

**EFFECT OF BANKS AND MARKET SPECIFIC CHARACTERISTICS ON THE
USE OF DERIVATIVES AMONG COMMERCIAL BANKS IN KENYA**

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university or for any other award.

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DEDICATION

This research is dedicated to policy makers in financial institutions

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LIST OF ABBREVIATIONS

BIS	Business International Settlements
CMA	Capital Markets Authority
FASB	Financial Accounting Standards Board
IMF	International Monetary Fund
KBA	Kenya Bankers Association
KNBS	Kenya National Bureau of Statistics
NSE	Nairobi stock exchange
OTC	Over The Counter
PRM	Panel Regression Model
TC/TRWA	Total Capital to Total Risk Weighted Assets
USD	US Dollar
WB	World Bank

OPERATIONAL DEFINITION OF TERMS

- CBK regulations:** The study will consider the CBK minimum regulations on the banks' total capital to total risk weighted assets of commercial banks in Kenya from the period 2009 to 2014
- Derivatives:** Are financial tools that are used by banks to protect against risks. Banks also use these tools for trading. The derivatives under focus in the study are the forwards and swaps. This study considered the Yearly value of derivative forward and swaps contracts for the selected banks from 2009 to 2014.
- Exchange rate volatility:** It is the propensity of currencies to increase or diminish in value. Exchange rate volatility in the study is to be determined by examining the standard deviation of the nominal US dollar exchange rate (USD/KSHS) on yearly basis covering the period 2009 to 2014.
- Interest rates volatility:** It measures the variability of nominal market interest rates from one period to another. This is determined in the study by examining the standard deviation of changes in of nominal interest rates on treasury bonds on yearly basis covering the period 2009 to 2014.
- Liquidity:** This concerns the capacity to fulfill its monetary requirements as they become outstanding. In this study liquidity of bank is determined by the ratio between bank's loans and advances (assets) to customer deposits (short term liabilities).
- Size of the bank:** Is a variable used in the study to refer to the size of a commercial bank as measured through the natural logarithm of bank's value of assets for the period 2009 to 2014.

Type of bank:

Type of bank in this study is classified as either foreign owned banks or domestically owned banks in Kenya. Dummies were used to measure this variable whereby 0= Foreign owned banks and 1= domestically owned bank.

ABSTRACT

Since the global financial turmoil in 2008, which led to the fall down of financial institutions, there is an increased focus on risk management practices in financial institutions globally. Being an essential tool for risk management and investment reasons, the usage of derivatives has grown speedily lately. Interest rate and currency risks represent the key forms of risks faced by the banks due to their volatility. While several empirical studies have been conducted in the developed financial markets on the application of financial derivatives, a lot remain undone on emerging countries like Kenya on the usage of derivatives as a viable instrument of hedging against the financial risks. Consequently, the primary objective of the study was to establish the effect of banks' in addition to market specific characteristics on the use of derivatives among the licensed banks in Kenya. The banks specific characteristics under study were the size of the bank, and type of bank. The market specific characteristics under the study were the interest rates and exchange rate volatility while the moderating characteristic was the Central bank of Kenya regulations. The research design was descriptive which generally describes the events from the variables under study. The study involved carrying out a census of all commercial banks that have been operational from 2009 to 2014. The researcher found it appropriate to use census method because the population under study was small and easily accessible. A desk review of secondary data was carried out through review of documentary reports of CBK, Nairobi Securities Exchange, Kenya National Bureau of Statistics, IMF, World Bank and the banks' financial statements through the period 2009 to 2014. A panel regression analysis model was utilized to examine relationship between banks and market specific characteristics and usage of derivatives among the licensed banks in Kenya. The data collected was used with an aim of presenting the research findings in respect to the extent to which banks' and market characteristics affect the use of derivatives among the commercial banks in Kenya. Stata v13 software was used to produce descriptive statistics such as means and standard deviation. Results from the Panel model, holding other factors constant, indicated that Interest rate volatility, exchange rate volatility, bank size and liquidity positively affects the use of derivatives while bank type negatively affects the use of derivatives among commercial banks in Kenya. The results further found the R^2 to be 0.659 meaning that 65.9 percent of the variations in the use of derivatives are explained by the predictor variables. In the presence of a moderator R^2 rose to 0.682. The study recommends that the CBK should monitor the exchange rates by coming up with an exchange rate target band beyond which it can intervene to stabilize exchange rates and protect them from the exchange rate volatilities. The study further recommends that the capital markets authority in liaison with the central bank of Kenya should set up a derivative exchange to allow the banks and companies with small size in terms of the assets to participate in the derivatives market. Thirdly, the study recommends that banks should set a proportion of its net profit to use in derivative trade. Finally, the study recommends that the Central Bank of Kenya should come up with a strong regulatory and policy environment to facilitate the development of derivatives market that will help banks manage its financial risks.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The global financial turmoil of 2008, led to the fall down of financial institutions, thus, there is an increased focus on risk management practices in financial institutions globally (Otsyula, 2014). Commercial banks and other financial institutions are intermediaries with much levered balance sheets making them more prone to both the interest rate and currency risks. Consequently, the banks need valuable ways to deal with these exposures (Otsyula, 2014). According to Brewer & Moser, (2001) banks take part in derivative markets mainly for the reason that their conventional functions of lending and borrowing make them exposed to financial risks thus helping them in hedging or reducing risk to attain satisfactory performance.

The BIS statistics (2013) on over the counter derivatives markets indicated that the estimated amounts outstanding totaled \$693 trillion as at June 2013 in Europe. In the recently industrialized countries which comprise China, Malaysia, India, Singapore, Hong Kong, Taiwan, and South Korea, the expansion of derivative markets has been motivated by very strong growth in the Over the counter market through various instruments namely; forwards (45 percent), FX swaps (35 percent), currency swaps (29 percent) and options at 102 percent (Ehlers and packer, 2013). These statistics obtained from the BIS, (2013) indicate a high growth rate in derivative markets in the recently industrialized countries. In terms of the category of derivative contracts, the data obtained from BIS, (2013) indicates that the interest rate contracts are the largest segment in global

over the counter market with an estimated amount of \$577 trillion as at end of June 2013. Notional amount for single currency interest rate derivatives dominates global aggregate because of its significance in managing interest rate risk in private and public liability (BIS, 2013). The estimated global over the counter derivatives amounts linked to foreign exchange contracts amounted to \$81 trillion as at June 2013.

Notwithstanding the expansion in global derivative market, the development of derivatives market in African economies remains a challenge (Clancy, 2014). According to Olatundun, (2009) majority African countries with the exception of South Africa have no organized exchange for derivatives. Bartram, Brown and Fehle (2003) indicated that ninety percent of the companies and financial companies in South Africa employ derivative instruments to hedge against risks associated with currency and interest rate due to the volatilities in the market. The Financial Stability Board (FSB) Peer Review of South Africa disclose that the South African Over the counter market estimated worth was R27.7 trillion (\$3.3 trillion) as at June 2012. The bulk (59%) of these transactions was estimated to be carried out in the inter-bank market.

In Kenya, Ithai (2013) observes that there is presently no structured exchange for financial derivatives. Barasa (2013) noted that the foremost barrier towards the development of the derivative markets in Kenya is the regulatory and policy environment. As at the end of 2012, the data obtained from the commercial banks' financials reveals that the total volume of derivatives stood at \$1.96 billion (Kshs. 168.8 billion). This data reveals lower amount of over the counter derivatives in comparison with South Africa's \$ 3.3 trillion (FSB, 2012). This study will focus primarily on the effect of bank's specific and market specific characteristics on the use of derivatives

among the Kenyan commercial banks with an aim of understanding the variables affecting the use of derivatives among commercial banks.

1.1.1 Use of derivatives

According to Barasa, (2013), derivatives are mostly classified by the association between the type underlying (Foreign exchange derivatives, equity derivatives, credit derivatives as well as interest rate derivatives) and the derivative (forwards, options, swaps and futures).

The summary of the statistic are as shown in table one and two below.

Table 1: Global notional amount outstanding in billions of US dollar

Interest rate contracts	June 2007	June 2010	June 2013
Forwards (FRAs)	25,607.00	60,028.00	89,434.00
Interest rate swaps	299,155.00	367,541.00	437,066.00
Total options	56,587.00	50,519.00	50,191.00
Other	7.00	-	579.00
Total	381,356.00	478,088.00	577,270.00

Source (BIS statistics, 2013)

As shown in table 1, global Interest rate contracts amounted to \$577 trillion at end of June 2013. The growth was motivated by significant upsurge in FRAs which was estimated to be \$89 trillion; representing a 21 percent increase. The estimated interest rate swaps increased by 15 percent to \$437 trillion.

Table 2 shows a summary of the global notional amount for foreign exchange related derivatives from 2007 to 2013

Table 2: Global notional amount outstanding in billions of US dollar

Foreign exchange contracts	June 2007	June 2010	June 2013
Forwards and swaps	29,775.00	31,935.00	39,575.00
currency swaps	14,130.00	18,890.00	26,318.00
Total options	13,662.00	12,107.00	15,077.00
Other	37.00	1.00	56.00
Total	57,604.00	62,933.00	81,025.00

Source (BIS statistics 2013)

From table 2, the global OTC derivatives associated with foreign exchange contracts amounted to \$81 trillion at end of June 2013 a significant growth from \$57 trillion as at the end of June 2007.

1.1.2 Use of derivatives among commercial banks in Kenya

According to Barasa, (2013), the Kenyan picture, on derivatives, portrays a nascent and emerging situation. As of today, no structured exchange for financial derivatives exists in Kenya just like in many emerging economies in Africa. This is further reinforced by KBA, (2015), report which outlines that commercial banks in Kenya are offering a limited number of derivatives which include foreign currency denominated forward contracts, interest rates and cross-currency swaps.

In 2002, the NSE sought to build up the institutional arrangement by undertaking senior management and board study tours to gain exposure on the operations and regulation of financial products such as futures and options (Barasa, 2013). Moreover, the CMA planned that a futures and options market would be established once the establishment of an electronic depository trading and settlement was concluded. The CMA sought to expand the market horizon by carrying out a study on the feasibility of setting up a futures and options market section (CMA Annual Report, 2002). Whereas the Automated Trading System (ATS) was established in 2006, it was anticipated that the derivatives segment would take off sooner. To date, the derivatives exchange is yet to be operational (Barasa, 2013).

