: Author (2012)

The above finding in table 4.2.5 and figure 4.5 shows that most banks listed at the NSE's balance sheets contains derivatives. Majority of them 90% engage in forward deals trading. None of the listed banks trade in futures, options, swaps and other derivatives which stand at 0%. Forward deals is the preferred derivative to other financial derivatives. This also serves to show that the banks' balance sheets contain derivatives

4.2.5 Net Interest Margin

Table 4.6 Net Interest Margin

Number	Net Interest Margin	Percentage (%)
2	0-5	20
8	5-10	80
0	Above 10	0
10		100

Source Author (2012)

Figure 4.6 Net Interest Margin

Source: Author (2012)

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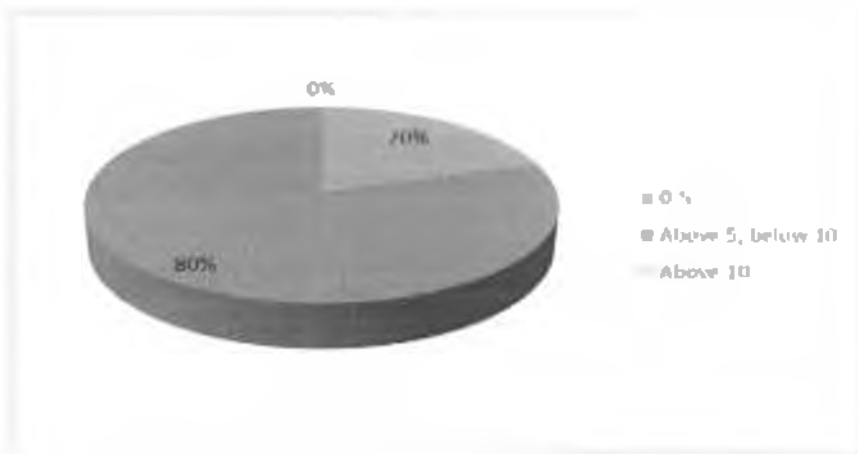
From table 4.2.6 and figure 4.6 above, 80% of the listed banks net interest margin lies between 5-10% while 20% lies between 0-5%. None of them has a net interest margin of above 10%.

4.2.6 Return on Assets (ROA)

Table 4.7 ROA

Percentage (%)	Number
0-2	0
2-4	2
4-6	6
6-8	2
TOTAL	10

Source author (2012)

Figure 4.7 ROA
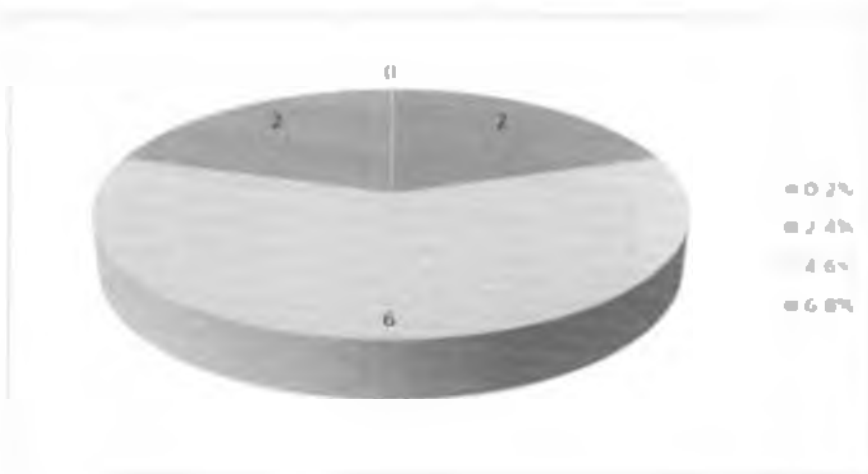
Source: Author (2012)

From table 4.2.7 and figure 4.7 above, most of the listed banks ROA ratio i.e. 6 banks lies between 4-6%, then 2-4% and 6-8% at 2 banks each.

4.2.7 Percentage Loan Loss Allowance to Total Capital

Table 4.8 Loan Loss Allowance

Loan loss allowance (%)	Number
0-5	2
5-10	3
10-15	1
15-20	0
20-25	2
Above 25	2
Total	10

Source: Author (2012)

Figure 4.8 Loan Loss Allowance

Source: Author (2012)

From table 4.2.8 and figure 4.8 above, majority of the listed banks loan loss allowance lies between 5-10% at 3 banks, then 0-5%, 20-25% and above 25% at 2 banks each. Only one of the listed banks loan loss allowance is between 10-15%. This indicated that majority of the banks' loan loss allowance to total capital lies between 5-10%.

