FACTORS AFFECTING THE USE OF FINANCIAL DERIVATIVES BY LISTED COMMERCIAL BANKS IN KENYA

BY

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UNITED STATES INTERNATIONAL UNIVERSITY-AFRICA

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STUDENT DECLARATION
I, the undersigned declare that this is my original work and that it has not been submitted to any other college, Institution or University other than the United States International University for academic purposes.

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This project has been presented for examination with my approval as the appointed supervisor.

Signed: ___________________________    Date: _____________________________

Dr. Elizabeth Kalunda

Signed: ___________________________    Date: _____________________________

Dean, Chandaria School of Business
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ABSTRACT

The use of financial derivatives by banks has been increasing drastically across the globe in the past years. The increase in the use of financial derivatives has been attributed to financial regulatory changes regarding the amount of capital the commercial banks are expected to have. Many researches have been done on financial derivatives, however, most of them have had mixed conclusions. The study at hand, therefore, joins the debate as it examined the factors affecting the use of financial derivatives by listed commercial banks in Kenya. In order to achieve this, three research objectives were drawn; to examine effect of bank size on use of financial derivatives by listed commercial banks in Kenya; to assess the effect of ownership structure on use of financial derivatives by listed Kenya commercial banks in Kenya; and to evaluate the effect of profitability on use of financial derivatives by listed commercial banks in Kenya.

The study utilized descriptive research method. The target population of this study was all the 11 listed commercial banks at the Nairobi Security Exchange. The study used secondary data. The secondary data was retrieved from audited financial statements reports of the sampled 11 commercial banks listed at NSE. The published financial statements reports were accessed from the selected companies’ websites. The study used descriptive statistics, correlation and multiple regression analyses methods. Descriptive analysis was used to help understand the data. Correlation was used to find out the relationship between two variables. Multiple regression was used to examine the relationship between dependent and independent variables that affect financial derivatives.

The findings indicated that firm size, ownership structure and profitability positively relates with financial derivatives. The correlation results indicated that firm size as measured by natural log of total assets was negatively correlated to ROA but positively and statistically insignificant. The study indicated that firm size as measured by natural log of assets was positively correlated to ownership structure with and also having a positive statistical significance. The study found that profitability as measured by ROA is negatively correlated to ownership structure as measured by foreign and local ownership and statistically insignificant to each other at 0.528 level of confidence. The results show that profitability is also positively correlated with financial derivatives at and also positively and statistically significant. The study shows that local and foreign ownerships are positively correlated to financial derivatives and also statistically significant to each. From the findings, it can be said that an increase in firm size and return on asset leads to an increase in financial derivatives of
the 11 commercial banks listed on the Nairobi Securities Exchange. It can also be said that both local and foreign owned commercial banks used financial derivatives.

The study concludes on the regression results where the study found that the variables had strong significant relationship with use of financial derivatives. The correlation results concluded that firm size as measured by natural log of assets had a strong positive correlation with financial derivatives of the studied commercial banks. The regression results also concluded that firm size as measured by natural log of total assets had strong positive relationship with financial derivatives. The study concludes the ownership structure as measured by local and foreign ownerships had strong correlation with financial and this was also supported by presence of strong positive significant relationship between the two variables in the regression results. The study concludes that there is strong positive correlation between profitability and use of financial derivatives among the listed commercial banks in Kenya.

The study recommends that in order for commercial banks to increase their use of financial derivatives there is need for commercial banks to increase their firm size as measured by natural log of total assets. The study recommends that companies should come up with policies that control the maximum percentage shares that an individual or an entity can hold. The study recommends that Nairobi Securities Exchange and commercial banks in Kenya should work jointly to fast track the use of swaps, futures, options and forwards in order to enhance the financial derivative usage.
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DEDICATION

This project is dedicated to my family for their moral support and encouragement.
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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA  Analysis of Variance
CMA    Capital Markets Authority
CBOT   Chicago Board of Trade
ICT    Information and Communication Technologies
IMF    International Monetary Fund
JSE    Johannesburg Stock Exchange
KACE   Kenya Agricultural Commodity Exchange
LIBOR  London Inter-bank Offered Rate
NSE    Nairobi Securities Exchange
NYMEX  New York Mercantile Exchange
OTC    Over-The-Counter.
ROA    Return on Assets
SAFEX  South African Futures Exchange
SPSS   Statistical Packages for Social Sciences
UK     United Kingdom
USA    United States of America
CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Financial derivatives can be described as instruments of finance whose values or security are pegged on the price of other underlying assets such as commodities, equities, foreign exchange or currencies, bonds and interest rates and bonds (Anderson & McKay, 2008). Financial derivatives have presently been used by commercial banks because they act as a cost-effective approach that can be used to manage risks in the financial market that comes as a result of traditional lending and borrowing activities. Therefore, financial derivatives are generally used to achieve specific allocation of assets in so far as bank portfolios are concerned. As such banks that use financial derivatives are able to cushion themselves from uncertainties in the market as far as exchange rates, commodity, price of equity, credit worthiness, and interest rates are concerned (Ansi & Ouda, 2009).

According to Mihaljek and Packer (2010), there are four types of financial derivatives. These are futures, forwards, options and swaps. Options provide stakeholders with the right to sell or buy an asset at a given price. Swaps take place when two parties agree to exchange cash flows within a given time. Forwards are used to hedge against exports and imports vis-à-vis agreements between two parties and futures agree on a price today for delivery of the product at some point in time in the future. While futures are exchange traded and mostly used during price volatility.

Therefore, as stated by Deshmukh, Greenbaum, and Kanatas (2013), these financial derivatives permit commercial banks to make adjustments during the period of balance sheets so as to manage financial market risk by not having to involve additional financial requirements. As a matter of fact, the use of financial derivatives by banks has been increasing drastically across the globe in the past years. The increase in the use of financial derivatives has been attributed to financial regulatory changes regarding the amount of capital the commercial banks are expected to have. Increase in the use of financial derivatives has also been as a result of the ever-unpredictable market risk that many banks are today exposed to.

In today’s unpredictable business environment, commercial banks tend to embrace financial derivatives for the simple reason that their traditional known lending and
borrowing processes has more often than not exposed them to financial market risk as such many banks have resorted to use of financial derivatives to help in minimizing risks and consequently enhance performance (Reichert & Shyu, 2010). The fact that banks are financial intermediaries that render financial services to many customers, these institutions does encounter interest rate risk that needs intervention mechanisms such as financial derivatives to cushion them business risks.

The primary source of interest rate risk stems from timing differences in the re-pricing of bank assets, short and long-term liabilities (Pathak, 2011). Financial derivatives adopted by the commercial, therefore, accord them with an efficient and effective way to manage interest rate risk without incurring additional capital charges that may render the bank financially distressed. In order to achieve this, financial derivatives could be used to hedge banks’ asset and liability positions by permitting the commercial banks to partake in the derivatives market which is equivalent to a current or future financial position. In addition, Kothari and Hentchel (2001) asserts that financial derivatives can also acts as financial instruments used by various stakeholders in order to speculate, invest and also hedge in financial markets.

As articulated by Anderson and McKay (2008), the fact that commercial banks today applies financial derivatives to hedge banks’ asset and liability positions in the financial markets, there are quite a number of factors that greatly affects the use of financial derivatives. Factors such as firms' size, default risk, debt service costs, liquidity, leverage, profitability, ownership structures and growth options have been found to affect the use of financial derivatives across the globe. On the other hand, Dabla-Norris (2012) identified policy environment, regulatory framework, the level of investor awareness, inadequate commodities on large scale, market to book ratio, frictional costs in the market structure, insufficient risk management; inadequate liquidity and segmented regulation as some of the factors that affects the use of financial derivatives.

Conversely, in spite of the fact that there are many factors that affects the use of financial derivatives as indicated above, the study at hand relies on factors such as firm size, profitability and ownership structures. Firm size has been used in this study due to the simple reason that in order for a bank to use financial derivatives, the total assets should be large enough to cushion it from any financial risks. As such large and well-diversified banks most likely embrace various forms of derivatives while small banks tend to be cautious in
use of derivatives (Rivas, 2006). On the other hand, ownership structure also determines the use of derivatives. As such bank ownership structure that is based on either foreign local, institutional, managerial or government or all of the above is an indication of presence of investor confidence hence their intention to invest in the bank. However, Rivas (2006) shows that banks with foreign ownership tend to have greater level of derivatives usage than locally owned banks hence the assertion that ownership structure affects use of derivatives. Studies have also established that profitability affects the use of financial derivatives (Akun, 2014). As such commercial banks uses financial derivatives so as to improve profitability hence the use of the variable in this study to ascertain. Therefore, firm size, ownership structure and profitability are used by the current study and were found to have positive relationship with the use of financial derivatives among the commercial banks.

Presently, the high uptake of financial derivatives among the commercial banks have been attributed to evidence that shows that financial markets have continuously been the subject of unpredictable movement in interest rate than in past decades (Flavell, 2010). This, therefore, has prompted commercial banks to lay down strategies such the adoption of financial derivatives usage in order to mitigate market and financial risks (Mishkin & Eakins, 2012).

Balvinder (1995) further says that some of these risks are firm or situation specific with no readymade exchange traded instruments to offset such risks. The management of these risks has shaped a new line of financial derivatives, the over-the-counter (OTC) derivatives. These derivatives are privately conveyed arrangements between parties that permit either one or all parties to obtain their anticipated financial flows. The OTC derivatives have grown faster than the exchange traded contracts in the recent years. According to Pandey (2005), financial derivative instruments have expanded very quickly from simple financial futures to a wide variety of striking and difficult securities in the modern markets.

Modern markets for derivatives relate to the historical situation in U.S.A., in the 18\textsuperscript{th} century. After the implementation of the Declaration of Independence (1776) and acknowledgement of the independence of the United States by Great Britain (1783), the United States became a strong partner for this kind of trading. Whereas in 1848 the California Gold Rush ended, in Chicago was created the first formal commodities exchange, the Chicago Board of Trade (CBOT), which is perhaps the major event for
futures market with grain. CBOT unraveled the problem of credit risk and provided centralized location to negotiate forward contracts (Pathak, 2011).

According to Kolb and Overdahl (2010), due to the instability of the quantity during the year, the “to-arrive” contracts were traded, representing permission to traders to lock in the price and deliver the grain later. Furthermore, these contracts demonstrated to be an effective tool for hedging and speculating on price volatility of the grain. Soon, the benefits of such a trading were recognized by wide public and the standardization in the form of the first clearing house was formed so as to enhance the use of financial derivatives such as contracts by companies across the globe.