Despite the absence of a derivatives exchange in Kenya, Ithai (2013) observes that most derivatives are traded over the counter. Njoroge, Matumo and Maina, (2013) point out that the most utilized derivatives instruments in Kenya are the forwards and swaps. Most Kenyan corporations use forward contracts to mitigate risk that may arise while importing or exporting goods by using swaps in making the necessary measures to swap currency resources over the stipulated time period. Based on the data obtained from the Kenyan commercial banks from 2009 to 2014, the forward contracts stood at 30 billion as at 2014 while the cross-currency swaps stood at Kshs. 150 billion.

The table below gives a summary on the derivatives contracts that are done in the over the counter market by the commercial banks from 2009 to 2014.

Table 3: Volume of derivative contracts by commercial banks in kshs'000

Derivatives	2009	2010	2011	2012	2013	2014
Forwards	11,821,010	15,390,636	19,328,015	26,851,281	28,378,535	30,265,900
Currency swaps	78,545,273	94,845,404	126,599,325	136,964,876	167,723,195	150,703,379
Options	4,873,577	4,403,026	5,365,015	5,008,322	5,881,768	5,509,288
TOTAL	95,241,869	114,641,076	151,294,366	168,826,491	201,985,511	186,480,581

Source (Commercial banks in Kenya)

1.1.3 Market specific characteristics and use of derivatives

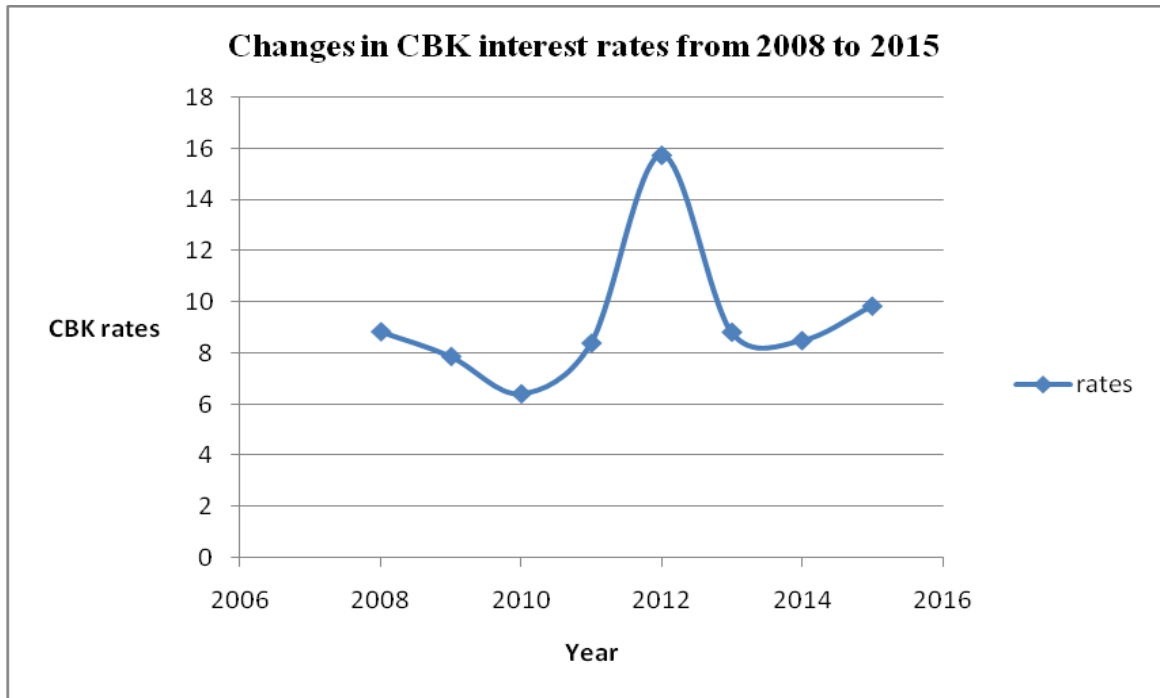
The market specific characteristics identified in the study are the interest rate and exchange rate volatility

1.1.3.1 Interest rate volatility

According to data obtained from the central bank of Kenya, Interest rates have exhibited a fluctuating trend since the interest rates liberalization in the early 1990s this has led to interest rate risk vulnerability by firms making it necessary for them to employ interest rate derivatives to hedge (Ngugi & Ndungu, 2000). According to Soretha, (2004), Interest rate risk can be controlled to a great extent by through the use of derivatives. This will ultimately, help the banks achieve great returns and profitability.

The chart below indicates the fluctuation of interest rates from 2008 to 2015 based on the data obtained from the central bank of Kenya.

Figure 1: Changes in CBK interest rates from 2008 to 2015



Source (CBK, 2016)

1.1.3.2 Exchange rate volatility.

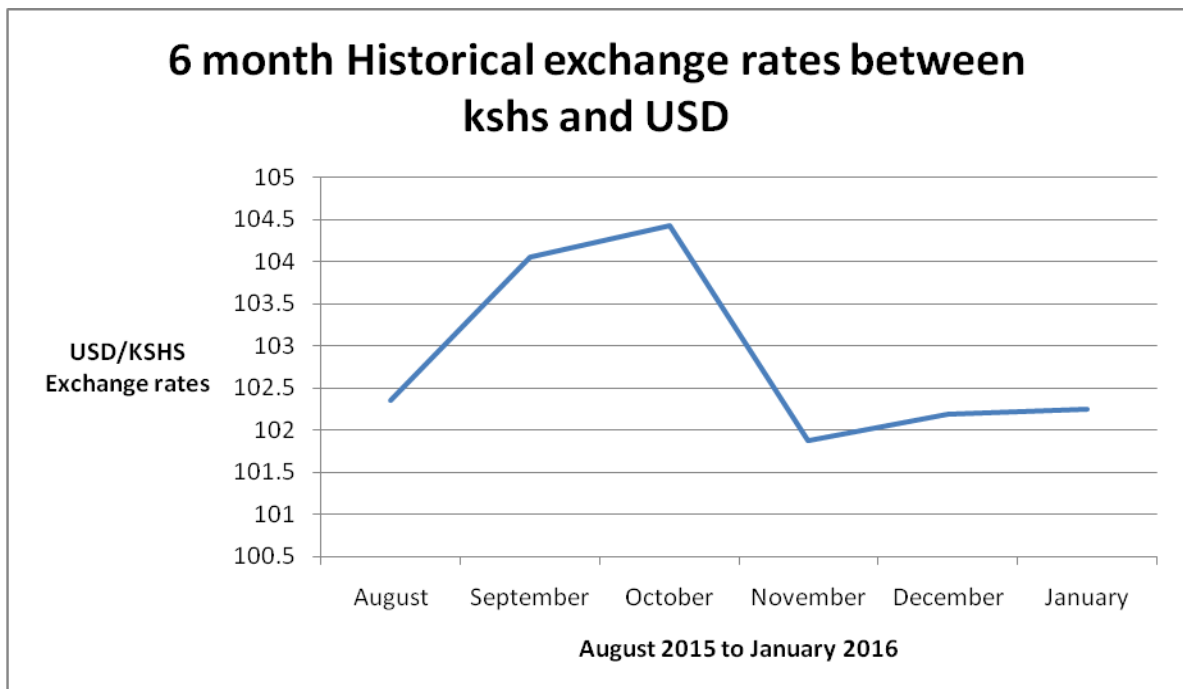
Exchange rate instability influences the operating cash flows through economic, transaction, and translation effects of exchange rate exposure. As a result, derivatives have emerged as valuable tools of managing foreign exchange exposure (Abor, 2005).

According to Ahmed (2015), the currency rates in Kenya have been characterized with rapid decline in the value of the Kenyan Shilling, which unfavorably impinge on the Kenyan economy. Like most firms, banks can be affected by exchange rate fluctuations. Banks with most international operations and transactions of foreign currencies are the most vulnerable to exchange rate fluctuations (Ahmed, 2015).

As at 2011, there was an upsurge in the use of swap derivatives by banks to finance both their short and long positions in the US Dollar or Kenya Shilling as a means of hedging their clients' requirements (C.B.K, 2012). The data obtained from the financials of commercial banks in Kenya indicates that as at 2014, currency swaps used amounted to Kshs. 150 billion compared to Kshs. 78.5 billion as at the end of 2009. Forward contracts mainly used by commercial banks to manage currency exposure amounted to Kshs. 30.2 billion compared to Kshs. 11.8 billion as at 2009.

The chart below reveals the six-month fluctuation in exchange rates in Kenya based on six-month period data obtained from the central bank of Kenya.

Figure 2: Six month historical exchange rates between Kshs and USD



Source (CBK, 2016)

1.1.4 Bank characteristics on use of derivatives

Derivatives are instruments that allow banks to deal with market risk without necessarily incurring extra capital needs. The banks' use of derivatives has been on a steady rise in the recent years partly due to regulatory modifications concerning banks capital adequacy requirements as well as specific characteristics surrounding the banks (Hundman, 1995).

1.1.4.1 Size of Asset of banks

According to Hundman, (1995) bigger banks have a higher likelihood of using derivatives than smaller banks for a number of reasons; first, derivatives are very intricate tools and need cautious administering and scrutiny. Secondly, banks that are large in size have adequate resources to which they can deploy unlike banks that are small in size which may have insufficient resources to which they can utilize towards the use of these instruments. Thirdly, large banks have capacity to engage in derivative trading in large volumes. Consequently, large banks find themselves enjoying economies of scale as transaction fees involved in trading derivatives decrease with increased derivatives transactions. Finally, banks that are large in size are more vulnerable to market risk for the reason that their sources of borrowing do have differences. As depicted by Ahmed (2015), there is a positive correlation in relation to a bank size and the currency exposure. The major reason cited for this is that banks that are big in size do have quite a number of foreign exchange transactions and trading positions. Therefore, one of the aims of the research was to describe the association of derivative use and asset size of the banks.

1.1.4.2 Type of bank and derivatives

According to Allayannis and Ofek, (2001), banks having a larger component of global activities are much expected to encounter and administer their currency exposure. El-Masry (2006) in his study, tried to give an exegesis on derivatives usage and risk management measures in use in the United Kingdom financial market. One of the key findings of the study was that public corporations had a higher possibility of making use of derivatives than the private firms. Additionally, it was observed that there was more derivative usage among international companies. The study took into consideration the type of the bank by focusing on the domestically owned banks against foreign owned banks. Due to the level of their operations, the use of derivatives among foreign owned banks is more likely to vary with that of the domestically owned banks. This study therefore aimed at determining the correlation between the type of bank and use of derivatives.