4.2.8 Derivatives to Total Assets

Table 4.9 derivatives to Total Assets

Derivatives Kshs (000)	Total assets Kshs (000)	Percentage (%)
25,830	1,204,981	21

Source: Author (2012)

From the above table 4.9, most banks balance sheets contains derivatives but to a less extent i.e. 21%. The derivatives form a small portion of the banks total assets.

4.2.9 Capital to Total Assets Unweighted For Risk

Table 4.10 Capital to Total Assets Unweighted For Risk

Capital to total assets unweighted for risk (%)	Number
0-25	1
25-50	1
50-75	3
75-100	5
Total	10

Source: Author (2012)

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Figure 4.9 Capital to total assets unweighted for risk
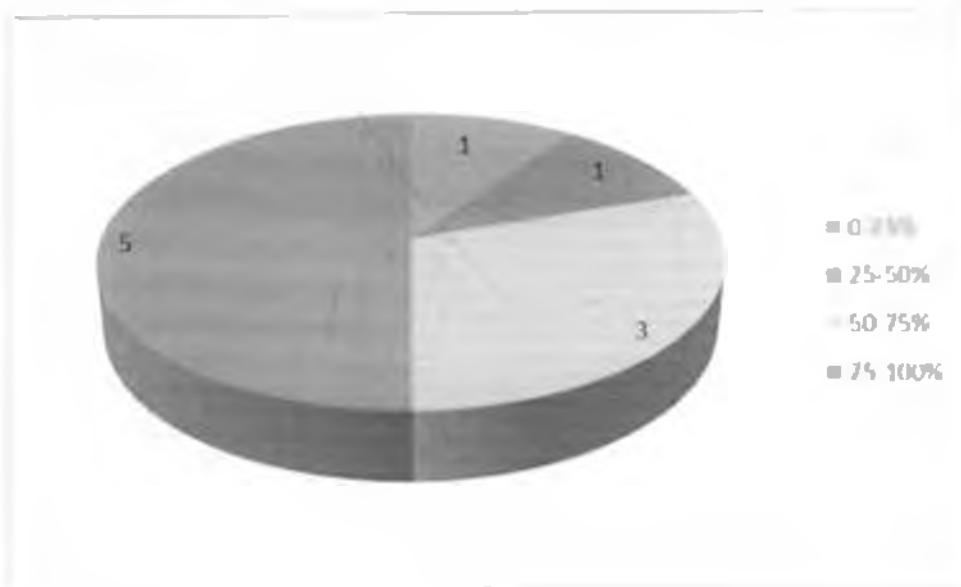
From the above table 4.2.10 and figure 4.10, the Capital to total assets unweighted for risk for the majority of the listed banks lies between 75-100% at 5 banks, then 50-75% at 3 banks, followed by 25-50% and 0-25% at one bank each. This indicated that majority of the banks' capital to total assets unweighted for risk lies between 75-100%

From the above 4.4 tables and figure 4.4, 58% of the banks have total capital of between Kenya shillings 1-10 billion, 25% below Kenya shillings 1 billion, while 17% above 10 billion shillings. This indicated that majority of the banks' capital base lies between 1-10 billion shillings.

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Table 4.11 Financial Derivatives and risks

CREDIT RISK

Risk importance		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	IMPORTANT	4	20.0	23.5	23.5
	MOST IMPORTANT	13	65.0	76.5	100.0
	Total	17	85.0	100.0	
Missing	System	3	15.0		
	Total	20	100.0		

LIQUIDITY RISK

Risk importance		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	IMPORTANT	7	35.0	41.2	41.2
	MOST IMPORTANT	10	50.0	58.8	100.0
	Total	17	85.0	100.0	
Missing	System	3	15.0		
	Total	20	100.0		

MARKET RISK

Risk importance		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NEUTRAL	2	10.0	11.8	11.8
	IMPORTANT	11	55.0	64.7	76.5
	MOST IMPORTANT	4	20.0	23.5	100.0
	Total	17	85.0	100.0	
Missing	System	3	15.0		
	Total	20	100.0		

OPERATIONAL RISK

Risk importance		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NEUTRAL	2	10.0	13.3	13.3
	IMPORTANT	7	35.0	46.7	60.0
	MOST IMPORTANT	6	30.0	40.0	100.0
	Total	15	75.0	100.0	
Missing	System	5	25.0		
	Total	20	100.0		