Even though the first future contracts on non-agricultural commodity appeared in 1933 on Commodity Exchange (silver), the growth of this trading began in 1950s, on London Metal Exchange (iron), New York Mercantile Exchange (NYMEX) (platinum) later on palladium (NYSE Euronext, 2011). The underlying asset was slowly changing from intangible property, over the agricultural goods to the metals. Whereas 1960s were typical with livestock trading (CME) or wool trading (Australia), the 1970s were focused on foreign currencies (on CME in 1972), treasury bills (on CME in 1976) and interest rates (on CBOT in 1975) (CME Group, 2011), which had the incorporeal character, again (CME, 2011).

Although the financial center of the world then was New York, Chicago underwent an expansion of futures and options contracts. In the center of the interest stood foreign currencies, which were previously related to the dollar (since 1944), as dollar was related to gold. However, as the American economy grew the need for more flexible system was require. In 1971, President Nixon completed convertibility of the dollar to gold. The prices of currencies started to waver individually, as the prices of the commodities. As a result, the need for hedging grew and the market answered by the offer of various types of financial derivatives (Chance, 1995).

In 1990s, the development of swap contracts continued, firstly in the terms of currencies, later on interest rates. As a result of tough competition from previous years, many exchanges amalgamated. Towards the end of 20th century, new underlying assets were used such as T-notes, stock exchange indexes, indexes of city’s bonds. New derivatives emerged such as derivatives with underlying assets of other derivatives, options on currency futures, options on futures on currency indexes, options on swaps or credit derivatives. All the 1990s can be from today’s perspective called a globalization period (Dabla-Norris, 2012).
Conversely, in the African context financial derivatives are not well understood. South Africa is in the lead with other sub-Saharan states debating whether it is valuable to have the derivatives market, taking into deliberation the costs involved in providing the necessary infrastructure and the regulatory framework into place. The growth of exchange-traded derivative instruments in South Africa started in the late 1980s (Ahuja, 2006). The South African Futures Exchange (SAFEX) was casually launched in 1987 and over the years grew as a leading emerging market. It started trading on financial futures including options on futures and gold futures. The development of the Agricultural Markets Division in 1995 led to the introduction of a range of agricultural futures contracts for commodities such as maize, wheat and sunflower seeds. Later options on agricultural products were launched in 1998. In 2001, JSE Securities Exchange, in South Africa, absorbed SAFEX to become Africa’s most active and important commodity exchange. Johannesburg Stock Exchange (JSE) also trades on its own single-stock futures contracts, index futures and options, and some commodities futures (MFA, 2008).

The use of financial derivatives was also witnessed in Zimbabwe. The financial derivatives were on the Agricultural Commodity Exchange (ZIMACE), which was recognized in 1994 and this was Africa’s first agricultural commodity exchange. According to the exchange’s own information, volumes of commodities traded have increased by an annual average of 35% since its opening. The exchange currently trades spot and forward contracts on maize, soy and wheat (Ilyina, 2004).

The latest to create a successful derivatives market in Africa is Mauritius. Mauritius started its derivatives trading in September 2010 and by June 2011. It had already experienced a trillion-dollar turnover in trading. A number of other states are looking into the possibility of introducing commodity exchanges such as Côte D’Ivoire, Ghana, Uganda and Morocco (Olatundun, 2009). Some other like Malawi, Zambia and Nigeria have had short-lived exchanges for which factors including inappropriate trading software, staff training and government intervention undermined their success (MFA, 2008).

In Kenya, there is the presence of the Kenya Agricultural Commodity Exchange (KACE) which deals with agricultural products. KACE was recognized in 1997, (KACE), as a medium for trade in spot and forward contracts for a range of commodities. KACE is a private sector firm launched in Kenya in 1997 to enable competitive and efficient trade in agricultural commodities, provide reliable and timely marketing information and
intelligence, provide a transparent and competitive market price discovery mechanism and harness and apply information and communication technologies (ICTs) for facilitating trade and information access and use in Kenya and subsequently scale out to the East African Community. Among the states that Kenya is looking up to as a model in the setting up of an agricultural commodity derivatives market is South Africa (Golafshani, 2003).

In addition, Kenya being one of the foremost emerging markets and a player in the global market is faced with systemic risk which results from market linkages. Balvinder (2005) imply that shocks arising in one market may be spread to other market as well. Kenya still lags in growth of a well-functioning structured financial derivatives market. The frequently used derivatives instruments by Kenyan companies are the forward contracts and swaps. Companies use forward contracts to hedge against their imports and exports while swaps are used when planning to exchange cash flows over time. Howton and Perfect (1998) argues that currency swaps and interest rate swaps are frequently used by financial institutions for an agreement providing exchange payments denominated in one currency for payments in another currency over a period of time. The floating interest rates are mostly tied to LIBOR (London Inter-bank Offered Rate). Hence, Kenya is in dire need of having a well-developed and regulated financial derivatives market that would enable companies’ hedge their cash flows fluctuations with an ease (Harris, 2002).

1.2 Statement of the Problem
Financial derivatives markets have reached a noteworthy growth in recent years, but this pattern has not accomplished the same strength in developing states notably, Kenya (IMF, 2014). As a result, a vital question arises: which variables affect the use of derivatives in top financial companies in Kenya?

Notably there are studies that have been carried out in so far as financial derivative use in concerned. Globally, a study by Deshmukh, Greenbaum, and Kanatas (2013) used interest rates and exchanges rates as factors that affects the use of derivatives and found positive relationship while a study by Haushalter (2000) among US firms used firm size as one the variables to determine its effect on financial usage. Demsetz and Lehn (2015) study in South Africa used ownership structure as independent variables but was measured using institutional and managerial listing while a study by Gorton and Rosen (2013) used profitability as independent variable so as to determine the extent it affects use of financial
derivatives. Evidently none of the studies used a combination of firm size, ownership structure and profitability as independent variables thus the need for this study.

In Kenya, a study conducted by Kamenchu (2013) used trade liberation and legal framework as variables that affected the use of derivatives in Kenya. Njoroge (2013) only identified the financial derivatives used in Kenya while Wafula (2009) found that firm size as an independent variable is one of the drivers of financial derivatives use. Additionally, Mwathi (2009) study was on the relationship between ownership structure and financial derivatives whereas Akun (2014) established the effect of financial derivatives on firm profitability. Ithai, (2013) dealt with credit derivatives in the banking sector and concluded that regulatory issue as independent variable was the impediment to derivatives absorption. As noted in these past studies, none of the studies used all the three variables (firm size, ownership structure and profitability) applied in this study hence a research gap which the study intends to bridge. Some studies also used other variables other than the ones adopted by the current study hence the justification for use of firm size, ownership structure and profitability as independent variables. Again the fact that most of these studies were carried out many years ago is an indication that the dynamics have changed as such their findings may not be used judge the current situation as far as derivative use is concerned hence the need for a more recent study of this magnitude to find out the effect of the variables on use of financial derivatives.

While it can be observed that firms in developed economies use a diversity of instruments to manage financial risks, it is not clear whether the full potential of these instruments is being realized in developing economies notably Kenya since not all firms use derivatives and not all firms use all types and more important, whether they are used appropriately. This issue needs examining. It is hence the purpose of this study to examine the factors affecting the use of financial derivatives by listed commercial banks in Kenya and provide recommendations thereof that can be relied upon.

1.3 General Objective
The main objective of this study was to examine the factors affecting the use of financial derivatives by listed commercial banks in Kenya.
1.4 Specific Objectives

1.4.1 To examine effect of bank size on use of financial derivatives by listed commercial banks in Kenya.

1.4.2 To determine the effect of ownership structure on use of financial derivatives by listed Kenya commercial banks in Kenya.

1.4.3 To find out the effect of profitability on use of financial derivatives by listed commercial banks in Kenya.

1.5 Significance of the Study

The study is relevant to scholars, practitioners and regulators within Kenya, Africa and the entire world financial market.

1.5.1 Scholars

This study adds to the knowledge on the use of Financial Derivatives in the Kenyan financial market. The knowledge is valid to other markets and forms theoretical frameworks that can be quoted in academic and research papers across the world.

1.5.2 Practitioners

Management teams of banking institutions can use the findings of this study 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 the use financial derivatives instruments. In general, commercial banks practitioners and other participants in the Kenyan financial sector can use the findings to improve on the nature, organization and capital outlay of their present and future financial derivatives investments.

1.5.3 Regulators

The regulators like the Capital Markets Authority, Central Bank of Kenya and Kenya Bankers Association can use the findings, recommendations and conclusions of this study to enact and improve regulation and operation procedures of financial derivatives in Kenya.

1.5.4 Commercial Banks

The commercial banks will use the findings and recommendations of this study to allocate resources to the areas that will spur growth of the use financial derivatives and deliver greater returns to their shareholders.
1.6 Scope of the Study
The study focused on examining the factors affecting the use of financial derivatives by commercial banks listed at Nairobi Securities Exchange (NSE) in Kenya. The banks are chosen because they are the main traders in financial derivatives in the Kenyan financial market. The study gathered secondary data. Secondary data from annual financial statements and reports were gathered from the commercial banks for a period of 5 years, 2013 to 2017.

1.7 Definitions of Terms
1.7.1 Derivatives
These are financial instruments whose value is derived from the performance of other instruments like assets, interest rates, currency exchange rates or indexes (Nguyen and Faff, 2002).

1.7.2 Derivatives markets
These are markets where the trades of derivatives products/contracts take place (Mihaljek and Packer, 2010).

1.7.3 Forward contract
This is a customized contract between two entities, where settlement takes place on a specific date in the future at today’s pre-agreed price (Mishkin & Eakins, 2012).

1.7.4 Futures
This is an agreement between two parties to buy or sell an asset at a certain time the future at the certain price. Futures contracts are the special types of forward contracts in the sense that are standardized exchange traded contracts (Anderson & McKay, 2008).

1.7.5 Options
There are two types: call and put options. Call option gives the holder the right but not obligation to buy underlying asset, at a given price on or before a given future date. Put option gives the buyer the right but not the obligation to sell a give quantity of the underlying asset at a given price on or before a given date (Pathak, 2011).
1.7.6 Swaps

These are private agreements between two parties to exchange cash flows in the future according to a prearrange formula. They can be regarded as portfolios of forward’s contracts (Mishkin & Eakins, 2012).

1.7.7 Over the Counter Derivatives

These are contracts, whether forward contracts, futures, or options which are privately negotiated between two counterparties. The terms of the contracts are customized to suit the parties to the trade (Reichert & Shyu, 2010).

1.7.8 Size of Bank

The total scale of assets to which a firm is exposed, including balance sheet assets plus the notional value of any derivatives plus any off-balance sheet commitments (Hall and Weiss, 1967).

1.7.9 Ownership Structure

The decision-making segment in the listed commercial banks in Kenya in so far as distribution of percentage of ownerships is concerned (Stulz, 2011).

1.7.10 Profitability

The ability of the listed commercial banks to generate earnings compared to its expenses and other relevant costs incurred during a specific period of time (Whittington, 2010).