1.1.4.3 Liquidity

Liquidity is the most significant characteristic of a sound functioning market (Harris, 2002). Lack of ample liquidity in the recently established markets leads to relatively high cost of hedging and hold back the development of contracts (Mbungu, 2013). The role of liquidity is in ensuring that arbitrage is cheap and convenient. According to Gamba and Triantis (2011), liquidity is frequently thrown in as a regression variable in empirical studies on hedging, and the proof implies that corporation using derivatives display inferior short-term liquidity compared to those that do not use derivatives. This study thus

aimed at clearly ascertaining the relationship between liquidity of the banks and the use of derivatives.

1.2 Statement of the problem

Since the global financial turmoil in 2008, which led to the fall down of financial institutions, there is an increased focus on risk management practices in financial institutions globally (Otsyula, 2014). Commercial banks and other financial institutions are intermediaries that have greatly levered balance sheets therefore; they have huge risk exposures in terms of interest rate and currency and require successful methods to deal with these vulnerabilities (Otsyula, 2014). Derivatives facilitate better access to finance through the allocation of funds to the most appropriate business undertakings besides assisting in financial risk mitigation measures in an institution by offering them with an option to dealing with price fluctuations and advance financial market structures in a bid to tackle the economic challenges arising from globalization (Mugambi, 2014).

Despite the global growth in use of derivatives, the Kenyan picture portrays a nascent and emerging situation; there is an absence of a derivatives exchange even though derivatives are known to add on other sources of financing and insurance in investments (Barasa, 2013). In the absence of an organized derivatives exchange, Ithai (2013) observes that most derivatives are traded over the counter. As at the end of 2012, the figures obtained from the commercial banks' financials reveals that the total volume of derivatives stood at \$1.96 billion (Kshs. 168.8 billion). These figures reveal lesser quantity of the over the counter derivatives in comparison with South Africa's \$ 3.3 trillion (FSB, 2012). Olatundun (2009) indicated that emerging economies are pigeonholed by very weak

financial markets and inadequacy of finances posing a challenge to development of a derivatives market which could otherwise have helped in shielding investors from financial risks such as currency and interest rate risks.

Attempts have been made through earlier studies to understand more on the use of derivatives. Titova (2012) sought to establish the impact of derivatives and bank specific variables on European bank risks. Keffala and Peretti, (2011) sought to determine the significance of derivative instrument use on capital market exposure. Luiz and Laham (2005) researched on the significance of hedging on the worth of a company as evidenced from a sample of some of the non-financial companies in Brazil. The major drawback with these studies is that they mainly focus on the effect of usage of derivatives and fails to present the specific variables influencing the use of the derivatives among companies. Secondly these studies were carried out mainly on the developed markets whose financial systems are more advanced than that of most countries within the African continent.

In Kenya, Ithai (2013) did a study on the features of the sluggish pace adoption of derivatives in Kenya. The major limitation of this study is that while there are bank's internal factors that hinder the adoption of derivatives in Kenya, only the market factors are analyzed. Another study done locally is on the usefulness of financial derivatives in mitigating foreign exchange risk amongst the Kenyan banks that are listed at the NSE (Nasurutia, 2013). Its major constraint is that it only examines the effect of derivatives by focusing only on currency risk leaving out other risks like the interest rate risk. Otsyula (2014) did a study on the challenges Kenyan banks face by use of financial derivatives in hedging against interest rate risk. Nevertheless, the research focused mainly on the financial institution guiding principle and market trading policy, technology as some of

the challenges faced towards the utilization of financial derivatives to moderate interest rate exposure by Kenya's commercial banks yet there are challenges that may arise from banks' characteristics. Consequently, a valid question arises: which banks' specific characteristics affect the use of derivatives in companies? To answer this question, this study aimed at ascertaining the effect of bank's specific and market characteristics on the use of derivatives among the licensed banks in Kenya.

1.3 Research Objectives

The wide-ranging undertaking of the research was to look into the effect of banks' and market specific characteristics on use of derivatives among the Kenyan commercial banks.

The objectives of the study were;

1. To investigate the effect of interest rate volatility on use of derivatives among the commercial banks in Kenya.
2. To evaluate the effect of exchange rate volatility on the use of derivatives among the commercial banks in Kenya.
3. To evaluate the effect of the size of the bank on the use of derivatives used by the commercial banks in Kenya.
4. To examine the effect of type of the bank on the use of derivatives by the commercial banks in Kenya.
5. To determine effect of liquidity on the use of derivatives by commercial banks in Kenya.

6. To examine the effect of regulations on the relationship between the bank and market characteristics on use of derivatives among the commercial banks in Kenya.

1.4 Hypothesis

H₀₁: The interest rate volatility has no significant effect on the use of derivatives used by the commercial banks in Kenya.

H₀₂: The exchange rate volatility has no significant effect on the use of derivatives used by the commercial banks in Kenya.

H₀₃: The size of the bank has no significant effect on the use of derivatives used by the commercial banks in Kenya.

H₀₄: The type of the bank has no significant effect on the use of derivatives used by the commercial banks in Kenya.

H₀₅: The liquidity of the bank has no significant effect on the use of derivatives used by the commercial banks in Kenya.

H₀₆: Regulations has no significant moderating effect on the use of derivatives used by the commercial banks in Kenya.

1.5 Significance of the study

The research will add to the presented empirical literature on the effect of banks specific and market characteristics on the derivatives usage among the commercial banks. This will in turn provide a basis to the scholars for the future studies on the adoption of derivatives among commercial banks.

It will also provide useful understanding into the nature and use of derivatives in the banking industry in the emerging markets taking into consideration certain characteristics of the Kenyan commercial banks like the size of the bank, type of bank and liquidity.

To the policy makers who include the government, CBK, CMA and the Kenya Bankers Association (KBA), the study will provide a basis for the formulation of fiscal and monetary policies that will support the faster growth of the derivative markets in the developing countries like Kenya and encourage greater participation of the commercial banks on the usage of derivatives as a viable tool of managing risk.

1.6 Scope of the study

The study focused on 38 banks in Kenya licensed by CBK. The study was only limited to commercial banks despite the existence of other financial institutions like insurance companies and micro finance institutions. This is because commercial banks play a lead role in use of derivatives for trading and hedging against risks. Besides, the commercial banks are intermediaries with an extremely levered balance sheet and have big exposures to risks. This study covered the period 2009 to 2014 to help in indicating the latest trends on the derivatives markets. 2008 to 2009 was the period when the world witnessed a global economic crisis that adversely affected many financial institutions.

1.7 Organization of the study

This thesis is organized as follows: chapter one explains the background of the research, objectives of the research, significance of the study and the scope of the study. Chapter two provides literature review on the effect of bank and market characteristics on the use

of derivatives among the commercial banks in Kenya and a conceptual framework. Chapter three explains the methodology used in the study. Chapter four presents the findings of the study and their interpretation, while chapter five presents the, summary, discussion, conclusions, limitations of the study, policy recommendations and suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the theoretical and empirical review. The theoretical review, discusses the theories of hedging and use of derivatives while the empirical review, discusses works of other authors in relation to the use of derivatives as risk management instruments.

2.2 Theoretical framework

This section explains the appropriate theories that support the use of derivatives as hedging tools against financial risks.

2.2.1 Traditional hedging theory

This theory stresses on how participants in the futures market can mitigate or evade potential risk. Hedgers or participants in the futures market take a position that is equivalent in degree but contrary to their position in cash market. For example, entities holding stock of X units would shield themselves from loss arising from any decrease in price by trading stock X futures. When this transaction takes place, futures contracts would be obtained thus annulling both positions. The theory further discusses that the spot and futures prices largely move hand in hand hence, the likelihood that variations in futures prices closely relate to variations in cash prices (Hieronymus, 1971). This theory

has long been recognized as a simple way of hedging practice and was helpful to the study in terms of explaining the use of derivative instruments as hedging tools.

2.2.2 Expectation Theory of Forward Rates

Expectation theory advanced by Muth (1961), suggests that most of the forward rates of present long term bonds are strongly correlated to the future interim interest rates of expected market of bonds. The term-structure of interest rates is well explained by this theory. Further, there exist three types of expectation theories that have been researched namely; market segmentation theory, pure expectations theory, as well as preferred habitat theory (Robert, 1998). The pure expectation theory helps in determining current rate of interest two years from now (forward rate) by compounding the sum of the present one year rate and a year forward. The Market segmentation theory assumes a different demand and supply relationships for the short and long term debt. The Preferred habitat theory is premised on the assumption that investors have different preferences in terms of the debt maturity periods and must be offered a premium. The application of this theory in foreign exchange means that forward exchange rates for release at a future date are equivalent to the spot rates for that date (Frank, 1997). This theory was helpful in determining the relationship between the volatile nature of the interest rates and the usage of derivatives by the commercial banks in Kenya since the theory is premised on the thought that investors suppose that the forward rates, pinpoints the future short term rate of interest as revealed by future contracts.

2.2.3 Theories of Exchange Rate Behavior

Globally, a floating exchange rate regime has been in place since the disintegration of the Bretton Woods accord in 1973, which led to the move away from the fixed regime. Founded on the theory of demand and supply, the price of currencies experience changes under the influence of the demand and supply forces. It is this regime that leads to an upsurge in the exchange rate risk which is mostly linked to international transactions. In reference to the monetary theory, Parkin & King, (1992) explains that exchange rates change, to make sure that the quantity of money in every supplied currency is equivalent to the quantity demanded. Another major inference of the uniqueness of the behavior of exchange rates and associated variables concerns the view of exchange rates as asset prices thus rates of exchange possesses many features of the prices of assets usually traded at the securities exchange. According to Maslon and Bilson (1984), for assets with quoted spot and future prices, a strong correlation does exist between the fluctuations in spot prices and the corresponding fluctuations in the futures prices. The theory of exchange rate behavior in the market was supportive in ascertaining the possible volatility of exchange rate effect on the usage of derivatives with a focus on the commercial banks in Kenya which plays a leading role in most foreign currency transactions.

2.2.4 Liquidity Preference Theory

This theory was initiated by Keynes (1936), and offers an explanation that monetary units have a preference for liquidity over capitalizing. The application of the theory helps in giving an explanation on the presented premium on the rates in regard to the anticipated

future spot rates. The premium in general is used as a form of imbursement for usage of inadequate liquid assets. Preference for liquidity ought to be described in a way that monetary units are required to hold onto specific levels of assets that are liquid so as to acquire products and for the reason that the short term future outlays can be hard to estimate. This concept provided guidance on the possible relationship between the liquidity of a commercial bank and the usage of derivatives which this study aimed to ascertain.