SOVEREIGN RISK

Risk importance		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LEAST IMPORTANT	2	10.0	11.8	11.8
	LESS IMPORTANT	6	30.0	35.3	47.1
	NEUTRAL	7	35.0	41.2	88.2
	MOST IMPORTANT	2	10.0	11.8	100.0
	Total	17	85.0	100.0	
Missing	System	3	15.0		
	Total	20	100.0		

INTEREST RATE RISK

Risk importance		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NEUTRAL	4	20.0	23.5	23.5
	MOST IMPORTANT	13	65.0	76.5	100.0
	Total	17	85.0	100.0	
Missing	System	3	15.0		
	Total	20	100.0		

TECHNOLOGY RISK

Risk importance		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	LEAST IMPORTANT	4	20.0	23.5	23.5
	IMPORTANT	4	20.0	23.5	47.1
	MOST IMPORTANT	9	45.0	52.9	100.0
	Total	17	85.0	100.0	
Missing	System	3	15.0		
	Total	20	100.0		

Source: Author computation 2012

From the Table 4.9 above, it is clear that the most important risk affecting the banks is credit risk at 76.5% followed by Liquidity risk at 58.8%. Sovereign risk has less or no effect at all.

4.3 Analytical Model

4.3.1 Correlation results

Correlation results in table 4.3 revealed that there was a positive and significant correlation between ROA, ROE, Income, Net interest margin, loan loss allowance, and market price to book value averaged at (r 0.422 and p value 0.000). Results also indicate that the correlation between ROE and growth in assets was insignificant. The correlation between ROE, ROA, Net interest margin and leverage was positive and significant (r=0.448 and p value =0.000). The correlation between the variables under study and dummy was positive and significant (r 0.260 and p value 0.031

Table 4.12: Correlation results

		ROE	Market price to book value	Growth In current assets	Leverage	Dummy
Variables	Pearson Correlation	1	.422**	.011	.448**	.260*
	Sig. (2-tailed)		.000	.927	.000	.030
	N	70	70	70	70	70
Market price to book value	Pearson Correlation	.422**	1	.275*	.480**	-.313**
	Sig. (2-tailed)	.000		.021	.000	.008
	N	70	70	70	70	70
Growth In assets	Pearson Correlation	.011	.275*	1	.215	-.224
	Sig. (2-tailed)	.927	.021		.074	.062
	N	70	70	70	70	70
Leverage	Pearson Correlation	.448**	.480**	.215	1	.000
	Sig. (2-tailed)	.000	.000	.074		.996
	N	70	70	70	70	70
Dummy	Pearson Correlation	.260*	-.313**	-.224	.000	1
	Sig. (2-tailed)	.030	.008	.062	.996	
	N	70	70	70	70	70

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed).

4.3.2 The Model Results

Regression analysis was conducted to empirically determine whether variables under study were a significant determinant of the financial derivatives. Regression results in table 4.4 indicate the goodness of fit for the regression between independent variables and derivatives is satisfactory. An R squared of 0.52 indicates that 52% of the variances in derivatives are explained by the variances in the independent variables.

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Table 4.13: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.631[a]	.52	.361	.07280

a   Predictors: (Constant),   Dummy,   Leverage,   Growth In current assets,
Market price to book value

Anova statistics confirm these results since the reported probability was 0.000. The

reported probability was less than the convectional probability of 0.05 (5%) significance

level. Anova results indicated that the overall model is significant. This implied that the

independent variables did a good job at predicting derivative use among commercial

banks in Kenya.

Table 4.14: ANOVA Results

Model		Sum of Squares	Df	Mean Square	F	Sig
1	Regression	.228	4	.057	10.759	.000[a]
	Residual	.344	65	.005		
	Total	.573	69			

a.   Predictors: (Constant),   Dummy,   Leverage,   Growth In current assets,

Market price to book value

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.228	4	.057	10.759	.000[a]
	Residual	.344	65	.005		
	Total	.573	69			

a. Predictors: (Constant), Dummy, Leverage, Growth In current assets, Market price to book value

b. Dependent Variable: ROE

The relationship between market price to book value, leverage and dummy is positive and significant. (b1 0.033, p value 0.00, b3 0.009, p value 0.028, b4 0.070, p value 0.01) However, the relationship between growth in assets is negative and insignificant (b2 -0.019, p value, 0.438).