1.8 Chapter Summary

This chapter focused on introduction of the history of derivatives and financial derivatives in the various markets in Europe, America, Middle East, Asia and Africa. It continued to state the objective of the study as an investigation of the factors affecting the use of financial derivatives by listed commercial banks in Kenya. The chapter also described the scope of the study in terms of population of interest; listed commercial banks on Nairobi Stock Exchange; and period of study; between 2008 and 2018. It thus set pace for the assessment of linked literature in line with the study objectives and also the research methodology that shall be able to provide convincing explanations and formation of the factors that affect the use of financial derivatives in Kenya.
The chapter two reviewed the literature available on financial derivatives, the effect of bank size on use of financial derivatives, the effect of ownership structure on use of financial derivatives and the effect of profitability on use of financial derivatives. Chapter three will describe the methodology used in the study; this included population, sample size and sampling techniques as well as methods of data collection and data analysis. Chapter four will present the results and findings while chapter five will provide discussion, conclusions and recommendations for further research.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction
The chapter presents the literature review. It begins with review of the effect of bank size on use of financial derivatives; this is followed by presenting the effect of ownership structure on use of financial derivatives. The final research objective on the effect of profitability on use of financial derivative was also highlighted. Finally, the chapter addresses the chapter summary.

2.2 Bank Size and use of Financial Derivatives
Bank size can be defined as the total value of assets to which a bank is exposed including balance sheet assets plus the notional value of any derivatives plus any off-balance sheet commitments on annual basis (Hall & Weiss, 1967). Large well-diversified banks will be less likely to fail than small banks (Rivas, 2006). Bank size serves as a proxy for a bank’s ability to diversify since large banks have better diversified asset portfolios (Shyu & Reichert, 2010; Mester, 2013). As such the discussions and various studies on the role and effect played by firm size in explaining financial derivatives usage have been ongoing in the fields of finance. Therefore, the empirical studies on the effect of bank size on the use of financial derivatives are discussed hereafter.

Haushalter (2000) study established the factors affecting the decision to use derivatives among 100 U.S oil and gas producer companies. The study gathered time series data for a period of 7 years (1991-1997). The study used descriptive research while Probit model and truncated model were employed respectively to test the factors affecting the corporation’s decision to use derivatives. Findings of the study showed that firm size was a major factor that made many of the studied corporations to use financial derivatives. The study further found that there exists statistical relationship between firm size and the decision to use of financial derivatives among the 100 oil and gas producer companies in the United States of America. However, those firms which were having small size were deemed to be slow in embracing financial derivative usage.

Foo and Yu (2005) assessed the determinants of firm’s financial derivatives in United Kingdom for 2 years (1997-1998). Two different models’ ordinary least squares (OSL) and Tobit were used to explore the determinants of the financial derivatives usage. The study found that firm size played a significant role in the use of financial derivatives as such it
was found to have significant relationship with financial while financial distress cost, growth opportunities and tax convexities did not play a significant role in identifying corporation’s extent of derivative usage.

A study was done by Prasetyantoko and Parmono (2008) based on linkage between firm size and financial derivatives of listed 23 companies in Turkey. The study adopted explanatory research design. The study covered a period of 3 years (2004-2006). The study used Generalized Linear Models analysis methods. By use of the Generalized Linear Models, the study found that firm size as measured by natural logarithm of total assets influences the use of financial derivatives and consequently profitability of the studied listed firms in Turkey. As such firms with larger size were found to have effective use of financial derivatives.

Another study that was conducted by Agiomirgiannakis et al (2006) assessed influence of firm size on financial derivatives of selected non-financial firms in United Arab Emirates. The research design cross-sectional survey research design. The secondary data was collected for a period of 5 years (2000-2004). By use of One Way ANOVA, the study found that among other factors that influence the use of financial derivatives, the firm size was found to be the variable that had strong positive relationship with the need to utilize financial derivatives among non-financial corporations in the UAE.

Hagedoorn and ClooDT (2003) examined the relationship between firm size and the financial derivatives for a sample of 1,478 German manufacturing firms in 31 industries. The data was collected for a period of 10 years (1993-2002). By usage of Pearson product moment correlation model, the study found that there was weak correlation between firm size and financial derivatives of German manufacturing firms that were unstable over the study period. These results suggested that firm size is not the major determinant of financial derivatives; however, the variables had weak correlation implying they are weakly related.

El-Masry (2006) in his study sought to establish the factors that influence the financial derivatives’ use in the UK market. The author conducted or rather collected data by use of research survey via formulated questionnaires. The study through use of surveys focused on establishing the reasons for using or otherwise lack of usage for financial derivatives for 401 UK nonfinancial companies. The author analyzed data using descriptive and linear regression model. Upon analysis, the results established that larger companies were more likely to utilize financial derivatives than medium and smaller companies. The study also
found that public companies in the UK were more likely to utilize financial derivatives than companies that were privately owned. The study also found that usage of financial derivatives was largely used among international firms as they were deemed to have larger firm size as opposed to locally based companies.

Emm and Ince (2011) research study was to examine the effect of firm size systemic risk in the over-the-counter (OTC) financial derivatives dealing among listed companies in Turkey. Data was collected for the period of 4 years (2008-2010). They used the event-study methodology with crude dependence adjustment to examine the effect of firm size for the involved derivatives dealers as far as the companies they represented were concerned. They re-estimated the parameters of firm size using the market-adjusted model to check for robustness and its relationship with financial derivatives. Additionally, the study used a multivariable regression framework so as to estimate the determinants of the abnormal returns as a result of small firm size. The findings were that OTC derivatives dealers experienced negative returns when their clients announced derivatives losses due to smaller firm size. In contrast, rival dealers with larger firm size who were uninvolved in the loss event exhibit positive returns in their respective companies.

Afza and Alam (2011) in their study sought to find out the factors affecting decision to use financial derivative by listed firms in the Karachi Stock Exchange. The study used the data of 86 non-financially companies listed on Karachi Stock Exchange for the period of 4 years (2004-2007). The study used secondary data which was collected from the annual financial reports of listed firms of Karachi Stock Exchange for the indicated period of time (four years). Non-parametric test was used to examine the mean difference between users and non-users operating characteristics in so far as the financial derivatives is concerned. Logit model was applied to analyze the overall effect of companies’ firm size on firms’ decision to use financial derivative instruments for hedging. Upon analysis, the study revealed that firms having larger sizes were more likely to use financial derivative instruments such as swaps, futures and options to reduce exchange rate exposure. The study again found that financially distressed large-size firms with financial constraints and fewer managerial holdings are more likely to use financial derivatives in order to boost their market performance.

Shen and Hartarska (2013) carried out a study that was meant to determine the impact of financial derivatives on the profitability of agricultural banks in the United States of
America. They used call report data from Federal Reserve Bank of Chicago for 2006, 2008 and 2010 so as to establish an endogenous switching model to evaluate how financial derivatives users and unlikely users with respect to the agricultural banks is affected by different risk factors. The study used spearman correlation as inferential analysis method. The study found that most of the Agricultural banks in Chicago USA, were green to the derivatives market and were not likely to utilize financial derivatives sue to speculation about risks surrounding use of financial derivatives in Chicago. However, it was also found that agricultural banks that had larger size were more likely to excel in the utilization financial derivatives than smaller firms. In this scenario, the results indicated that risk management through financial derivatives in agricultural banks was effective and that firms with bigger financial muscles, firm size, made good profit as a result of derivatives usage among the agricultural banks studied.

In Kenya, Wafula (2009) tested the drivers of financial derivatives for the firms listed on the Nairobi Securities Exchange. The study used firm size among other variables as the independent variable. The data collected and covered the period of 7 years (2002-2008). The study used cross tabulation as well as probit analyses methods. The study found that firm size as independent variables is one of the drivers of financial derivatives. Upon further analysis, the study found that a weak but significantly positive relationship was demonstrated between firm size and financial derivatives.

A study by Mumoki (2009) on the forms of financial derivatives used among Kenyan commercial banks to manage foreign exchange risk exposure. Data was collected for duration of 5 years (2004-2008). By use of linear regression analysis, the results of the study showed that the forward contract was the most frequently used instrument. 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. The study, therefore, determined that commercial banks with larger firm size were likely to embrace the usage of swaps, futures, options and forwards in order to remain afloat in the market.

According to Gitogo (2012) conducted a study on the relationship between firm size and financial derivatives among the commercial banks in Kenya for a period of 4 years (2008-2011). The study used qualitative research design. The author used factor analysis and
Ordinary Least Square methods. The financial derivatives were measured by use of swaps, futures and options. On the other hand, financial performance was measured by use natural logarithm of total assets of each of the commercial banks in Kenya. The study concluded that there exists relationship between firm size and financial derivatives of commercial banks in Kenya. The study further found that swaps were the commonly used financial derivative among the companies at it was found to have the highest effect on the use of financial derivatives while futures were least effective.

Salim (2012) studied the relationship between bank size and financial derivatives’ usage among the commercial banks in Kenya. The study specifically aimed at determining the relationship between bank size factors, namely, total deposits, total loans, and total assets, and financial derivatives usage. The research design was descriptive whereas the study period was 5 years (2007-2011). The study used the multiple regression analysis to find out the significant relationship between the variables. The main findings of the study established strong correlations between all the studied factors of bank size and the use of financial derivatives. However, total assets were found to have the most significant relationship with the need to use financial derivatives among the commercial banks in Kenya.

2.3 Ownership Structure and use of Financial Derivatives
Ownership structure can be defined as the decision-making segment in the listed commercial banks in Kenya in so far as distribution of percentage of ownerships is concerned (Stulz, 2011). Ownership measures the degree of concentration of voting right in listed commercial banks in Kenya. In this study, it is measured by the percentage of foreign ownership of shareholders, and the percentage of local shareholder. As such the dummy variable was used to establish whether a bank is foreign owned or locally ownership. Furthermore, the divergence ratio of the largest shareholder illustrates ownership concentration from another perspective. Owner identity is based on the type of the largest shareholder (Stulz, 2011). The empirical studies as far as ownership structure is concerned are discussed hereafter.

A study by Demsetz and Lehn (2015) investigated the relationship between ownership structure and use of financial derivatives (futures and swaps) of companies listed at Johannesburg Securities Exchange for a period of 3 years (2010-2012). The study used causative research design. By use of regression analysis, the study found that managerial
and directorial ownerships positively affected the use of financial derivatives whereas public and foreign ownership had negative relationship with use of financial derivatives among the companies that were listed at JSE.

Allayannis, Lel and Miller (2010) study examines the impact ownership structure on financial derivatives among non-financial companies in Japan. The study covered a period of 5 years (2004 to 2008). The authors used mixed research design as the preferred research design. The study then employed multiple regressions as the sole data analysis method. The study found that high concentration of foreign ownership had negative impact on financial derivatives. The study again found that local ownership had statistical and positive relationship with the quest to use financial derivatives.