2.3 Empirical review

This section illustrates an analysis of the literature linked to the purposes of the study. It outlines various studies done on the use of derivatives.

2.3.1 Market characteristics and use of derivatives

Ithai (2013) sought to identify the factors that cause the sluggish taking up of derivatives use in Kenya with a focus on Kenyan commercial banks. A census survey was conducted on 45 banks using questionnaires. The variables used in the analysis were the regulatory structure, trade liberalization, and savings to investment ratio, macro-economic aspects and technological aspects. Using regression model, the study found that at least 80 percent of Kenyan financial institutions use financial derivatives for either speculation, or hedging or the two. The study further found that out of the four variables examined, the key factors holding back the use of derivatives included trade liberalization and legal structure. The factors identified are market based; the banks' specific characteristics are left out.

Nasurutia (2013), sought to establish how useful financial derivatives are in the management of foreign exchange exposure among Kenya's commercial banks. A descriptive research design was employed. The populace of the research constituted 10 listed commercial banks from the period 2008 to 2012. The variables under study included returns of bank, derivative usage and average exchange rates for US dollar, Sterling pound and the Euro. Analysis conducted through the use of regression analysis, indicated that derivative usage has a negative relationship with foreign exchange exposure which implied that an increase in derivative usage leads to a corresponding decline in foreign exchange exposure. Consequently, the study concluded that Kenyan banks can utilize derivatives in dealing with foreign exchange exposure. The variables under investigation were predominantly market based, for instance, the study looks at how effective derivatives are in the management of foreign exchange exposure with a prime focus on the average exchange rates for the US dollar. This study thus not only looked at the market oriented factors but also the bank oriented factors which include the size, type and liquidity of bank.

Kuria (2013), sought to determine the significance of risk management tools of Kenyan Unit trust companies in mitigating foreign exchange exposure. The variables under study were risk management instruments which include futures, swaps, options and interest caps and floors. The research design used was descriptive utilizing a sample of 47 firms that were registered with the capital markets authority (CMA) and trading in unit trusts. Results of 43 firms were analyzed and the results of the study showed that firms use local currencies in doing their business and this exposes them to foreign exchange risk. This is because all main hard currencies of global transactions are the causes of foreign exchange

risks. Further, the study found that firms invoice the foreign currency as internal/natural risk management technique and currency swaps as external technique to mitigate foreign currency exposure. The key limitation of this study is that it largely focused on derivatives effect on foreign exchange exposure but failed to focus on the characteristics that influence the use of derivatives. This study was thus helpful in addressing this gap.

Otsyula (2014) did a study on the challenges facing the usage of financial derivatives in hedging the risk brought about by interest rates by commercial banks in Kenya. Using snowballing technique, 5 commercial banks were selected. The data was collected using primary data via questionnaire. The independent variables under study included; market technology, trading platforms and institutional policy while the use of financial derivatives was the dependent variable. The key finding of the study was that market trading platforms and financial institutional policy were the main challenges facing the use of derivatives in circumventing interest rates' associated exposure. The major limitation of the study was that most of the variables under study were market oriented, yet there are challenges that may arise from banks' characteristics. Secondly the sample size of 5 commercial banks was relatively small. Therefore this study focused on both the market and banks' characteristics among all the commercial banks that have been operational in Kenya from 2009 to 2014.

2.3.2 Bank characteristics and use of derivatives

El-Masry (2006) sought to illustrate derivatives usage and risk management measures in use in the United Kingdom financial market. The variables under study include Size of the firm and type of firm with a population of 401 non-financial companies in the United

Kingdom. The findings showed that superior companies use derivatives more often as compared to intermediate and smaller companies. Furthermore, the use of derivatives by public companies was higher than that of the private firms, and that derivative usage was greatest in the transnational companies. Key findings of the study demonstrate that, almost half of the companies that are not using derivatives couldn't use them since their exposures were not considerable. Other reasons for not using them were rules on disclosures under the FASB and the costs of setting up and sustaining the derivatives programmes outweigh the anticipated gains. The study however focused exclusively on non-financial firms and not on the financial institutions like the banks and thus this study was instrumental in filling this research gap.

Rivas, Ozuna and Policastro (2006), researched on the effectiveness of using derivatives in Latin American banks. The study included 39 Mexican banks, 116 Brazilian banks, as well as 27 Chilean banks. Secondary data obtained from each of the Latin American country's central bank was used in this study. With bank efficiency as the dependent variable, DEA (Data envelopment analysis) model was used in measuring it. The key discovery of the research pointed out that there is a correlation between the two variables, a bank's efficiency increases with an upsurge in the usage of derivatives. While bank efficiency is a bank characteristic, this research focused primarily the significance of derivatives usage on the bank efficiency but not on the effect of banks characteristics on use of derivatives.

Zhao and Moser (2006) investigated the relationship that exists between usage interest-rate derivative by banks in the U.S. and development in these banks commercial and industrial loan portfolios. A sample of 467 Federal Deposit Insurance Corporation

(FDIC) insured banks was used. The banks considered had total assets worth over \$300 million with a C&I loans portfolio. The independent variables under study were the interest rate options, forward and futures contracts with lending activity measured using loan portfolios being dependent variable. Balance sheet data and the usage of the interest rate derivative information were found from the reports filed with the Federal Reserve System. By means of a regression analysis, the study instituted there is a positive association between the interest rates derivatives and the lending activities. Another key discovery of the research was that banking organizations that are large in size are much more likely to utilize derivatives fully contrary to banking organizations that are small. The bank characteristic considered by the study was loan portfolios and its relationship with the use of derivatives. This study considered other banks' characteristic which included the size, type of bank and liquidity.

Shiu, Moles and Shin (2009) sought to investigate on what determines the use of derivatives among the commercial banks in Taiwan. The banks examined under study were the banks listed at Taiwan stock exchange through the period 1998 to 2005. A probability model was used to determine the effect of bank specific characteristic on use of derivatives. The specific characteristics considered in the study included; Net interest margin, liquidity and the size of the bank. The outcome of the study showed a significant correlation between a bank's size and the usage of derivatives. The study also found that for interest rates derivatives, the choice to use derivatives is influenced by the net interest margin. The study however found a negative relationship between liquidity and use of interest related derivatives while a positive but insignificant relationship was found between liquidity and currency derivatives. The study was however conducted in Taiwan

whose financial markets and system are far developed than that of Kenya. Hence this study helped in determining the relationship between banks' characteristic and use of derivatives in the context of emerging economies like Kenya.

Keffala, Peretti and Chan, (2011) sought to determine the significance of derivative instrument usage on capital market exposure as evidenced in banks in the recently industrialized as well as developing economies. The data used was secondary obtained from banks websites using a sample of 52 banks from both the recently developed and emerging economies over the period 2003 to 2009. The independent variables under study were the four risk hedging instruments; options, swaps, futures and forwards while the control variables were capital, gross loans, liquidity, loan reserve and net interest margin. The three measures of risks studied included; market risk, unsystematic risk and total return risk. Analysis was carried out using regression and the findings showed that options tend to intensify all kinds of exposure for banks regardless of the type. On the other hand, swaps, forwards and futures negatively affect capital market exposure meaning that futures, swaps as well as forwards, may be used effectively as hedging instruments, whereas options are used for speculation. The core finding is that the banks sampled do not appear to be at risk when they use the derivative instruments. The bank characteristic; gross loans, liquidity, capital and net interest margin were examined as control variables. The study only examines the significance of derivative usage on capital market exposure. The characteristics driving the usage of these derivatives are not identified and thus the study was helpful in addressing this research gap.

Titova (2012), sought to establish the impact of derivatives and bank specific variables on European bank risks. Taking a sample of public European banks from 19 countries from

2005 to 2010, he measured the annualized volatility of daily stock returns. The bank specific variables under study included the size, loan quality, proportion of deposit funding, profitability and off-balance sheet items. The results of the study show that trading derivatives with significant counterparty risk exposure may enhance bank risk. The study also showed that larger banks with a higher proportion of impaired loans, more deposits in their funding structure, lower profitability and greater off-balance sheet item amounts tend to have higher risk. The study doesn't identify how banks' variables affect the use of derivatives which this study sought to address.

Shen and Hartarska (2013), sought to examine the significance of financial derivatives on the profitability of the agricultural banks. The study relied on secondary data attained from the federal reserve bank of Chicago for covering the period 2006 to 2012. A sample of 1056 agricultural specialist banks was used out of a total of 6,921 community banks. The variables under the study were, Profitability as a dependent variable measured using return on assets(ROA), financial derivatives as independent variables while the explanatory variables include capital adequacy, liquidity risk, default risk, interest risk and management preferences. An endogenous switching regression was used in analyzing the data. The findings indicated that risk management through financial derivatives in agricultural banks was less affected by interest and credit risk in the period. The study further found that because of high fixed cost of participating in derivatives market, small banks such as agricultural banks usually have limited funding sources and are unlikely to take speculative derivative positions. The key finding of this study based on the results from endogenous switching regression indicate that without the use of derivatives, user

banks would have 12% lower profitability. The prime focus of the study was the agricultural banks but this study focused on the commercial banks licensed in Kenya.

Velasco (2014) did a study on the factors influencing derivative usage by the companies that are listed in Philippines. The study dealt with the diverse firm level aspects that influenced the corporations' choice of employing derivatives as hedging tools by corporations; these included liquidity and firm size as the independent variables. Derivative usage was the dependent variable. Data were gathered from annual reports of 74 corporations over the period 2007 to 2011. Results of regression confirmed that the size of a firm and employee stock option procedures were considerable motivation for firms to utilize corporate hedging. Additionally, liquidity as well as the existence of expansion prospects was a negative influence on derivatives usage. The study focused much more on the non-financial companies listed at Philippines' stock exchange market. This study aimed at filling the research gap by focusing on the commercial banks in Kenya, both listed and not listed at the NSE since banks play a lead role in the derivative transactions.

2.3.3 Regulations and use of derivatives

Barasa, (2013) did a study on the factors hampering derivatives trading at the Nairobi securities exchange. In the study he points out that as from early 2000, the NSE and the Capital Markets Authority (CMA) have attempted to bring reforms in the market through the introduction of options and futures market. The key finding of his study was that the major hindrances for the derivative trading were the regulatory and strategy environment.

The foremost drawback with this study is that it did not present the specific regulations that hinder the trading of derivatives at the NSE.