Table 4.15: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.048	.022		2.233	.029
	Market_price_to_book value	.033	.009	.442	3.736	.000
	Growth In assets	-.019	.025	-.080	-.780	.438
	Leverage	.009	.004	.253	2.250	.028
	Dummy	.070	.019	.381	3.645	.001

a Dependent Variable: DERIVATIVES

DERIVATIVES 0.048+ 0.033Market Price to Book value -0.019Growth In Assets + 0.009 Leverage + 0.070 Dummy

4.4 Summary and Interpretation of Findings

The information collected was from the financial statements and other journals and was mainly based on suggestions, opinions from market leaders and comments from CEOs of all the banks listed at the NSE about the banks performance. These were mainly as footnotes in the financial statements. From the analysis of the research, 100% of the banks listed at the NSE were analyzed and relevant information on the subject of the study taken and tabulated. The data mainly centered on the following variables namely profitability, return on assets, net interest margin, loan loss allowance and capital to risk unweighted assets. Other variables which affect the subject of study to lesser extent were also analyzed. In conclusion, most banks income comes from other investments like derivatives other than loans. These investments contributes largely to the banks income hence their proper analysis should be undertaken.

The study findings indicated that the average Return on Assets (ROA), ROE, income, loan loss allowance i.e. variables under study for the 10 banks in the year 2006 was 4%. The average variables for the 10 banks in the year 2007 was 5.5%. The same was for the 10 firms in the year 2008 was 6%. The average Return on Assets (ROA), ROE and other variables for the 10 banks in the year 2009 was 6.2%. The average Return on Assets (ROA) and ROI among other variables for the 10 banks in the year 2010 was 7.5%. The overall Return on Assets (ROA) over the 5 year period was 15.55%

The findings further revealed that the average market to book value for the 10 banks in the year 2006 was 4. The average market to book value for the 10 listed banks in the

year 2007 was 3.52. The average market to book value for the 10 banks in the year 2008 was 2.63. The average market to book value for the 10 banks in the year 2009 was 3.6523. The average market to book value for the 10 banks in the year 2010 was 5.976. The overall average market to book value over the 5 year period was 2.657.

From the study it was also revealed that the average growth in assets for the 10 banks in the year 2006 was 28.42%. The average growth in assets for the 10 banks in the year 2007 was 31.13%. The average growth in assets for the 10 banks in the year 2008 was 10.58%. The average growth in assets for the 10 banks in the year 2009 was 26.65% The average growth in assets for the 10 banks in the year 2010 was 36%. The overall average growth in assets over the 5 year period was 16.54%.

In addition the findings revealed that the average investments in derivatives for the 10 banks in the year 2006 was Kenya shillings 600M. The average total derivatives for the 10 banks in the year 2007 and 2008 was Kenya shillings 500M and 1 billion respectively. The average investments for the 10 banks in the year 2009 was 4.51 The average investments for the 10 banks in the year 2010 was 4.21. The average growth in derivatives assets over the 5 year period was 4.43.

From the findings, the trend for the average ROA, ROE and key profitability ratios for the 10 banks in the year 2007 indicated that there was a drop in the average ROA, ROE and key profitability ratios in the year 2008. However, an increase in the average ratios was observed in the year 2009 and year 2010

From the findings it was also revealed that a decrease in market price to book ratio was observed in year 2008 and 2009. However, a slight increase was observed in the year 2010. The same is to increase as we move forward. It was also revealed from the findings that a slight increase in average growth in assets ratio was observed in year 2008 However a decrease was observed in the year 2009 followed by an increase in the year 2010.

Study findings further indicated that a sharp increase in the 10 listed banks gross income from year 2007 to year 2010 This is attributed to the growth in investments derivatives included Most of the banks gross income was over Kenya shillings 10 billion averaging to about Kenya shillings 10.5 billion for all the listed banks. The growth in gross income if projected to increase from year 2010 onwards.

The study further revealed that there was a positive and significant correlation between ROA, ROE, profitability ratios and other variables under study and market price to book value. This also implies that there is a positive relationship between financial derivatives and growth in the total banks assets. Results also indicate that the correlation between ROE and growth in assets was insignificant. The results further indicate that the correlation between ROA and growth in assets was significant. The correlation between ROE and leverage was positive and significant (r 0.556 and p value 0.000).