A study by Zhao (2010) sought to examine the relationship between ownership structure and firms’ use of financial derivatives by the UK based financial services industry. The study was conducted for a period of 6 years (2004-2009). The authors used descriptive research designs. The study used linear regression analysis methods. By use of regression analysis, the study found that institutional ownership and local ownership had significant positive relationship with firms’ utilization of financial derivatives in the UK. The firms that were only having local shareholders were reluctant to use financial derivatives as opposed to firms with both local, foreign and government listings. The study, therefore, concluded that ownership structure was positively related to firms’ use of financial derivatives in the UK financial services industry as such all firms were recommended to use financial derivatives so as to improve their overall financial performance.

Boubaker, Mefteh-Wali and Shaikh (2010) in their study investigated the effect of ownership structure on derivatives' use policy. The research study covered a period of 3 years (2000-2002). The study used Pearson product moment correlation analysis. The study found that CEO ownership has a negative effect on the decision to use derivatives, whereas CEO tenure length influences negatively the extent of derivative use. CEO age impacts positively both decisions, whereas firms that grant stock options to their CEOs do not rely too much on derivatives. However, the presence of outside block holders seems not to affect the firms’ hedging policy.

Ozsoz, Gurarda and Ates (2014) study focused on determining the relationship between ownership structure and financial derivatives of 22 publicly traded Turkish companies for a period of 4 years (2010-2013). The study was cross sectional in nature. By use of
crosstabulation and Chi square tests, the study found that family ownership has a negative impact on financial derivatives ratings while foreign ownership has a weak but positive effect on financial derivatives as such the study recommended that companies should embrace appropriate financial derivatives that could increase their market survival in the country.

Berle and Means (2012) study was on the impact of ownership structure on the usability of financial derivatives in India. The study was carried out among the 50 textiles and entertainment industries registered in Bombay Stock Exchange. The research study covered a period of 5 years (2005-2009). The study adopted causative research design. The researchers made use of Pearson rank correlation moment coefficient and multiple linear regressions analyses methods. The study found that managerial and institutional ownerships positively influence the level of firms’ use of financial derivatives while foreign ownership had insignificant association with the use of financial derivatives.

Leung and Horwitz (2010) investigated the effect of ownership structure on the use of financial derivatives. The study used a sample of 101 of the 500 US non-financial firms for a period of 10 years (1999-2008). The study used a mixed research design. The study also used partial least squares and correlation methods. The study found that there is an insignificant positive relationship between manager-controlled firms on the use of financial derivatives. The study also found that owner-controlled firms as far as shareholding is concerned and has linear relationship with financial derivatives.

Croswel, Taylor and Saywell (2007) conducted a study on the relationship between ownership structure and financial derivatives of 349 firms in Australia. The study collected data for a period of 10 years (1997-2006). The study used descriptive research design. The study found a curvilinear relationship between insider ownership and the use of financial derivatives while foreign ownership had no relationship with the use of financial derivatives among the studied Australian firms.

Karaca and Eski (2012) as well carried a study on the effect of ownership structure on the utilization of financial derivatives among the 50 manufacturing firms listed in the Istanbul Stock Exchange for 8 years (2004 to 2011). The authors used explanatory research designs. The study used panel regression as the data analysis method. The study measured ownership by use managerial, foreign and local shareholdings whereas financial derivatives were measured using forward contracts and swaps. The study found a positive relationship
between local shareholdings and financial derivatives as measured by forward contracts and swaps. However, a no relationship was evidenced in the managerial and foreign shareholdings.

Meca and Ballesta (2011) study focused on determining the relationship between ownership structure and financial derivatives use in Madrid. The study was based on 254 non-financial firms listed in Madrid Stock Exchange for a period of 4 years, (1999 to 2002). The study used panel regression on Tobin’s-Q. The preferred research design was descriptive research designs. The results showed that local companies that had high representation of local ownership positively influence the use of financial derivatives among listed firms in the Madrid Stock Exchange from 1999 to 2002. However, the study found some weak evidence that family ownership has a negative and foreign ownership has a very weak positive impact the use of financial derivatives among the 254 non-financial firms listed in Madrid Stock Exchange.

Burkart (2010) examined the effect of ownership structure on the utilizations of financial derivatives by listed commercial in New York Securities Exchange. The study covered a period of 8 years (2001 to 2008). The study was an exploratory in nature. The author used auto correlations to find out the statistical significance between the independent and dependent variables. The study found that measures of ownership structures such as local, institutional and foreign had positive correlation with financial derivatives. However, insignificant statistical relationship was witnessed.

Medline (2004) research study was based on establishing the relationship between ownership structure as measured by managerial listing, institutional listing, government listings and financial derivatives of companies in Belgium. The study collected secondary by from the yearly financial reports of the selected companies for a period of 3 years (2000-2002). The data was analyzed by means of descriptive statistics and hausman tests (fixed and random effects). The study found that there was no relationship between ownership structure and financial derivatives of firms listed in the NSE.

In yet another study, Mwathi (2009) conducted a study on the relationship between bank ownership structure and financial derivative usage. The author used cross sectional research design. The study collected secondary data for a period of 7 years (2001-2007). The data was retrieved from the annual financial statements that were found from the websites of the targeted companies. The analyzed data by use loglinear regression found that noted that
generally, the bank ownership structure had a moderate positive influence on its overall use of financial derivatives.

Cherutoi (2006) investigated the relationship between ownership structure and the use of financial derivatives among the non-financial institutions listed at the Nairobi Securities Exchange during the period of 6 years (2000-2005). The study used descriptive research design. The data collected from the sample companies was analyzed using regression analysis. The study found that 66% of the firms’ that use financial derivatives was as a result of the ownership structure in the form of local or foreign ownerships. However, the rest of the firms, 34% showed insignificant statistical relationship between ownership structure and the use of financial derivatives. These results imply that there is mixed relationship between firm ownership structure (local and foreign) and the use of financial derivatives.

Again Stephen (2009) carried out a research study entitled ‘the effect of ownership structure on the financial derivatives of non-banking firms listed in the NSE. The study gathered secondary data the period of 4 years (2004-2007). He used mixed exploratory research designs. The study used generalized linear models. The study found that the firms listed in the Nairobi Securities Exchange have complied with the 25% threshold of individual ownership. From the analysis it was found that in average foreigners owned 22.1%, Individuals 23.6% and Institutions 54.5%. It was further found that ownership structure positively affected the use of financial derivatives among the non-banking institutions in Kenya.

Further Mule (2013) study was based on the association between ownership structures and financial derivatives of listed firms in Kenya. The study collected secondary data for a period of 5 years (2008-2012). By use of partial correlation the study found that ownership structures of the top five largest local shareholders and second institutional shareholders had a negative relationship with the listed firms’ financial derivatives while companies with lack of shareholding rights as far as monopolization is concerned demonstrated positive relationships.

2.4 Profitability and use of Financial Derivatives

Profitability can be defined as the ability of the listed commercial banks to generate earnings compared to its expenses and other relevant costs incurred during a specific period
of time (Whittington, 2010). Profitability in this study is determined by return on assets of each of the listed commercial banks in Kenya. According to Kanatas, Deshmukh and Greenbaum (2016), commercial banks that utilize derivative can face less uncertainty in interest rates and thus increase 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. The empirical studies are far as effects of profitability on the use of financial derivatives among the commercial banks in Kenya are presented hereafter.

Hartarska and Nadolnyak (2013) study was based on the impact of use of financial derivatives on the profitability of the agricultural banks in Canada for a period of 5 years (2008-2012). The authors used causal research designs. The study also used Spearman rank correlations. The study found that use of financial derivatives has positive impact on the profitability of agricultural banks. This was supported by the fact that during the 2008 fiscal crisis derivatives assisted agricultural banks boost their profitability and lower their sensitivity to credit risk and interest risk.

Chaudhry (2000) study analyzed how different types of exchange rate derivatives affect BHCs’ exposure to risks and profitability among the micro-financial institutions in the Republic of Iran for a period of 5 years (1995-1999). The study used mixed research whereby both primary and secondary data were employed. By use of OLS, the study found that exchange rate options tend to increase risk whereas swaps are mainly used to mitigate risk exposures. These measures of financial derivatives were found to improve the profitability of the micro-financial institutions in the Republic of Iran.

Cyree, Huang, and Lindley (2012) study focused on the contribution of financial derivatives on commercial banks’ profitability. The study collected secondary data for the period of 3 years (2009-2011). The study employed descriptive research design. The study then used regression in the form of model summary, Anova and coefficient to determine the significance between the variables. The study found that adoption of financial derivatives such options and futures depict a positive relationship with profitability whereas contracts were found to have negative relationship with profitability.

A study by Gorton and Rosen (2013) was based on examining influence of financial derivatives on the profitability of commercial banks in Sweden. Time series data was
collected for 4 years (2008-2011). The study adopted exploratory research designs. The authors used Pearson Correlation model to conduct analysis. The study found that use of financial derivatives components such as swaps, contracts futures and options improve the profitability of the firms. Profitability was thus found to be statistically and positively correlated to financial derivatives’ components among Swedish companies.

Deshmukh, Greenbaum, and Kanatas (2013) study was based on the relationship between financial derivatives and profitability of commercial banks in Brazil. The secondary data was collected from financial reports for a period of 7 years (2005 to 2011). The study used linear regression analysis method. The study found that banks who can manage interest rate risk using derivatives were less constrained in their lending activities and will thus be able to invest in optimum yielding assets as a result of the use financial derivatives. The authors found that there was positive statistical relationship between financial derivatives and profitability. It was thus established that use of financial derivatives freed commercial banks from the restrictions imposed by traditional internal hedging as such it permitted the commercial banks to separate its choice of assets so as to improve profitability even if the market is turbulent. Therefore, financial derivative use was found to have a strong significant positive relationship with the profitability of the commercial banks.

Duffee and Zhou (2001) study examined the relationship between financial derivatives, financial distress and profitability of listed commercial on the Karachi Securities Exchange. The study covered a period of 4 years (1996-1999). The study used binary logistics and probit analysis. The study found that credit derivatives hedge a bank against financial distress and that this additional flexibility allows the bank to avoid the problem due to bank information superiority and this ultimately improved the commercial bank’s profitability. Thus a positive relationship between financial derivatives and profitability was established.

In yet another study, Norden, Buston, and Wagner (2011) examined the association between profitability and credit risk derivatives among financial institutions in Belgium. The study collected secondary for 5 years (2006-2010). The study was cross-sectional in nature. The study also used descriptive and multivariate general linear model as the data analysis tool. The study found that credit risk derivatives adopted by the financial institutions had no relationship with profitability of these institutions as was supported by general linear model results on insignificant relationship.
Mayordomo, Rodriguez-Moreno, and Peña (2014) analyzed the impact of financial derivatives on commercial banks’ profitability in Italy. The study covered a period of 10 years (2004-2013). The study adopted census research as such all the listed commercial banks were studied. The study employed the use of Pearson correlation and Chi square which was used to test hypothesis. The study found that commercial banks that used financial derivatives demonstrated strong profitability over banks that did not use financial derivatives. Therefore, the study found a strong positive significant relationship between financial derivatives use and profitability of commercial banks in Italy.