Araujo and Leao, (2015) studied on Over the Counter Derivatives and the influence of Regulatory Changes in the non-Financial segment in Brazil. The sample consisted of 999 firms from Brazil. The independent variable was the regulatory changes by the central bank as measured through taxation on net short position in foreign exchange derivatives with the dependent variable being the cost of hedging. Using a panel model, the results showed that the cost for companies that are exposed to devaluation of domestic currency was more than two times. Despite being effective as macro prudential/capital control measure, the tax over short positions in derivatives resulted in the increment of hedging costs for non financial companies. The justification is that most of the banks ought to reassign supplementary costs on holding taxable short positions on foreign exchange derivatives to companies which hold long positions in new non deliverable futures indenture.

2.4 Research Gaps

The major drawback with these studies is that they mainly focused on the effect of usage of derivatives and failed to present the specific variables influencing the use of the derivatives among companies. Secondly, majority of these studies focused mainly on non-financial firms; few of these studies examine the use of derivatives among the commercial banks. Lastly, these studies were carried out mainly on the developed markets whose financial systems are more advanced than that of most countries within the African continent. This study therefore was helpful in addressing these research gaps

by identifying the effect of banks and market specific characteristics on the use of derivatives among Kenyan commercial banks. Table 4 brings out the summary of these studies.

Table 4: Summary of literature review and findings

Author (Year)	Focus of the previous study	Major findings	Research gap	Focus of current study
El-Masry (2006)	The use of derivatives and risk management practices by nonfinancial firms in the UK market	Hedging with derivatives manages volatility cash flows	Focuses Only on non-financial firms	Focus is on the commercial banks in Kenya.
Rivas, Ozuna and Policastro (2006)	Effect of use of derivatives on banks' efficiency	The bank's efficiency increases with increase in derivative use	Focus is only on banks' efficiency. The effect of banks' characteristic on use of derivatives is not addressed.	Focuses on effect of bank size, bank type and liquidity as banks' specific characteristics on use of derivatives
Zhao and Moser (2006)	Relationship between the use of interest rate derivatives and the growth of consumer and industrial loan portfolios	There is a positive association between interest rate derivatives and lending activities	Only examines the relationship between interest related derivatives and loan portfolio. Other characteristic such as the size and type of bank aren't considered	Other characteristic such as the size and type of bank are considered in relation to how they affect derivative usage
Shiu, Moles and Shin (2009)	Determinants of the use of derivatives among the commercial banks in Taiwan.	A positive correlation between bank size and use of derivatives	The study was carried out in Taiwan whose financial system is developed than Kenya. The determinants could vary based on the country's state of financial system	Focus is on the Kenyan commercial banks under the existing financial systems

Keffala, peretti & chan (2011)	The effect of derivative instrument use on capital market risk as evidenced from banks in emerging and recently developed countries.	Forwards, swaps & futures negatively affect capital market risk. Secondly, banks do not appear to be at risk by using derivative instruments	Focus only on effect of use of financial derivatives but does not identify the specific variables influencing use of the derivatives
Titova (2012)	The impact of derivatives and bank specific variables on European bank risks	Trading derivatives with significant counter party risk exposure may enhance bank risk. Secondly, Larger banks tend to have high risk	Focus is on European banks whose financial systems are developed from that of Africa.
Shen & Hartarka (2013)	The impact of financial derivatives on profitability in agricultural banks	Banks not using derivatives would have 12% lower profitability	Focus is only on agricultural banks yet the results may vary depending on type of bank
Ithai (2013)	Factors leading to the slow adoption of derivatives use in Kenya with a focus on the commercial banks in Kenya	The main factors hindering the use of derivatives are the legal framework and trade liberalization	Most variables under study are market based. Banks' specific factors are left out
Nasurutia (2013)	The effectiveness of financial derivatives in managing foreign exchange exposure among commercial banks in Kenya	Derivative usage have a negative relationship with foreign exchange exposure	Only examines effect of derivatives on currency risk leaving out other risks like interest rate risks
Kuria (2013)	Effect of risk management instruments on foreign exchange exposure by unit trust companies in Kenya	Firms use local currencies in doing business and this exposes them to forex risk	Only examines unit trusts leaving out other financial institutions like banks.
Otsyula (2014)	Challenges facing the use of financial derivatives in hedging interest rate risk by commercial banks in Kenya	Market trading platforms and institutional policy were the main challenges	Most variables under focus were market oriented. Banks' characteristics are left out. The sample size was also relatively small.

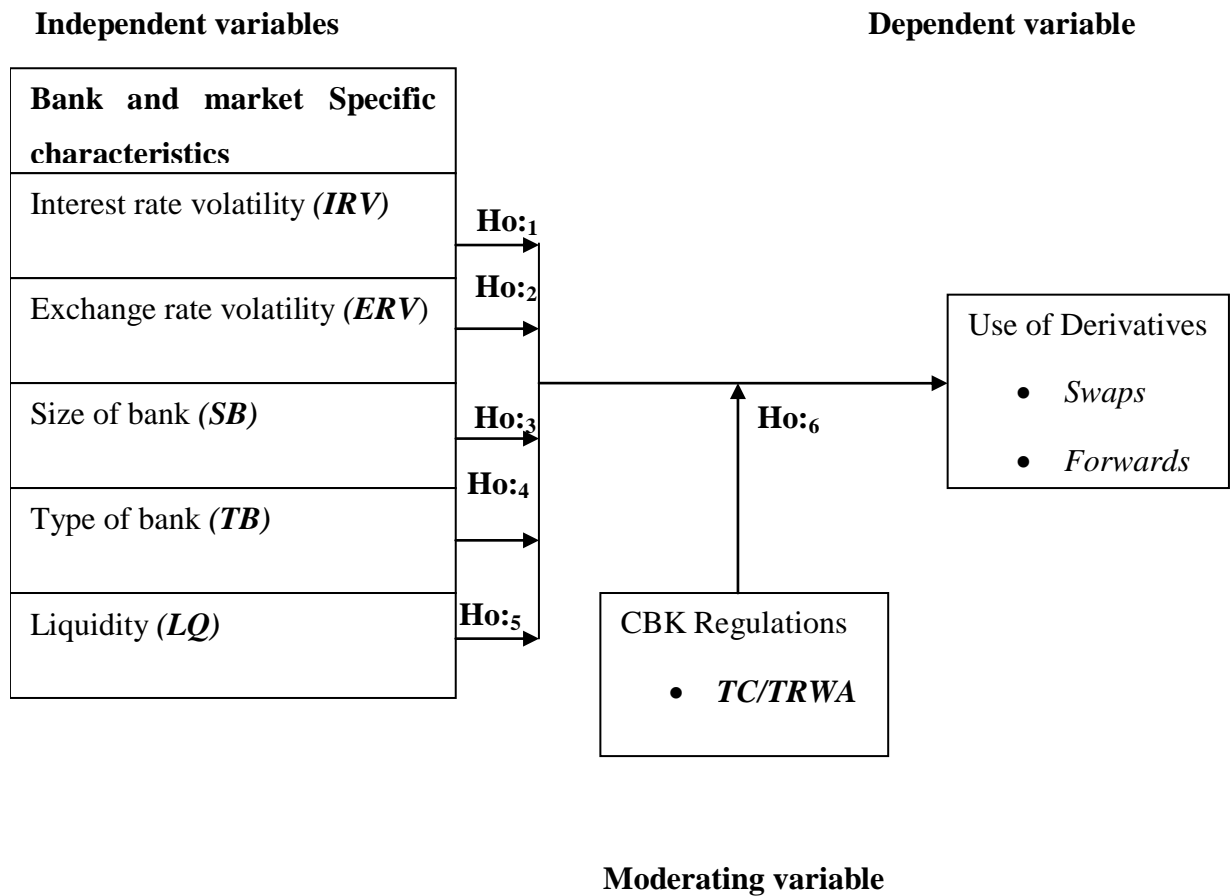
Velasco (2014)	Factors influencing derivative usage among selected listed companies in Philippines	Size of the firm and employee stock option processes were motivation for derivative use	Firms under study were mainly non-financial	Focus is on financial companies specifically commercial banks
Araujo and Leao (2015)	OTC derivatives: Impacts of regulatory changes on the non-financial sector in Brazil	Cost of hedging by companies that are exposed to devaluation of currency was higher	Taxation is the only regulatory measure examined. Regulations in terms of the interest rates are not considered.	Regulations is measured using the total capital to total risk weighted asset ratio

Source (Literature reviewed by the researcher, 2016)

2.5 Conceptual framework.

The conceptual framework spells out the association between the banks' specific and market characteristics, and CBK regulations (Moderating variable) and the use of derivatives among the commercial banks in Kenya.

Figure 3: Conceptual model



Source (Researcher, 2016)

2.6 Relationship between independent and dependent variable

The possible association involving the independent and the dependent variables is examined below:

2.6.1 Size of bank and derivatives

According to Hundman, (1995) bigger banks have a higher likelihood of using derivatives than smaller banks for a number of reasons; first, derivatives are very intricate tools and need cautious administering and scrutiny. Secondly, banks that are large in size have adequate resources to which they can deploy unlike banks that are small in size which may have insufficient resources to which they can utilize towards the use of these instruments. Thirdly, large banks have capacity to engage in derivative trading in large volumes. Consequently, large banks find themselves enjoying economies of scale as transaction fees involved in trading derivatives decrease with increased derivatives transactions. Finally, banks that are large in size are more vulnerable to market risk for the reason that their sources of borrowing do have differences. Ahmed, (2015) put forward that there is a positive association between a bank's size and the currency exposure. The major reason cited for this is that banks that are big in size do have quite a number of foreign exchange transactions and trading positions. Therefore, one of the aims of the research was to describe the correlation involving derivative use and asset size of the commercial banks.

2.6.2 Type of bank and derivatives

According to Allayannis and Ofek (2001), banks having a bigger component of global activities are more likely to encounter and administer their currency exposure. El-Masry (2006) in his study, tried to illustrate derivatives usage and risk management measures in use in the United Kingdom financial market. One of the key findings of the study was that public corporations had a higher possibility of utilizing derivatives than the private firms. Additionally, it was observed that there was more derivative usage among international companies. The study took into consideration the type of the bank by focusing on the domestically owned banks against foreign owned banks. Due to the level of their operations, the use of derivatives among foreign owned banks is more likely to vary with that of the domestically owned banks. This study therefore aimed at determining the correlation between the type of bank and derivatives usage.

2.6.3 Liquidity and derivatives

Liquidity is the most significant characteristic of a well functioning market (Harris, 2002). Lack of adequate liquidity in the recently established markets leads to relatively high cost of hedging and hinders the development of contracts (Mbungu, 2013). The role of liquidity is in making arbitrage cheap and convenient. According to Gamba and Triantis (2011), liquidity is often thrown in as a regression variable in empirical studies on hedging, and the proof implies that parties using derivatives display inferior short-range liquidity compared to those that do not use derivatives. This study thus aimed at clearly ascertaining the relationship between liquidity of the banks and the use of derivatives.