In addition. Study findings further indicated that the total capital to total assets unweighted for risk was quite high between the year 2006-2010 i.e. 75-100% and the same

averaged at 25-50%. This is basically for the ten banks studied. There was an increasing trend in the capital to total assets unweighted for risk in the 10 listed banks from year 2006 to 2010 year 2010 being the highest. This is attributed to the growth in total assets. Derivatives are included in the total assets figure.

Regression analysis was conducted to empirically determine whether independent variables were a significant determinant of effects of derivatives on the general growth in assets and banks performance. Regression results in table 4.6 indicate the goodness of fit for the regression between independent variables and dependent variable is satisfactory. An R squared of 0.398 indicates that 39.8% of the variances in ROE are explained by the variances in the independent variables. ANOVA results indicated that the overall model is significant. Thus implied that the independent variables did a good job at predicting ROE. The relationship between market price to book value, leverage, total assets, capital base, loan loss allowance and dummy is positive and significant. ($b1$ 0.033, p value 0.00, $b3$ 0.009, p value 0.028, $b4$ 0.070, p value 0.01). However, the relationship between growth in assets is negative and insignificant ($b2$ -0.019, p value, 0.438)

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Chapter one discussed the problem statement and the objectives of the study. The study aimed to investigate the extent of the use of financial derivatives among commercial banks listed at the NSE.

Chapter two discussed the literature review and the various opinions of different people, the theories backing the study, the empirical studies supporting the research project and the actual empirical evidences that had been revealed by earlier researchers in this area. Chapter three presented the research methodology which consists of the kind of research design the study has adopted, the population and the sampling size, in this case, all the banks listed at the NSE were studied, also the kind of data collected is covered in this area and the data analysis tools used in the project is also covered in this chapter. Chapter four presented the findings.

5.2 Summary

The general objective of the study was to establish the extent of the use financial derivative among commercial banks in Kenya. This study focused on the use of simple financial indices as performance indicators. The following research questions guided the study: What factors influence the choice to use derivatives in hedging risks amongst Commercial banks in Kenya? What are the reasons why commercial banks if any use financial derivatives and does its use influence the performance of the

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commercial banks? A correlational design was used for the study. The population comprised of all commercial banks listed at the NSE at year 2010 which numbers to 10 banks. Values corresponding to all the explanatory variables i.e. net profit (profitability), return on assets, Return on equity, Capital to total assets unweighted for risk, net interest margin among other variables were taken. The other variables like derivatives to total capital were considered albeit to a lesser extent. The study used secondary data which was collected from the banks financial statements sent and compiled at the CBK. Data was analyzed and summarized in frequencies and percentages. The findings have been presented in tables and charts for easier interpretation.

All the listed banks financial statements analysed in this study showed that most banks (90%) engage in derivative trading albeit to a lesser extent and forward deals ranks high among the financial derivatives discussed in this study. The financial derivatives forms part of the items in the balance sheets which impact significantly on the banks income. A big percentage of the banks listed at the NSE undertake more derivative trading maybe due to their huge capital base. Most of them are market leaders. 90% of the banks, nine out of ten had used at least one derivative to hedge against risks.

5.2 Conclusions

The use of financial derivatives among commercial banks in Kenya is not rampant as evidenced by the figures in chapter four above. There are so many explanations to this phenomenon like the risks involved, capital constraint, structures to be put in place for ease of trading, lack of clear policies among other factors. This was clearly

explained by a number of variables namely profitability, return on assets, type of derivatives, net interest margin, unweighted risk assets among others. The variable that best explained derivative trading among banks is the total derivative versus total assets, total derivatives versus total capital and the type of derivative in use by the banks. Other variables like return on assets were considered to a lesser extent. Each variable, however, have a strategic significance to the Commercial Banks performance and would be useful in explaining the extent of use of financial derivatives among commercial banks listed at the NSE.

A commercial bank would decide whether to increase or reduce level of derivatives, especially the forward trading which ranks highest among other derivatives in use by the banks. In addition, another way of adjusting for risk is to modify the return standards to include a risk premium where warranted. In a sense, the reasoning behind this is quite simple the greater the risk, the higher the return desired from the investment and in our case derivatives. This approach is intuitively attractive to banks decision makers, because the process parallels the way we think about personal investments

Thus, investments in businesses subject to wide profit swings and competitive pressures would command a premium above the return standard, while with fairly predictable businesses a less-than-average return may be acceptable. The concept rests on the assumption that a diversified company can derive a range of standards that, in combination, represent an appropriate return to the shareholders and also fairly reflect the relative risk of the individual lines. Banks must and should diversify their portfolios and in essence to try and invest more in other   assets like the derivatives.