In his study Said (2011) explored how the use of derivatives by US banks impacted on their profitability as measured by return on assets ratio, return on equity ratio, efficiency ratio, cost of funding earning assets, and net interest margin. The data was collected for a period of 9 years (2002 to 2010). By use of correlation analysis, the study found that there is strong positive correlation between financial derivative indicators and profitability measures among the US commercial banks.

Brewer et al. (2000) studied the relationship between lending and derivatives use and their impact on profitability over the period of 6 years (1994 to 1999). The data for the six year period was collected and subjected to two step cluster analysis methods. The study found that banks using derivatives increase their business lending faster than banks that do not use derivatives as such they exhibited higher financial growth and consequently profitability. Brewer et al. (2001) study the relationship between lending and derivatives use over the period from the fourth quarter of 1994. To this end, they employed Spearman correlation and nonparametric tests as well as regression test. The derivative-augmented regressions indicate that banks using any type of interest rate derivative, on average experience higher growth vis-à-vis higher profitability. Thus a positive strong relationship was found to exist between profitability and financial derivatives.

In his study Said (2011) investigates the effect of the use of derivatives on U.S. banks profitability during the sample period of 8 years (2002-2009). The author employed a two stages OLS regressions approach to determine the effect of the use of derivatives on US bank performance. They measured bank profitability by the ratio of return on assets, the ratio of return on equity, the efficiency ratio, cost of funding earning assets, and net interest margin. The study found that the profitability of firms had significant positive link with financial derivatives that the commercial banks applied.
Njoroge (2013) conducted a study focusing on financial derivatives use and their impact on profitability. The study was conducted for 4 years (2009-2012). The study used spearman correlation. The design that the study considered appropriate was explanatory research design. The study found that most Kenyan companies used swaps and forward contracts. The swaps were employed by the companies when they are planning to exchange cash flows in the future so as to improve profitability while forward contracts were found to be used to hedge against their imports and exports in order to increase profitability. The study, therefore, found that use of financial derivatives improves the profitability of companies.

Akun (2014) research study was to establish the effect of financial derivatives on the profitability of commercial banks in Kenya. The study involved an in-depth analysis of financial derivatives and its effects on the profitability of commercial banks and thus descriptive research design was found to be the most appropriate research design. Secondary data about the commercial banks notional amount of derivatives (swaps, options, forwards and futures), total assets, liquidity ratio and total shareholders’ equity was collected from the annual supervision reports of the Central Bank of Kenya bank for a period of five years (2011-2015). The secondary data was analyzed by use of the multiple regressions methods. The study used Statistical Package for Social Sciences (SPSS version 18) to help in obtaining the regression output. Return on Assets (ROA) was used as the proxy for profitability while financial derivatives measures such as swaps, contracts, options and forwards were the predictor variables. The findings of the study indicated that there is an insignificant negative relationship between the profitability (ROA) of commercial banks in Kenya and financial derivatives. Additionally, the negative nature of the relationship implied that a unit change in the increase in financial derivatives usage will result to a decrease in profitability (ROA) of the commercial banks in Kenya. As such the study, therefore, recommended that financial derivatives should be properly used in a manner that is instrumental to the goal of a sound and safe banking system in Kenya so as to increase financial performance.

2.5 Chapter Summary
Some of the previous studies cited in this chapter indicate that firm size has strong positive relationship with financial derivatives while others found a weak and negative relationship with financial derivatives. In regard to ownership structure, most studies found that the variable had positive relationship with the use of financial derivatives while few studies
found no relationship between ownership structure and use of financial derivatives. Again, most studies found that profitability has positive relationship with the use of financial derivatives. The next chapter presented the research methodology that was used in conducting the study on the factors affecting the use of financial derivatives by listed commercial banks in Kenya.
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction
This chapter explains the research methodology that the researcher employed in this study. It explicitly explains the research design, the population, the sample size, data collection methods, research procedures and data analysis methods that was used in the study.

3.2 Research Design
A research design is a road map of investigation conceived so as to obtain answers to research questions (Kothari, 2004). A research design is appropriate in research because it provides an opportunity for the researchers to hypothetically relate variables of study with existing theories. This enabled researcher to make deductive reasoning concerning the problem under investigation. The study utilized descriptive research method. According to De Vaus (2013), a descriptive research is used to obtain information concerning the current status of the phenomena to describe what exists with respect to variables under study. Descriptive research design is applicable to this study because it helps in describing the of the problem under investigation and the relationship between variables. In addition, it allowed investigation of quantitative data to be collected, analysed to describe specific phenomena. Descriptive design, therefore, indicated current trend of a phenomena, current events and linkages between different factors at the current time.

3.3 Population and Sampling Design

3.3.1 Population
A population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated (Creswell, 2014). Target population is that population to which a researcher wants to generalize the results of the study. The target population of this study was all the 11 listed commercial banks at the Nairobi Security Exchange which were operational in the period 2013 to 2017 (see appendix III).

3.3.2 Sampling Design
A sample is a fraction of the total population that is being researched on. Thus, sampling design refers to the final procedure used by the researcher in selecting a few items or sample from a population that is representative enough of the entire population In this study, not a
single selection process was employed since all commercial banks listed in the Nairobi Securities Exchange were included in the sample.

3.3.2.1 Sampling Frame

A sampling frame denotes a list of elements from which the sample is drawn. It comprises the correct list of members of the population only (Teddlie & Yu, 2007). The sampling frame for this study was the 11 commercial banks listed in the Nairobi Securities Exchange.

3.3.2.2 Sampling Technique

The method used to decide on a given number or all the elements from the population to represent the whole population in research is referred to as sampling technique. More often than not, a researcher will be required to decide on the appropriate and representative sample size to be used in the study (Winter, 2013). Since the study adopted total population sampling technique, all commercial banks listed in the Nairobi Securities Exchange were used in the study. The Nairobi Securities Exchange was used as the source of the sample frame for the study. According to Etikan, Musa and Alkassim (2016), total population sampling is defined as the study which includes all members of the population in the study. Census survey improves the accuracy and reliability levels in a study.

3.3.1.3 Sample Size

A sample is a sub-group or representative selection of a population that is examined or tested to obtain statistical data or information about the whole population (Bryman & Bell, 2015). On the other hand, sampling refers to the process of selecting a number of individuals for a study in such a way that the individuals selected represent the large group from which they were selected (target population) (Dul & Hak, 2015). The study was limited to all the 11 commercial banks that are listed at the Nairobi Securities Exchange. This is due to the fact that the population was manageable hence a census study. The secondary data period was five-year period from 2013 to 2017. A time frame of five years was justified because it was able to show the trend of financial directives of the listed companies hence assisted in providing adequate data for the current study.

3.4 Data Collection Methods

The study used secondary data. The secondary data involved use of quantitative data that had been previously collected by other people for a different purpose. The secondary was obtained through financial statements and statistics of the selected commercial banks for a
period of five years, 2013 to 2017. The said secondary data was sourced from published accounts for the 11 commercial banks listed in the Nairobi Securities Exchange. The study used a checklist to collect data for the commercial banks under review.

3.5 Research Procedures
The researcher tested the correlation between factors affecting the use of derivatives and ownership structure using financial information obtained from unlisted commercial banks. The researcher sought relevant secondary data from the commercial banks audited accounts for the period under study and Nairobi Securities Exchange handbooks. The secondary data was collected for a period of five years, from 2013 to 2017. The researcher believed that a five-period data for each of the listed commercial banks was suitable for the study as supported by a study by Al-Hawary (2011) that was conducted in Jordan for a similar period, from 2002-2009.

The secondary data for profitability was retrieved from audited financial statements reports of the sampled 11 commercial banks listed at NSE. The published financial statements reports were accessed from the selected companies’ websites. In order to effectively collect secondary data profitability was measured by Return on Assets (ROA). ROA was computed by dividing profit before tax by total assets in each of the 11 commercial banks listed at NSE.

3.6 Data Analysis Methods
The collected data was analysed in various steps by use of descriptive statistics, correlation and multiple regression analyses methods. Correlation was used to find out the relationship between two variables. Multiple regressions were used to examine the relationship between dependent and independent variables that affected use of firm financial derivatives. Therefore, the study used social packages for statistical sciences (SPSS version 24) as a tool for analysis which assisted in getting descriptive, correlation and regression outputs.

3.6.1 Descriptive analysis
Descriptive statistics are ways of summarizing large set of numerical information to give relevant meaning to data (Owens, 2012). The descriptive statistics consisted of mean, minimum, maximum and standard deviation to enhance understanding of the sample data.

3.6.2 Pearson’s Product-Moment Correlation Coefficient
The study also used the Pearson’s product-moment correlation coefficient. The method was preferred because it allowed researcher to collect much more data than experiments (Statistics, 2013). The method was also applicable to this study because it allowed the researcher to determine the strength and direction of a relationship so that later studies can narrow the findings down and, if possible, determine causation experimentally. The correlation coefficient was denoted as \( r \), and it took a range of values from -1 to +1. A value of 0 denoted that there was no positive relationship between the two variables. A value equal to +1 indicated a perfectly positive association between the variables, that is, as the value of one variable increased so does the value of the other variables. A value of \( r \) equal to -1 indicated a perfect negative association, that is, as the value of one variable increased the value of the other variable decreased (Cooper and Schindler, 2016).

Firm size was measured by natural logarithm of total value of assets of each of the 11 commercial banks listed at NSE. The study used natural logarithm since it provides values that are easily managed during data analysis. A study by Babatunde and Olaniran (2009) also justify the computation of firm size by use of natural log of total value of assets. The secondary data for firm size was retrieved from audited financial statements reports of the commercial banks. The published financial statements reports were accessed from the each of the companies’ websites.

Ownership structure was measured by dummy variables. Whereby 1 represented local ownership while 0 represented foreign ownership. In order to find out whether a bank was local or foreign owned, the study used percentage representations as shown in the appendix II. The secondary data for ownership structure was retrieved from the websites having the financial statements or reports of the commercial banks listed at the NSE.