2.6.4 Volatility and derivatives

According to Psychoyios (2009), Volatility is without a doubt the most vital variable in finance. It has come into view transversely across a continuum of functions in addition to theories in asset pricing, risk management, derivatives, portfolio theory, business finance, investment valuation and econometrics. Previous investigations have been apt to realize a positive association between the volatility and the financial markets activities. In a comprehensive assessment of the early literature, Karpoff (1987) illustrated that most studies had found a positive association involving the unpredictability of prices in equity, futures markets as well as trading volume based on the daily data. According to Ithai (2013) the volatilities have prompted various financial institutions to execute hedging methods in order to mitigate their financial exposure.

2.6.5 CBK regulations

After the 2008 economic crisis, that affected the banking sector, the bank's regulators globally have been making efforts to introduce capital requirements as guided by Basel committee to help protect banks against financial risks. For the commercial banks to engage in its business activities efficiently, it needs to be financially sound as manifested through adequate capital. For this reason, the central bank of Kenya regulates the minimum amount of capital that commercial banks have. This is usually measured using the total capital to total risk weighted assets (Soretha, 2014). It is on this premise that this study sought to examine the moderating effect of regulations by the CBK on the relationship between bank and market specific characteristics on the use of derivatives.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses in detail the study philosophy, research design, empirical model, Operationalization as well as measurements of variables, target population, sample design and size, data collection tools and instruments in addition to data analysis and presentation techniques and the diagnostic tests that were carried out in the study.

3.2 Research philosophy

This research adopted positivism research philosophy, which entails the testing of hypothesis derived from an existing theory by measuring the visible social realities. According to Trochim (2006), Positivism uses a comprehensible quantitative method to examine a phenomenon; this contrast the post positivist approaches, whose goal is to describe and survey a phenomenon from a qualitative standpoint. This research philosophy was considered appropriate due to the fact that the study was premised on the quantitative aspects of the population under study.

3.3 Research Design

A descriptive research design was employed in the study. The design encompasses assembling data that describe events and then classifies, put into a table, describes, then explains the data collection by use of charts and graphs to assist the reader in comprehending the data distribution (Glass & Hopkins, 1984). The main objective of a

descriptive study according to Malhotra, (1996) is to describe something in regard to who, what, where, when and how of a phenomenon. This method is the most appropriate since the major goal of this study was to ascertain the effect of banks' and market specific characteristics on the use of derivatives among commercial banks in Kenya.

3.4 Empirical model

According to Hsiao (2007), Panel data greatly helps in improving the effectiveness of the econometric estimates. The reason put forward for this is that a panel data have more degrees of freedom and more sample differences than the cross-sectional data which may be seen as a panel with $T = 1$, or time series data which is a panel with $N = 1$. As shown in the equation below, the study used a panel regression model to test the effect of banks and market specific characteristics on the use of derivatives among the commercial banks in Kenya.

Equation 1: Panel model without the moderating variable

$$Y = \beta_0 + Y = \beta_0 + \beta_{IV} X_{IVit} + \beta_{EV} X_{EVit} + \beta_{SB} X_{SBit} + \beta_{BT} X_{BTit} + \beta_{LQ} X_{LQit} + \ell_i$$

The model includes the bank specific characteristics and the market specific characteristics but excludes the moderating variables. This was aimed at predicting the value of the dependent variable (y) in the absence of the moderating characteristic.

Equation 2: Empirical Panel model with the moderating variable

$$Y = \beta_0 + Y = \beta_0 + \beta_{IV} X_{IVit} + \beta_{EV} X_{EVit} + \beta_{SB} X_{SBit} + \beta_{BT} X_{BTit} + \beta_{LQ} X_{LQit} + B_{RE} X_{RE} + \ell_i$$

The model includes the bank specific characteristics and the market specific characteristics and also includes the moderating variables. This was to help in envisaging the worth of the dependent variable (y) in the existence of the moderating characteristic hence help the study in establishing whether there is a significant effect of the moderating variable (RE) on the association between the independent variables and the dependent variable. From the equation:

Y is the dependent variable (forwards and swaps), β_0 is a constant,

$\beta_{SB}, \beta_{BT}, \beta_{LQ}, \beta_{IV}, \beta_{EV}$, and β_{RE} are the regression coefficients

$X_{SB}, X_{BT}, X_{LQ}, X_{IV}$ and X_{EV} , represents the independent variables while X_{RE} represent the moderating variables where:

X_{SBit} = Size of the bank at time t

X_{BTit} = Type of bank at time t

X_{LQit} = Liquidity of bank at time t

X_{IVit} = Interest rate volatility at time t

X_{EVit} = Exchange rate volatility at time t

X_{REit} = Regulations in the banking sector by CBK at time t

i = number of commercial banks under study (38 commercial banks using derivatives)

t = time period (2009 – 2014)

The objective of this panel model was to examine relationship between bank and market specific characteristics and usage of derivatives among the commercial banks in Kenya.

The study used 95% confidence level to test the significance of the model variables i.e. at P-values =0.05. In general, a p-value less than 0.05 mean that the coefficient is statistically significant. A p value of less than 0.05 implies that you can reject the null

hypothesis meaning that, a predictor that has a low p-value is expected to be a significant addition to the model for the reason that variations in the predictor's rate are connected to the variations in the response variable. On the contrary, a superior p-value implies that variations in the predictor are not linked to the variations in the response (Frost, 2013).

3.5 Operationalization and measurement of variables

The Operationalisation and the measurement of the variables under study are summarized in table 5 below.

Table 5: Operationalization and measurement of variables

Variable	Type	Operationalisation	Measurement
Derivatives (Y)	Dependent	Forwards and Swaps	Natural log of Yearly value of forwards and swaps.
Size of bank (SB)	Independent	Value of bank's assets(as reported in the balance sheets)	Natural log of bank's value of Assets
Type of bank (TB)		Foreign owned banks Domestic banks	1=Domestic bank 0=Foreign owned bank
Liquidity (LQ)		Liquid Assets verses deposits and short term borrowings (Liabilities) of the bank (Kshs)	Liquidity ratios of banks
Exchange rate volatility (EV)		USD/Kshs (Nominal exchange rates)	Standard deviation of changes in quarterly nominal exchange rates
Interest rate volatility (IV)		Nominal interest rates	Standard deviation of changes in quarterly nominal interest rates
CBK regulations	Moderator	Regulations in the banking sector	Total Capital to Total risk weighted Assets (Percentage)

Source (Researcher, 2016)

3.6 Target population.

According to Saunders (2003), a population is a whole set of persons, events or items possessing similar features that kowtow to a particular description. The target population was commercial banks that are licensed in Kenya by the central bank. Currently there are 43 commercial banks that are licensed.

Table 6: Number of commercial banks in Kenya from 2008 to 2014

Year	2009	2010	2011	2012	2013	2014
Number	45	45	45	43	43	43

Source (Central Bank of Kenya)

3.7 Sample design and sample size.

A census is viable where the population is small and essential where the components are quite dissimilar (Cooper & Schindler, 2007). Where the population is small and varied, any sample drawn may not properly be demonstrative of the population from which it is sampled. For this reason, the researcher found it appropriate to use census method because the population was small and the institutions under study were easily accessible. The study sample size was limited to 38 commercial banks which excluded 2 banks; Imperial Bank and Dubai Bank that had been placed under receivership at the time of the study. The sample size also excludes 4 banks namely; Ecobank, Gulf Bank, First community bank and UBA bank whose data for the period 2009 and 2010 were inadequate.

3.8 Data collection tools and instruments

Data collection involved bringing together the empirical evidence so as to get a clear understanding concerning a situation and bring answers to the questions that caused the carrying out of a research (Flick, 1998). In this study, data was collected from secondary sources which included commercial banks, bank's financial statements, central bank of Kenya reports, World Bank reports and the Nairobi securities exchange (NSE) documentary reviews of the banks through the period 2009 to 2014. The data collection tool used is shown in Appendix II. The data collected was subjected to a panel regression analysis.

3.9. Data analysis and presentation.

The data collected was used with an aim of presenting the research findings in respect to the extent to which banks' and market characteristics affect the use of derivatives among the commercial banks in Kenya. Stata version 13 was used to produce descriptive statistics such as means, and standard deviation. Results was presented inform of tables. Descriptive statistics was used to determine the panel regression output.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter brings out a summary and outcome from empirical analysis and the inferences derived from the data as the researcher strives to realize the objective of the study. The study used secondary data obtained from commercial banks' financial statements, central bank of Kenya reports, World Bank reports and the Nairobi Securities Exchange (NSE) documentary reviews of the banks through the period 2009 to 2014. Stata version 13 was used to analyze the data and the findings are presented in the tables 7 to 13.

4.2 Descriptive statistics

Descriptive statistics are used in a research study to describe the basic characteristics of data in a research (Wooldridge, 2003). The researcher used descriptive statistics to give a summary of the study data. The data capturing the derivatives, and bank size was captured using the natural logarithms. The interest rate volatility and exchange rate volatility was presented using the standard deviation of the percentage changes in their nominal rates while the bank type was captured using the dummies where 1 represents domestically owned banks and 0 foreign owned. Lastly, the central bank regulations focused on the central bank of Kenya rates over the period 2009 to 2014. Table 7 presents the précis of descriptive statistics for the seven variables as outlined in the previous chapter.

Table 7: Summary of Descriptive Statistics

Variables	N	Mean	Minimum	Maximum	Std. Deviation
Derivatives	228	20.839	11.339	24.275	1.819
Bank size	228	23.998	21.839	26.655	1.256
Liquidity	228	43.895	23.000	86.850	14.348
Bank type	228	0.368	0.000	1.000	0.483
Interest rate volatility	228	3.248	0.108	11.316	2.689
Exchange rate volatility	228	2.717	0.024	15.477	2.475
Regulation(TC/TRWA)	228	21.333	20.000	23.000	0.945

Source (Research findings, 2016)

From the data presented in table 7, derivatives had a mean of 20.839, standard deviation of 1.819, minimum of 11.339 and maximum of 24.275 which was determined based on the natural logs of the derivative values. Bank size had a mean of 23.998, standard deviation of 1.256, minimum of 21.839 and maximum of 26.655; this was determined using the natural logs of the banks' total value of assets. Liquidity has a mean of 43.895, standard deviation of 14.348, minimum of 23.000 and maximum of 86.850; this was determined based on liquidity ratios of the banks. Bank type had a mean of 0.368, standard deviation of 0.483, minimum of 0 and maximum of 1; this was determined using the dummies where 1 represented the locally owned banks while 0 represented the foreign owned banks. Interest rate volatility had a mean of 3.248, standard deviation of 2.689, minimum of 0.108 and a maximum of 11.316; interest rate volatility was determined based on the standard deviation of the interest rates of treasury bonds during the study period. Exchange rate volatility had a mean of 2.717, standard deviation of

2.475, minimum of 0.024 and a maximum of 15.477 and was determined based on the standard deviations of the changes in the nominal exchange rates against the US dollar during the study period. Regulations had a mean of 21.333, minimum of 20.000 and maximum of 23.000 and were measured using the Total capital to total risk weighted assets set by the central bank of Kenya.