5.3 Policy Recommendations

The study presented recommendations for practice and for policy. The study recommended that financial derivatives trading should be continued. The governance structures need to be put in place so as to enhance returns at the stock exchange and in turn maximize returns to the commercial banks.

The study also suggest that despite concerns that financial derivative trading and listed banks entail new market risks that need regulatory intervention, the profitability and generally performance of the banks has not changed so much. However, market risk does vary considerable across the banks. Therefore a better way of assessing the risks associated with derivative trading and how these risks affect the banking sector in general must be undertaken.

Our evidence suggests that derivative trading does improve the performance of the banks quoted at the Nairobi securities exchange. We recommend that this study be carried out further and the whole banking industry to be studied. This should also extend to other firms listed at the NSE. From a broader perspective, we note that there was a great improvement in most items on the balance sheets during the study period. Policy makers should undertake to understand why derivative trading is not as robust in Kenya s other developed countries and what should be done to improve financial derivative trading at the NSE.

5.4 Limitations of the study

One of the limitations of the study is that derivative trading is new in the banking industry in Kenya and is an ongoing process and most of other derivatives had not been introduced at the time of the study. So there could be a lot of information about derivatives that was not captured in the study.

Another limitation relates to the operationalization of derivatives. The assumption is that all banks engage in derivative trading which in the actual sense is not the case. To guarantee the consistency and availability of the data, the analysis is limited to only the banks that are listed in the Nairobi securities exchange and have been trading continuously. Data are derived from the bank's annual reports sent to the CBK monthly. Another limitation was in regard to the type of research design. This research was quantitative and failed to capture qualitative issues. Perhaps an interview with the bank officers on how they perceive the derivatives and its effects on the banks performance. Some hidden information would have been brought to the fore.

5.5 Suggestions for Further Study

The study suggests that another research be done once all the aspects of derivative trading by the banks so that better results can be obtained. This study covers a shorter period which may be giving different results like if for instance a broader period of ten or more years was adopted.

The study also suggests that broader areas of study and a bigger population be covered so that bigger and better results can be obtained on other variables that can explain whether financial derivative use has a positive effect on the financial performance. This study was only limited to 10 banks listed NSE.

It addition , the study suggests that the qualitative aspects must also be introduced so that first hand information can be obtained from the bankers and even management of the various banks that are listed and not listed at the Nairobi Stock Exchange Questionnaires must be administered and one on one interview with bank officers be held so that the qualitative aspects can also be measured. This study centered more on quantitative aspects and failed to capture the qualitative aspects.

Finally, financial derivative trading in Kenyan banks should also be compared to other banks in the developed economies. Also, derivative trading at the NSE should also be compared to derivative trading in other exchanges in Africa and the rest of the world

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APPENDICES

APPENDIX 1: Commercial Banks listed at the NSE

1. Barclays Bank of Kenya Ltd

2. CFC Stanbic of Kenya Holdings Ltd

3   *CFC Stanbic of Kenya Holdings Ltd Rights*

4. Diamond Trust Bank Kenya Ltd

5   Equity Bank Ltd

6   Housing Finance Co.Kenya Ltd

7. Kenya Commercial Bank Ltd

8   National Bank of Kenya Ltd

9. NIC Bank Ltd

10. Standard Chartered Bank Kenya Ltd

11 The Co-operative Bank of Kenya Ltd

Source (NSE, 2012)

APPENDIX II: Commercial Banks listed at the NSE, their Market Share and total capital

	Large Peer Group > 5%	Market size Index	Total Capital In billion
1	Kenya Commercial Bank Ltd	14.52%	45.163
2	Equity Bank Ltd	9.98%	35.047
3	Barclays Bank of Kenya Ltd	8.90%	29.223
4	Co-operative Bank of Kenya Ltd	8.41%	20.972
5	Standard Chartered Bank (K) Ltd	7.74%	20.571
6	CFC Stanbic Bank Ltd	5.10%	10.150
7	Diamond Trust Bank (K) Ltd	3.77%	10.366
8	NIC Bank Ltd	3.70%	9.900
9	National Bank of Kenya Ltd	3.59%	10.456
10	Housing Fin. Co. of Kenya Ltd	1.48%	4.782

Market share index is the composite of net assets, deposits, capital, number of loan accounts and number of deposit accounts.

Source: (CBK 2011)