Financial derivative was equally measured by use of futures contract and swaps in terms of monetary values as recorded by each commercial bank in their annual financial reports. The study used futures and swaps due to the fact they are the most commonly preferred financial derivatives used among Kenyan firms. The secondary data for financial derivative measures was retrieved from audited financial statements reports of each of the commercial banks. The audited and published financial reports were accessed from the each of the banks’ websites. Both raw and computed data for all the variables are shown in appendix II.
3.6.3 Multiple Regression Analysis

Multiple linear regression model analysis was used to examine the relationship between financial derivatives variables among the listed commercial banks on NSE. The regression was chosen due to the fact that it has the ability to determine the relative influence of one or more predictor variables to the criterion value (Cooper and Schindler, 2016). The functional form of the model is given as follows:

\[ Y = \alpha_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + ei \]

Where:

- \( Y \) = Financial derivatives (futures and swaps)
- \( \alpha_0 \) = Is the constant
- \( X_1 \) = Firm size (natural log of total value of assets)
- \( X_2 \) = Ownership structure (1 local ownership and 0 for foreign ownership)
- \( X_3 \) = Profitability (profit before tax/total assets)
- \( \beta_1, \beta_2, \beta_3 \) = Coefficients
- \( ei \) = Is the residual error term

3.7 Chapter Summary

The chapter has presented the methodologies that guide the study. These includes; the study research designs, the target population, the sample size and sampling procedures, data collection methods and research procedures as well as data analysis procedures which determined how secondary data was analyzed in chapter four.
CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction

Data analysis is a process of gathering, modeling and transforming data with the goal of highlighting useful information, suggesting conclusions and supporting decision making. This chapter shows the analysis, presentations and discussion of findings of the study as set out in chapter three. The Statistical Package for Social Sciences software was used, and the findings were presented as descriptive statistics, Pearson correlation and regression analysis. Data was collected from the published audited financial reports for the commercial banks that are listed on the NSE.

4.2 Descriptive Statistics

4.2.1 Descriptive Statistics Analysis on Firm Size

The study sought to determine the average bank size of the listed banks in the Nairobi Securities Exchange. The study results reveal that in the year the firm size was 30,756,173 which was the lowest. The highest average firm size was 34,118,734 in the year 2017 this indicates the growth of the commercial banks from year to year. The findings are indicated in the Figure 4.1 on the bank size.

Figure 4.1: Trend Analysis on Average Bank Size
4.2.2 Descriptive Statistics Analysis on Profit Before Tax

The study sought to determine the profit before tax for the listed commercial banks in the Nairobi Securities Exchange for the period 2013 to 2017. The findings indicated that the lowest profit before tax was 8,920,311 in the years 2015 and the highest in the year 2017 which was 16,766,859. The Figure 4.2 below indicate the profit before tax from period 2013 to 2017.

![Profit Before Tax](image)

**Figure 4.2: Trend Analysis on Annual Average PBT**

4.2.3 Descriptive Statistics Analysis on Total Assets

The total assets for the listed banks trends show the trend for average return on assets from year 2013 to the year 2017. Figure 4.3 below shows the total assets had slight variance between 2013 and 2017 with the highest total assets of the banks being 34,118,734 in the years 2017 while the lowest being 30,670,424 in the year 2013. The findings are indicated in the Figure 4.3 on the total assets of the banks.
4.2.4 Descriptive Statistics Analysis on ROA

The average return on assets earned by listed banks yearly between 2013-2017 was obtained from the banking sector survey reports. Banks financial performance over the period covered by the study was highest in the year 2013 and 2017, during which the return on assets stood at 43% in the year 2013 and 44% in the year 2017. The lowest ROA recorded over the entire period was 25% in 2015 and a ROA of 37% and 34% was recorded in 2014 and 2016 respectively. Figure 4.4 below further illustrates the trend in the banks’ performance over the study period.
4.2.5 Descriptive Statistics Analysis on Ownership Structure

The ownership structure trends indicating the average local ownership structure and foreign ownership for the commercial banks in Kenya between the years 2013 and 2017. The ownership structure for the local banks in the year 2016 had the lowest with 61.79% but still it was the highest compared to the foreign ownership structure, it had the highest in the year 2017 which stood at 64.3% which was still the highest compared to the foreign banks. In the year 2016 the foreign ownership structure was the lowest which stood at 22.68% while the highest was in the year 2013 which was 24.29% but still it was the lowest compared to the local ownership structure. The findings are indicated in the Figure 4.5 below on the ownership structure for local and foreign banks.

![Ownership Structure Graph](image)

Figure 4.5: Trend Analysis on Average ownership structure

4.2.6 Descriptive Statistics on Financial Derivatives

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 annual reports. The financial derivatives for the swaps indicated that the lowest was in the year 2014 which was 25 while the highest was in both year 2013 and 2017 which was 28. For the futures the findings indicated that the lowest stood at 23 in the year 2013 and highest stood at 27 in the year 2014. The Figure 4.6 below indicates the trends for the financial derivatives which is futures and swaps.
4.2.7 Descriptive Statistics on Natural Logarithm of Total Assets

The study was interested in obtaining data about the factors affecting the use of financial derivatives among 11 listed commercial banks for a period of five years. The obtained data was analyzed using descriptive statistics and the results are as shown below. Data displayed in Table 4.1 clearly shows that the mean value for natural log of the 11 commercial banks in 2017 was 7.2818 and this was the year the study established that natural log was at its highest. This was followed by 2014 which had a natural log mean value of 7.0305. The lowest mean values were witnessed in the year 2016 at 6.7663. The study also tested for variability by use of standard deviation and found that year 2013 had the highest standard deviation at 0.88794 while year 0.80469 had second highest standard deviation. The lowest standard deviation was found in the year 2015 at a value of 0.60179.

Table 4.1: Descriptive Statistics on Natural Logarithm of Total Assets

<table>
<thead>
<tr>
<th>Year</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>4.75122</td>
<td>8.00231</td>
<td>7.0183</td>
<td>0.88794</td>
</tr>
<tr>
<td>2014</td>
<td>4.69534</td>
<td>8.00051</td>
<td>7.0305</td>
<td>0.76812</td>
</tr>
<tr>
<td>2015</td>
<td>4.76903</td>
<td>7.37092</td>
<td>6.8331</td>
<td>0.60179</td>
</tr>
<tr>
<td>2016</td>
<td>4.79446</td>
<td>7.60045</td>
<td>6.7663</td>
<td>0.62312</td>
</tr>
<tr>
<td>2017</td>
<td>4.33321</td>
<td>7.91231</td>
<td>7.2818</td>
<td>0.80469</td>
</tr>
</tbody>
</table>
4.3 Effect of Bank Size on use of Financial Derivatives
As presented in Table 4.2, the year 2014 was found to have the highest values for financial derivatives at Kenya shillings 52.8182. The second highest value for financial derivatives was realized in the year 2017 at Kenya shillings 51.6364 while the lowest value for financial derivatives levels was obtained in the year 2015 at Kenya shillings 46.4545. The results also show that the values for standard deviation which shows variability in financial derivatives levels was at its highest in year 2014 and the score was Kenya shillings 35.43393 while 2016 had the lowest value for financial derivatives at Kenya shillings 27.53675.

Table 4.2: Descriptive Statistics on Financial Derivatives (Futures and Swaps)

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>12.00</td>
<td>111.00</td>
<td>50.2727</td>
<td>32.32365</td>
</tr>
<tr>
<td>2014'</td>
<td>10.00</td>
<td>104.00</td>
<td>52.8182</td>
<td>35.43393</td>
</tr>
<tr>
<td>2015'</td>
<td>4.00</td>
<td>89.00</td>
<td>46.4545</td>
<td>28.61945</td>
</tr>
<tr>
<td>2016'</td>
<td>12.00</td>
<td>86.00</td>
<td>50.5455</td>
<td>27.53675</td>
</tr>
<tr>
<td>2017'</td>
<td>12.00</td>
<td>98.00</td>
<td>51.6364</td>
<td>33.09765</td>
</tr>
</tbody>
</table>

4.4 Effect of Ownership Structure and use of Financial Derivatives
The study findings presented in the Table 4.3 shows that banks ownership structure mean was highest in the year 2013 which stood at 43.8345 and lowest in the year 2016 which was 42.2386. The standard deviation for the ownership structure showed that the highest was 36.0213 for the year 2014 and lowest standard deviation for the year 2016 which was 34.2900. Below show the findings of the study.

Table 4.3: Ownership Structure and use of Financial Derivatives

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013'</td>
<td>0.16</td>
<td>97.55</td>
<td>43.8345</td>
<td>35.7875</td>
</tr>
<tr>
<td>2014'</td>
<td>1.01</td>
<td>96.45</td>
<td>43.6118</td>
<td>36.0213</td>
</tr>
<tr>
<td>2015'</td>
<td>1.02</td>
<td>95.5</td>
<td>42.56</td>
<td>35.6989</td>
</tr>
<tr>
<td>2016'</td>
<td>0.45</td>
<td>95.67</td>
<td>42.2386</td>
<td>34.2900</td>
</tr>
<tr>
<td>2017'</td>
<td>0.16</td>
<td>96.8</td>
<td>43.795</td>
<td>36.1000</td>
</tr>
</tbody>
</table>
4.5 Effect of Profitability and use of Financial Derivatives

As presented in Table 4.4 the study found that year 2015 represented the highest value for profitability as measured by ROA and this was 1.4860. The second highest profitability was recorded in the year 2016 at 1.4320 whereas the lowest value was witnessed in the year 2013 at 0.4700. As far as standard deviation is concerned, the study found that its values in profitability levels was highest in the year 2014 and lowest in year 2013 at 1.40494 and 0.39226. The results above clearly show the trend of profitability for the five-year periods. The results show that profitability was lowest in 2013, increased from 2014 to 2015 but dropped in 2016 and also dropped significantly in 2017.

Table 4.4: Descriptive Statistics on Profitability (ROA)

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>0.06</td>
<td>0.97</td>
<td>0.8380</td>
<td>0.39226</td>
</tr>
<tr>
<td>2014</td>
<td>0.13</td>
<td>0.83</td>
<td>1.0600</td>
<td>1.40494</td>
</tr>
<tr>
<td>2015</td>
<td>0.08</td>
<td>0.52</td>
<td>1.4860</td>
<td>1.27092</td>
</tr>
<tr>
<td>2016</td>
<td>0.01</td>
<td>0.81</td>
<td>1.4320</td>
<td>1.24502</td>
</tr>
<tr>
<td>2017</td>
<td>0.08</td>
<td>0.99</td>
<td>0.4700</td>
<td>0.46211</td>
</tr>
</tbody>
</table>

4.6 Inferential Statistics

4.6.1 Correlation Analysis

For an advanced analysis, the study used correlation analysis method. Correlation is a statistical measure that indicates the extent to which two or more variables fluctuate together. A positive correlation indicates the extent to which those variables increase or decrease in parallel; a negative correlation indicates the extent to which one variable increase as the other decreases.

The correlation results in Table 4.5 below indicate that firm size as measured by natural log of total assets is negatively correlated to ROA at -0.065 but positively and statistically insignificant at a 0.635 level of confidence. The study indicates that firm size as measured by natural log of assets is positively correlated to ownership structure with Pearson of 0.438 and also having a positive statistical significance level of 0.001. Again, it was found to be positively correlated to financial derivatives with a Pearson of 0.750 and also positively and statistically significant to each other at 0.000.