4.3 Diagnostic tests

These tests were carried out before the analysis of the panel model. The tests carried out included the correlation test, normality test and the stationarity tests and the results presented from table 8 to 11.

4.3.1 Correlation test

Correlation is a statistical method that can show if and how strongly the match ups of the variables are associated. It is normally used in quantifiable data. According to Bluman, (2005), values between -0.6 and -0.8 or +0.6 and +0.8 account for 36 percent to 64 percent of the variance, which shows a moderately strong to strong association. Values between -0.8 and -1.0 or +0.8 and +1.0 account for more than 64 percent of the variance, which might show a very strong relationship therefore exceptionally high values above 0.8 in absolute value imply that certain match ups of variables aren't giving independent information. This test was carried out using the pearsons correlation and the results presented in table 8 below.

Table 8: Test for correlation

	Derivatives	Banksize	Liquidity	Banktype	Intvolatility	Excvolatility	Regulations
Derivatives	1.000						
Banksize	0.784* 0.000	1.000					
Liquidity	0.605* 0.000	-0.141 0.698	1.000				
Banktype	-0.089 0.175	0.068 0.304	-0.184 0.610	1.000			
Intvolatility	0.234* 0.004	-0.080 0.827	-0.103 0.122	0.073 0.269	1.000		
Excvolatility	0.153* 0.019	-0.027 0.682	-0.096 0.148	-0.022 0.745	-0.165 0.066	1.000	
Regulations	0.252* 0.000	-0.058 0.387	0.105 0.113	0.000 1.000	-0.104 0.117	-0.025 0.710	1.000

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

Source (Research findings, 2016)

The correlation test indicates that, there is a positive significant relation between the banks size and use of derivatives [r=0.784, p value 0.000]. There is a significant relationship between liquidity and use of derivatives [r=0.605, p value 0.000] meaning that an increase in liquidity results in an increase derivative usage. Thirdly, the results from the test shows a non significant negative relationship between the bank type and derivative use [r=-0.089, p value 0.175]. A significant positive relationship exists between the interest rate volatility and the use of derivative [r=0.234, p-value 0.004]. lastly, there is a significant positive relationship between exchange rate volatility and the derivative usage [r=0.153, p-value 0.019]. A significant positive relationship existys between regulations (TC/TRWA) and use of derivatives [r=0.252, p-value 0.000]. From

the findings, there is no multi-collinearity problem since none of the p values is more than 0.8.

4.3.2 Stationarity test

According to Dickey fuller tests, time series data frequently exhibit non stationarity of variables. This may result in false regression outcome which make statistical conclusions invalid (Banda, 2010). False outcome means that the variables do not reinforce any theory that brings them together. To test for stationarity, this study carried out the Augmented Dickey Fuller tests which entailed testing the order of integration through unit root tests. The null hypothesis is that the series is non-stationary while the alternative hypothesis is that the series is stationary. If a p-value is <0.05 , the null hypothesis is rejected implying that the series is stationary. However, if the p-value is >0.05 , then we fail to reject the null hypothesis.

The test for stationarity was carried out using the Augmented Dickey Fuller (ADF) test and the results summarized in table 9 below:

Table 9: Test for stationarity

VARIABLE	ADF	
	Chi Square t-statistic	P- value
Derivatives	25.6996	0.0000
Interest Rate Volatility	12.4424	0.0000
Bank Size	66.1718	0.0000
Exchange Rate Volatility	6.4581	0.0000
Bank Type	11.0000	0.0000
Liquidity	13.9390	0.0000
Central Bank Regulations	21.1125	0.0000

Source (Research findings, 2016)

From the results, the data for the derivative contracts, bank size, bank type, liquidity, interest rate volatility, exchange rate volatility and central bank regulations exhibit stationarity Since their p-values are less than 0.05 at 95% level of significance. This means that the data used had no stationarity problem.

4.3.3 Normality test

Normality test was carried out to verify if the research variables have a normal distribution. Normality test was done using the Doornik-Hansen test. Table 10 represents normality test for each of the distribution.

Table 10: Test for normality

Test for univariate normality				
Variable	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
Derivative	0.0832	0.4853	5.41	0.0605
Interest rate volatility	0.0294	0.7245	4.92	0.0856
Exchange rate volatility	0.0124	0.5431	6.63	0.0515
Bank size	0.3998	0.9514	4.97	0.0736
Bank type	0.0001	0.0000		0.0000
Liquidity	0.0382	0.7140	4.48	0.1065
Regulations	0.1894	0.5701	2.07	0.3557

Source (Research findings, 2016)

According to Bluman, (2005), P-value ≤ 0.05 indicates that the data is not normally distributed in which case; the null hypothesis is rejected and concludes that the data do not follow a normal distribution. On the other hand, if P-value > 0.05 the decision is to fail to reject the null hypothesis on grounds that the evidence to conclude that the data do not follow a normal distribution is not adequate. In this case under the univariate test for normality, all the variables except bank type have a p value of more than 0.05 meaning that the data follow a normal distribution. On the other hand, bank type has a p value of less than 0.05 hence it does not follow a normal distribution. However, despite the bank type exhibiting non normal distribution, it is acknowledged that the 228 observations are sufficient for time series analysis based on central limit theorem (Wooldridge, 2003).

4.4 Inferential statistics

This section outlines the findings from the panel regression models without the moderating variable and with the moderating variable. Prior to carrying out the models, a hausman test was carried out to determine if to use the random effect or the fixed effect model. The hausman tests results are presented in table 11.

Table 11: Hausman Test

---- Coefficients ----				
	(b)	(B)	(b-B)	sqrt(diag(V_b-
	M1	M2	Difference	V_B))S.E.
IntVolatility	.4601931	.0015594	.04586337	.21034487
ExcVolatility	.3102452	.5654037	-.25515850	.06510586
Banksize	1.1914022	.8590748	.03323274	.11044150
Banktype	-.6624115	-.0092652	-.65314631	.42660009
Liquidity	.0151424	.0085355	.00660690	.00004365

chi2(3) = 7.94
prob>chi2 = 0.0472

Source (Research findings, 2016)

According to Green, (2008), in running the hausman test, the null hypothesis is that the preferred model is random effect while the alternative hypothesis is the fixed effect. A p value of < 0.05 indicates the significance and in this case we use the fixed effect model while a p value of > 0.05 indicates non significance and in this case the random effect model is preferred (Kreuter, 2009). From the results obtained, there were significant differences in the two models as presented i.e. the fixed effect model (M1) and the random effect model (M2). A Chi Square value of 7.94 was obtained with a significant p-value of 0.0472. Since the p value was less than 0.05, the study used the fixed effect model.

4.4.1 Regression model

This part presents the outcome of the panel regression model in the absence of the moderating variable and the outcome in the presence of the moderating variable. The outcomes are presented in the subsequent Table 12 to 13

4.4.1.1 Empirical model without a moderating variable

Empirically, there is a direct association between bank specific and market specific characteristics and the use of derivatives. The results of the analysis are presented in table 12 below:

Table 12: Empirical Model without the moderating variable

$$Y = \beta_0 + \beta_{IV} X_{IVit} + \beta_{EV} X_{EVit} + \beta_{SB} X_{SBit} + \beta_{BT} X_{BTit} + \beta_{LQ} X_{LQit} + \ell_i$$

Derivatives	Coefficient	S.E	Z	P-Value
Constant	-8.199	1.485	-5.522	0.000*
Interest rate volatility	0.460	0.221	2.081	0.037*
Exchange rate volatility	0.310	0.154	2.013	0.044*
Bank size	1.191	0.058	20.525	0.000*
Bank type	-0.662	1.324	-0.500	0.615
Liquidity	0.015	0.005	2.986	0.003*

**significant at 0.05 level*

$$r^2 = 0.659, F(73.521, 0.000)$$

Source (Research findings, 2016)

Table 12 presents an empirical panel regression model (PRM) of the bank specific characteristics and the market specific characteristics and the use of derivatives among the commercial banks in Kenya by excluding the moderating variable (Regulations on derivatives). The PRM was done using the fixed effect regression. An overall R² of 0.659 was obtained and this means that the independent variables explain 65.9% of total variations in the use of derivatives. From the model, exchange rate volatility, bank size, bank type and liquidity were the significant variables in explaining the use of derivatives by commercial banks in Kenya, since their p values were less than 0.05(p< 0.05).

Thus the panel regression equation becomes;

$$Derivatives_{it} = - 8.199 + 0.460IntVolatility_{it} + 0.310ExcVolatility_{it} + 1.191Banksize_{it} - 0.662Banktype_{it} + 0.015Liquidity_{it} + \ell_i$$

Source (Research findings, 2016)

From the equation, holding other factors constant, commercial banks in Kenya are prone not to use derivatives by 8.199 times. A unit increase in interest rate volatility other factors held constant, leads to an increase in derivative use among banks by 0.460 times compared to 0.310 times for a unit increase in exchange rate volatility. A unit increase in bank size, other factors held constant leads to a 1.191 times upsurge in the use of derivatives by commercial banks. A unit increase in domestically owned banks results in a decline in derivative use by 0.662. Lastly, with a unit increase in liquidity of the bank, there is a 0.015 times upsurge in the use of derivatives.

From the model, there is a significant positive relationship between the interest rate volatility and the use of derivatives; a unit change in interest rate volatility leads to an increase in derivative usage by 0.460 times. This could be due to the fact that the interest rates have been fluctuating during the study period. The results are however in line with the study by Zhao and Moser, (2006) which found a positive correlation between interest rate volatility and the use of derivatives.