The study found that profitability as measured by ROA is negatively correlated to ownership structure as measured by foreign and local ownership with a Pearson of -0.087
and statistically insignificant to each other at 0.528 level of confidence. The results show that profitability is also positively correlated with financial derivatives at 0.430 and also positively and statistically significant at 0.001. The study shows that local and foreign ownerships are positively correlated to financial derivatives at 0.619 and also statistically significant to each other at 0.000. This, therefore, means that whether a company is locally or foreign owned, the use of financial derivatives was embraced in all the commercial banks listed at NSE.

From the findings, it can be said that an increase in firm size and return on asset leads to an increase in financial derivatives of the 11 commercial banks listed on the Nairobi Securities Exchange. It can also be said that both local and foreign owned commercial banks used financial derivatives. This is supported by the fact that ownership structure had a positive relationship with the use of financial derivatives (futures and swaps).

**Table 4.5: Correlations Analysis**

<table>
<thead>
<tr>
<th></th>
<th>Firm size</th>
<th>ROA</th>
<th>Ownership structure</th>
<th>FD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Firm size</strong></td>
<td>Pearson Correlation</td>
<td>1</td>
<td>Sig. (2-tailed)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>55</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ROA</strong></td>
<td>Pearson Correlation</td>
<td>-.065</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.635</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td><strong>Ownership structure</strong></td>
<td>Pearson Correlation</td>
<td>.438**</td>
<td>-.087</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.001</td>
<td>.528</td>
<td>55</td>
</tr>
<tr>
<td><strong>FD</strong></td>
<td>Pearson Correlation</td>
<td>.750**</td>
<td>.430**</td>
<td>.619**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.001</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
4.4 Multiple Regression Analysis

The study also presents analysis for multiple regressions analysis. This method was to help in determining the significant relationship between the variables. The results are analyzed in the form of model summary, ANOVA and regression coefficients’ tables in the subsequent sections.

**Table 4.6: Model Summary**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.958&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.919</td>
<td>.914</td>
<td>.44303</td>
</tr>
</tbody>
</table>

<sup>a</sup>. Predictors: (Constant), Ownership structure, ROA, Firm size

The result in Table 4.6 above is a model fit which was meant to determine how well the equation model fits the data. The coefficient of determination, R square was applied to determine the predictive power of the study model. The study indicates that the R square was 0.919 which means that 91.9% of the variations in financial derivatives can be explained by firm size, ownership structure and return on asset. The remaining 8.1% in unexplained; implying that the 8.1% forms variables that were not used by the study. Adjusted R square (coefficient of determination) depicts the variation in the financial derivatives as a result of changes in the independent variables. R is (coefficient of correlation) shows the relationship between the study variables. From the findings, it can be affirmatively said that there is indeed a strong positive statistical relationship between the study variables hence the equation model fits the data.

**Table 4.7: ANOVA<sup>a</sup>**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig. &lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>113.008</td>
<td>3</td>
<td>37.669</td>
<td>191.923</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>10.010</td>
<td>51</td>
<td>.196</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>123.018</td>
<td>54</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>. Dependent Variable: Financial derivatives (futures and swaps)

<sup>b</sup>. Predictors: (Constant), Ownership structure, ROA, Firm size
The statistics in Table 4.7 shows the Analysis of Variance (ANOVA) results. From the ANOVA statistics, the processed data had a significance level of 0.000 which showed that the data was ideal for making a conclusion on both independent and dependent variables. The statistics of \( F \) calculated at 5% Level of significance was found to 191.923. Since \( F \) statistics is more than the \( F \) critical value of 2.69, it can, therefore, be said that the overall model used in this study is significant. From the findings it can be deduced that there is a significant relationship between independent variables (firm size, ownership structure and profitability) and financial derivatives (dependent variable).

**Table 4.8: Coefficients**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized</th>
<th>Standardized</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>.503</td>
<td>.461</td>
<td>1.093</td>
<td>.280</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm size</td>
<td>1.003</td>
<td>.073</td>
<td>.610</td>
<td>13.720</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>ROA</td>
<td>1.063</td>
<td>.085</td>
<td>.504</td>
<td>12.561</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Ownership</td>
<td>1.261</td>
<td>.142</td>
<td>.396</td>
<td>8.889</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Financial derivatives (futures and swaps)

The functional form of the model was given as:

\[
Y = \alpha_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + e_i (i)
\]

Therefore, the model takes the form of:

\[
Y = 0.503 + 1.003X_1 + 1.0063X_2 + 1.261X_3
\]

The statistics in presented in Table 4.8 above shows results for regression coefficients. As shown in the equation, it had established that taking all independent variables (firm size, ownership structure and return on assets) into account at constant at zero, usage of financial derivatives among the listed commercial banks was 0.503. As presented in the table 4.9, the findings indicate that taking all other independent variables at constant zero, a unit improvement in the natural log of total assets in the banks would lead to a 1.003 increase in the use of financial derivatives.
It is also clear that a unit improvement in return on asset as a measure of profitability would lead to a 1.0063 increase in the use of financial derivatives by commercial banks. It was again found that a unit increase in either local or foreign ownerships would lead to a 1.261 increase in the use of financial derivatives among the listed commercial banks. The study also found that all the independent variables were significant at p<0.05 since all their p-values were less than 0.05 (actually they were 0.000).

From the findings, the results can be interpreted to mean that there exists a direct positive relationship between all the independent variables and dependent variable which is an indication that firm size as measured by natural log of total assets, profitability (ROA) and ownership structure (foreign and local) improves the use of financial derivatives by the commercial banks listed on the Nairobi Securities Exchange.

4.5 Chapter Summary
The present chapter analyzed, interpreted and discussed data as per research findings. The study found that firm size (natural log of total assets), profitability (ROA) and ownership structure (local and foreign) do have positive and significant statistical relationship with use of financial derivatives. The next and final chapter looks at summary, discussions, conclusions, recommendations and suggested areas for further study.
CHAPTER FIVE

5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction
The chapter presents the summary, discussion, conclusion, and recommendations as per research findings. The presentation adhered to research objectives that guided the study. Areas for further research study are also presented in this chapter. The sub sections are presented hereafter.

5.2 Summary
The main objective of the study was to determine factors that of affect use of financial derivatives among the 11 listed commercial banks on the Nairobi Securities Exchange. In order to achieve this, the study used three objectives namely: To examine effect of bank size on use of financial derivatives by listed commercial banks in Kenya; to assess the effect of ownership structure on use of financial derivatives by listed Kenya commercial banks in Kenya and to evaluate the effect of profitability on use of financial derivatives by listed commercial banks in Kenya.

The study used descriptive research method. Descriptive research design was applicable to this study because it helped in describing the state of affairs of the problem under investigation and the relationship between variables. The target population of this study involved all the 11 commercial banks listed at NSE in Kenya. The study used secondary data which involved use of quantitative data that had been previously collected by other people for a different purpose. The secondary was obtained from financial statements and statistics of the selected companies for a period of five years, 2013 to 2017. The study used SPSS Version 21 to aid the analysis of secondary data. The data was analyzed descriptively, by use Pearson correlation and regression methods. Descriptive involved descriptive tools such as means, maximum, minimum and standard deviation. The next step was the testing of data by use of Pearson moment correlation while the last step involved use of regression methods such as model summary, ANOVA and coefficients.

The study indicated that firm size as measured by natural log of total assets is negatively correlated to return on assets but positively and statistically insignificant at level of confidence. The study indicates that firm size as measured by natural log of assets is
positively correlated to ownership structure, it was also found to be positively correlated to financial derivatives and positively and statistically significant.

The study findings indicated that profitability as measured by ROA is negatively correlated to ownership structure as measured by foreign and local ownership and statistically insignificant. The results showed that profitability is positively correlated with financial derivatives and positively and statistically significant. The study shows that local and foreign ownerships are positively correlated to financial derivatives and statistically significant. This, therefore, means that whether a company is locally or foreign owned, the use of financial derivatives was embraced in all the commercial banks listed at NSE.

From the findings, it can be established that an increase in firm size and return on asset leads to an increase in financial derivatives of banks listed on the Nairobi Securities Exchange. It can also be said that both local and foreign owned commercial banks used financial derivatives. This is supported by the fact that ownership structure had a positive relationship with the use of futures and swaps.

5.3 Discussion
5.3.1 Effect of Firm Size on Use of Financial Derivatives

Regarding firm size, the correlation results found that firm size as measured by natural log of total assets is negatively correlated to ROA but positively and statistically insignificant at each other. The study found that firm size is positively correlated to ownership structure and also had a positive statistical significance to each other. Again, firm size was found to be positively correlated to financial derivatives and also positively and statistically significant at each other. The results are supported by another study that was conducted by Agiomirgiannakis et al (2006) and found that firm size had strong positive relationship with the use of financial derivatives among non-financial corporations in the UAE. Contrary to a study done by Prasetyantoko and Parmono (2008) based on linkage between firm size and financial derivatives of listed 23 companies in Turkey, the study found that firm size as measured by natural logarithm of total assets influences the use of financial derivatives and consequently profitability of the studied listed firms in Turkey. As such firms with larger size were found to have effective use of financial derivatives.

The correlation analysis is in agreement with that of Haushalter (2000 on the factors affecting the decision to use derivatives among 100 U.S oil and gas producer companies. The study gathered time series data for a period of 7 years (1991-1997). Findings of the
study showed that firm size was a major factor that made many of the studied corporations to use financial derivatives. The study further found that there exists statistical relationship between firm size and the decision to use of financial derivatives among the 100 oil and gas producer companies in the United States of America. However, those firms which were having small size were deemed to be slow in embracing financial derivative usage. According to a study by Foo and Yu (2005) found out that firm size played a significant role in the use of financial derivatives as such it was found to have significant relationship with financial while financial distress cost, growth opportunities and tax convexities did not play a significant role in identifying corporation’s extent of derivative usage. Another study that supports the findings is that of Hagedoorn and Cloodt (2003) who examined the relationship between firm size and the financial derivatives for a sample of 1,478 German manufacturing firms in 31 industries, the study found that there was weak correlation between firm size and financial derivatives of German manufacturing firms that were unstable over the study period. These results suggested that firm size is not the major determinant of financial derivatives; however, the variables had weak correlation implying they are weakly related.

As far as the regression results are concerned, the adjusted R square (coefficient of determination) depicted the variation in the financial derivatives as a result of changes in the firm size. This, therefore, means that there is a strong positive statistical relationship between the firm size and financial derivatives. Further, the study found that the fact that F statistics was more than the F critical value, the overall model used in this study was significant. The study also found that a unit increase in firm size as measured by natural log of total assets could lead to a unit increase in the use of financial derivatives. In congruence, Haushalter (2000) study established that there exists statistical relationship between firm size and the decision to use of financial derivatives. In line with the findings a study by Wafula (2009) tested the drivers of financial derivatives for the firms listed on the Nairobi Securities Exchange. The study found that firm size as independent variables is one of the drivers of financial derivatives. Upon further analysis, the study found that a weak but significantly positive relationship was demonstrated between firm size and financial derivatives.

The findings of the study is in line with that of Afza and Alam (2011) who in their study sought to find out the factors affecting decision to use financial derivative by listed firms in the Karachi Stock Exchange. Logit model was applied to analyze the overall effect of
companies’ firm size on firms’ decision to use financial derivative instruments for hedging. Upon analysis, the study revealed that firms having larger sizes were more likely to use financial derivative instruments such as swaps, futures and options to reduce exchange rate exposure. The study again found that financially distressed large-size firms with financial constraints and fewer managerial holdings are more likely to use financial derivatives in order to boost their market performance.

5.3.2 Effect of Ownership Structure on Use of Financial Derivatives

Regarding correlation results on ownership structure for foreign banks showed a negatively correlated with the financial derivatives where this is in line with a study by Boubaker, Mefteh-Wali and Shaikh (2010) who found that ownership has a negative effect on the use of derivatives. However, the presence of outside block holders seems not to affect the firms’ hedging policy. Local banks showed that ownership structure was positively correlated to financial derivatives and also statistically significant to each other. Regarding the regression results, the study found that the adjusted R square showed a variation in the financial derivatives because of changes in ownership structure which, therefore, shows that there was a strong positive statistical relationship between the study ownership structure and financial derivatives. The finding is in agreement with a study by Allayannis, Lel and Miller (2010) who examined the impact ownership structure on financial derivatives among non-financial companies in Japan. The study found that high concentration of foreign ownership had negative impact on financial derivatives. The study again found that local ownership had statistical and positive relationship with the quest to use financial derivatives.

The finding is in agreement with a study by Boubaker, Mefteh-Wali and Shaikh (2010) in their study investigated the effect of ownership structure on derivatives' use policy. The research study covered a period of 3 years (2000-2002). The study used Pearson product moment correlation analysis. The study found that ownership has a negative effect on the decision to use derivatives. Another study by Ozsoz, Gurarda and Ates (2014) on determining the relationship between ownership structure and financial derivatives of 22 publicly traded Turkish companies for a period of 4 years (2010-2013). The study found that ownership has a negative impact on financial derivatives ratings on financial derivatives as such the study recommended that companies should embrace appropriate financial derivatives that could increase their market survival in the country.
The findings established that the F statistics was more than the F critical value of 2.69, which implied that the overall model used in this study was significant. It can then be said that there is a significant relationship between ownership structure and financial derivatives. In support another study by Mudambi & Nicosia (2008) concluded that ownership structure was positively related to firm performance in the UK financial services industry. This is in line with a study by Zhao (2010) who examined the relationship between ownership structure and firms’ use of financial derivatives by the UK based financial services industry. By use of regression analysis, the study found that institutional ownership and local ownership had significant positive relationship with firms’ utilization of financial derivatives in the UK.

A study that supports the finding by Cherutoi (2006) who investigated the relationship between ownership structure and the use of financial derivatives among the non-financial institutions listed at the Nairobi Securities Exchange during the period of 6 years (2000-2005). The study found that 66% of the firms’ that use financial derivatives was as a result of the ownership structure in the form of local or foreign ownerships. However, the rest of the firms, 34% showed insignificant statistical relationship between ownership structure and the use of financial derivatives.

A study that supports the findings by Demsetz and Lehn (2015) investigated the relationship between ownership structure and use of financial derivatives (futures and swaps) of companies listed at Johannesburg Securities Exchange for a period of 3 years (2010-2012). By use of regression analysis, the study found that managerial and directorial ownerships positively affected the use of financial derivatives whereas public and foreign ownership had negative relationship with use of financial derivatives among the companies that were listed at JSE. Another study that supports by Berle and Means (2012) on the impact of ownership structure on the usability of financial derivatives in India. The researchers made use of correlation and multiple linear regressions analyses methods. The study found that managerial and institutional ownerships positively influence the level of firms’ use of financial derivatives while foreign ownership had insignificant association with the use of financial derivatives.

5.3.3 Effect of Profitability on Use of Financial Derivatives

As far as the correlation results is concerned, the study found that profitability as measured by ROA is negatively correlated to ownership structure and statistically insignificant to
each other. The study found that profitability was also positively correlated with financial
derivatives and also positively and statistically significant to each other. In disagreement,
a study by Norden, Buston, and Wagner (2011) found that credit risk derivatives adopted
by the financial institutions had no relationship with profitability. This is supported by
Akun (2014) whose study was to establish the effect of financial derivatives on the
profitability of commercial banks in Kenya. Return on Assets was used as the proxy for
profitability while financial derivatives measures such as swaps, contracts, options and
forwards were the predictor variables. The findings of the study indicated that there is an
insignificant negative relationship between the profitability (ROA) of commercial banks in
Kenya and financial derivatives. Additionally, the negative nature of the relationship
implied that a unit change in the increase in financial derivatives usage will result to a
decrease in profitability (ROA) of the commercial banks in Kenya.

Regarding multiple regression, the Adjusted R square established a variation in the
financial derivatives as a result of change in the independent variable, profitability (ROA).
This, therefore, imply that the study found that that there is a strong positive statistical
relationship between the profitability (ROA). The F statistics also found that the overall
model used in the study was significant hence presence of positive statistical relationship.
The study also found that a unit increase in the profitability (ROA) could lead to a unit
increase in the use of financial derivatives among commercial banks by the same factor.
The finding contradicts a study by Cyree, Huang, and Lindley (2012) which found a mix
result. They found that adoption of financial derivatives such options and futures depict a
positive relationship with profitability whereas contracts were found to have negative
relationship with profitability. This is in agreement with a study Hartarska and Nadolnyak
(2013) on the impact of use of financial derivatives on the profitability of the agricultural
banks in Canada. The study found that use of financial derivatives has positive impact on
the profitability of agricultural banks.

Another study that support the regression analysis by Gorton and Rosen (2013) was based
on examining influence of financial derivatives on the profitability of commercial banks in
Sweden. Time series data was collected for 4 years (2008-2011). The study found that use
of financial derivatives components such as swaps, contracts futures and options improve
the profitability of the firms. Profitability was thus found to be statistically and positively
correlated to financial derivatives’ components among Swedish companies. Sanothery
study by Deshmukh, Greenbaum, and Kanatas (2013) on the relationship between financial
derivatives and profitability of commercial banks in Brazil. They found out that there was positive statistical relationship between financial derivatives and profitability. It was thus established that use of financial derivatives freed commercial banks from the restrictions imposed by traditional internal hedging as such it permitted the commercial banks to separate its choice of assets so as to improve profitability even if the market is turbulent. Therefore, financial derivative use was found to have a strong significant positive relationship with the profitability of the commercial banks.

The finding of the study is supported by Said (2011) who investigated the effect of the use of derivatives on U.S. banks profitability during the sample period of 8 years (2002-2009). They measured bank profitability by the ratio of return on assets, the ratio of return on equity, the efficiency ratio, cost of funding earning assets, and net interest margin. The study found that the profitability of firms had significant positive link with financial derivatives that the commercial banks applied.

5.4 Conclusions
5.4.1 Effect of Bank Size on use of Financial Derivatives

Based on correlation results, the study concluded that firm size as measured by natural log of total assets had a strong positive correlation with financial derivatives of the studied commercial banks. This was affirmed by presence of statistically significant relationship between the variables. The regression results also concluded that firm size as measured by natural log of total assets had a strong positive relationship with financial derivatives as such an increase in firm could to an increase in the use of financial derivatives among the listed commercial banks in Kenya.

5.4.2 Effect of Ownership Structure on use of Financial Derivatives

Based on correlation results, the study concludes the ownership structure as measured by local had strong correlation with financial and this was also supported by presence of positive significant relationship between the two variables but weak negatively correlated with the and foreign ownerships. The conclusion was also supported by results from regression which showed existence of a positive significant relationship between ownership structure and financial derivatives. From the two results it can be conclusively said that the more companies are either locally or foreign the more they are likely to use financial derivatives. The local banks are willing to use financial derivatives as opposed to foreign banks. The study, therefore, concluded that local ownership structure for banks was
positively related to the use of financial derivatives in Kenyan financial industry compared to the foreign banks that listed in the Kenyan market.

5.4.3 Effect of Profitability on use of Financial Derivatives

Based on the correlation results, the study concluded that there is strong positive correlation between profitability as measured by return on asset and use of financial derivatives among the listed commercial banks in Kenya. This conclusion was also affirmed by presence of positive significant relationship between the variables from the correlation results. In support of correlation results, the regression results also concluded that profitability (ROA) had significant relationship with use of financial derivatives. From results it can be conclusively said that a unit increase in the profitability (ROA) by any factor increases the use of financial derivatives in the studied banks by a similar factor.

5.5 Recommendations

5.5.1 Recommendations for Improvement

5.5.1.1 Effect of Bank Size on use of Financial Derivatives

The study recommends that in order for commercial banks to increase their use of financial derivatives there is need for commercial banks to increase firm size as measured by natural log of total assets. By increasing firm size the commercial banks will be able to improve their use of financial derivatives and consequently increase financial performance.

5.5.1.2 Effect of Ownership Structure on use of Financial Derivatives

The study recommends that companies should come up with strategies that control the maximum percentage shares that an individual or an entity can hold. This study, therefore, suggest that commercial banks should provide policy guidelines that aim to make optimal use of financial derivative instruments such as options, futures, forwards and contracts. It also recommends that policymakers in the financial sector should develop a well-established derivative market in Kenya so as to enhance awareness on use of financial derivatives and to facilitate banks that have high foreign sales and more volatility in their cash flows.

5.5.1.3 The Relationship between Profitability and Financial Distress

The study recommends that Nairobi Securities Exchange and commercial banks in Kenya, should work jointly to fast track the introduction of exchange traded financial derivative instruments like swaps, futures, forwards and options. These measures will thus help in
enhancing the use of financial derivatives and consequently a realization of financial growth vis-à-vis profitability.

5.5.2 Recommendations for Further Research

The main objective of this study is to examine the factors affecting the use of financial derivatives by listed commercial banks in Kenya. The study, therefore, recommends further research study could also be conducted to determine the effect of financial derivatives on the profitability of commercial banks in Kenya. The study also suggests a further research can be carried out to investigate the effect of components of derivatives such as forwards, swaps and options and how they affect financial performance of commercial banks in the country.
REFERENCES


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## APPENDICES

### APPENDIX I: COMMERCIAL BANKS LISTED AT NSE

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