Under the model, a unit increase in exchange rate volatility holding other factors constant, results in a 0.310 times increase in use of forwards and swaps; which agree with study by Nasurutia (2013) who indicated that firms use derivatives to deal with foreign exchange exposure arising from volatility of exchange rate. Further, the findings agree with the study by Kuria (2013) which found the significance of the risk management tools in the management of the foreign exchange exposure. Foreign exchange transactions exposes firms to foreign risk resulting from volatility of the rates, therefore firms including banks use derivatives to maximize their returns.

Thirdly, there is a significant positive correlation between the size of the bank and the use of derivatives. A unit increase in the size of the bank results in a 1.191 increase in derivative use by banks holding other factors constant. This indicates that larger banks in terms of the assets are more probable to use derivatives than smaller banks. The findings agree with the study done by El-Masry, (2006) which found out that larger companies use derivatives more than smaller and medium companies. Further, a study by Shiu, (2009) indicated a positive relationship between the bank size and the use of derivatives among the commercial banks in Taiwan. It also agrees with Ahmed, (2015) who observes that there is a positive relationship between bank size and foreign exchange exposure.

Further, under the panel regression model, there is a non-significant negative association between the bank type and the use of derivatives. A unit increase in the number of domestic banks other factors held constant, results in a 0.662 times decline in the use of derivatives. This is in line with the study by Allayannis & Ofek, (2001) who suggested that the type of the bank have an effect on the use of derivatives. According to Allayannis & Ofek, (2001), banks with a wider spectrum of international transactions are more prone to use derivatives than those with a smaller element of international activities. El-masry, (2006), further indicates that derivative usage is greatest among international firms than local firms due to the nature and scale of their transactions.

Lastly, the findings indicate a significant positive correlation exists between the liquidity of the banks and the use of derivatives. A unit increase in liquidity of a bank results in a rise in the use of derivatives by 0.015 times holding other factors constant. These findings agree with the findings from other studies previously done. For instance, Shiu, Moles and Shin (2009) recognized that firms with higher liquidity were more likely to use currency derivatives than those experiencing liquidity problems. Keffala, Peretti and Chan, (2011) also established that there was a positive relationship between liquidity and derivative instruments.

4.4.1.2: Empirical Model with the moderated relationship

The sixth objective sought to determine whether CBK regulations had a significant moderating effect on the relationship between the bank and market specific characteristics and the use of derivatives. The study interacted changes in CBK regulations on minimum total capital to risk weighted assets with the predictor variables;

Interest rate volatility, exchange rate volatility, bank size, bank type, and liquidity. These interactions resulted in moderated variables.

These alongside the moderating variable were regressed to generate a panel regression output shown in table 13 below;

Table 13: Empirical Model with the moderated relationship

Derivatives	Coefficient	S.E	Z	P-Value
Constant	-8.871	2.343	-3.786	0.000*
Interest rate volatility	0.241	0.164	1.465	0.050*
Exchange rate volatility	0.076	0.235	0.327	0.046*
Bank size	1.194	0.059	20.307	0.000*
Bank type	-0.661	0.079	-0.120	0.943
Liquidity	0.016	0.005	3.047	0.002*
Regulations	0.529	0.112	4.741	0.000*

**significant at 0.05 level*

$$R^2 = 0.682, F (88.563, 0.000)$$

Source, (Research findings, 2016)

From these findings, the panel regression equation becomes;

$$Derivatives_{it} = - 8.871 + 0.241IntVolatility_{it} + 0.076ExcVolatility_{it} + 1.194Banksize_{it} - 0.661Banktype_{it} + 0.016Liquidity_{it} + 0.529Regulations_{it} + \ell_i$$

From the findings, a positive and significant relationship exists between the moderated interest volatility, exchange volatility, bank size and moderated liquidity. Further, the use of regulations was statistically significant at 0.05 level of significance with a p-value of 0.000 as a result, the null hypothesis was rejected meaning that regulations has a significant moderating effect on the relationship between the bank and market specific characteristics and the use of derivatives.

R^2 of 0.682 was obtained meaning that with moderation, the predictor variables explains 68.20% of the variations in the use of derivatives by the commercial banks in Kenya. There was an increase in R^2 upon the introduction of the moderated variable from 0.659 obtained in the panel regression model without the moderated variable. This further reinforces the significance of the moderating variable introduced in the model.

The findings of this study on regulations is in line with the study by Barasa, (2013) who found out that the regulatory and policy environment plays a key role in the derivatives market. Otsyula, (2014) in his study also found a positive relationship between the financial institutional policy and the use of derivatives and that an absence of it was a major challenge to the use of derivatives in circumventing interest rates' associated exposure. Further, a study by Araujo and Leao, (2015) on the impact of Regulatory Changes in the non financial Sector in Brazil reveals that the regulatory changes by the central bank have an effect on the cost of hedging. Hence the central bank regulations on the total capital to total risk weighted assets do have an effect on the use of derivatives by the commercial banks in Kenya as revealed in the study.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter outlines the summary of the findings of the study, conclusions and recommendations based on the analysis of the data presented in Chapter Four. The chapter is structured as follows. Section 5.2 presents the summary of the findings of the study while section 5.3 is the conclusion. Section 5.4 discusses the policy implications arising from the outcomes of this study. Finally, section 5.5 presents the suggested areas for further research.

5.2 Summary of the findings

The objective of the study was to look into the effect of banks' and market specific characteristics on use of derivatives among commercial banks in Kenya from 2009 to 2014. The specific objectives of the study were; Firstly, to investigate the effect of interest rate volatility on the use of derivatives. The second, objective was to evaluate the effect of exchange rate volatility on the use of derivatives among the commercial banks in Kenya. The third aim was to evaluate the effect of the bank size on the use of derivatives among commercial banks in Kenya. The fourth aim was to examine the effect of the bank type on the use of derivatives. The fifth aim was to determine the effect of liquidity on the use of derivatives among the commercial banks in Kenya. The sixth objective was to determine the effect of regulations on the relationship between the bank and market characteristics and use of derivatives among the Kenyan commercial banks.

The research findings were premised on the research objectives and the hypotheses. In analyzing the data, a panel regression was carried out to determine the effect of bank and market specific characteristics on the use of derivatives among the commercial banks in Kenya. From the findings, the effect of interest rate volatility on the use of derivatives was statistically significant at 0.05 level of significance therefore the null hypothesis was rejected. Secondly, the effect of exchange rate volatility on the use of derivatives was statistically significant at 0.05 level of significance therefore the null hypothesis was rejected. Thirdly, the bank size was also found to have a significant effect on the use of derivatives therefore the null hypothesis was rejected. Fourthly, the effect of liquidity on the use of derivatives among the commercial banks was found to be significant at 0.05 level of significance hence the null hypothesis was rejected. Further, the effect of bank type on the use of derivatives was not significant at 0.05 level of significance therefore the null hypothesis was not rejected. Lastly, Regulations was shown to have a significant moderating effect on use of derivatives when interacted with interest rate volatility, exchange rate volatility, bank size and liquidity at 0.05 significance level. There was also an increase in R^2 upon the introduction of the moderating variable from 0.659 to 0.682.

5.3 Conclusions

The research findings were premised on the research objectives and the hypotheses. From the findings, the effect of interest rate volatility on the use of derivatives was statistically significant at 0.05 level of significance therefore the null hypothesis was rejected. The study concludes that interest rate volatility has a major effect on the derivative use by banks. Secondly, the effect of exchange rate volatility on the use of derivatives was statistically significant at 0.05 level of significance therefore the null hypothesis was

rejected. From these results, the study concludes that exchange rate volatility greatly affect the derivative usage. Thirdly, the bank size was also found to have a significant effect on the use of derivatives therefore the null hypothesis was rejected. The study thus concludes that size of the bank affect the derivative use. Fourthly, the effect of liquidity on the use of derivatives among the commercial banks was found to be significant at 0.05 level of significance hence the null hypothesis was rejected. The study concludes that liquidity encourages derivative use. Fifthly, the effect of bank type on the use of derivatives was not significant at 0.05 level of significance therefore the null hypothesis was not rejected. Lastly, the moderating effect of regulations as measured using the total capital to total weighted risk assets on the use of derivatives was found to be statistically significant as 0.05 level of significance.

5.4 Policy Recommendations

Banks should effectively monitor its specific characteristics alongside the market characteristics as they have an effect on the use of derivatives among Kenyan commercial banks. The specific policy recommendations from the study are as below;

First, the Central Bank of Kenya, should monitor the exchange rates by coming up with an exchange rate policy that will protect the commercial banks and other financial institutions. For instance, CBK can come up with a target band beyond which it can intervene to stabilize exchange rates thus protecting banks and other financial institutions from exchange rate volatilities.

Being an intermediary, banks need a structured derivative exchange. For this reason, its formation should be hastened. By doing so, banks will get a premise through which it can

help other firms to assess derivative contracts to lower their borrowing costs and offset the decline in profit margins during the period of interest rate volatility. This will not only help firms borrow during the period of high interest rate volatility, but it will also help the banks to properly diversify their portfolios hence maximizing returns.

The size of the bank plays a significant part in the use of derivatives traded over the counter. As the capital markets authority gears towards establishing a derivative exchange in Kenya, it should ensure that it establishes a segment that will allow the small banks in terms of the assets to participate in the derivatives market as this will help them in terms of assessing instruments through which they can hedge themselves against financial risks and diversify their portfolios so they can easily compete with banks with large size.

As found out in the study, liquidity significantly influences the use of derivatives by banks. The central bank being a regulator should therefore closely monitor the liquidity ratios of the banks. While the statutory ratio is set at 20 percent, the central bank should consider revising this ratio upwards by considering the overall growth of the banking sector in the most recent years. Banks should also create a cash reserve that is specific for derivatives by setting aside a proportion of its net profit, so that when there is inadequate liquidity or signs of liquidity challenges, it can still be able to engage in derivative trading.

The Central Bank of Kenya through its regulations plays a major function in ensuring the success of the derivatives market as observed in the study through the changes in R^2 . The CBK regulations through the total capital to total weighted risk asset influences the

bank's ability to use derivatives as it ensures the banks are financially sound. As the country gears towards the establishment of a derivative exchange, the Central Bank of Kenya should ensure that the regulatory and policy environment must be well maintained and reviewed periodically, to encourage banks to use derivatives for hedging and as a tool for portfolio diversification which will help in shielding them from the interest and currency risks.

5.5 limitations of the study

The foremost limitation of the data was the issue of validity. Nevertheless this was dealt with by ensuring that the data collected was from authorized bodies. There was also the challenge of data collection from three banks namely: Ecobank, Gulf bank and First community bank due to unavailability of adequate data for the period 2009, 2010 and 2011. In spite of this, the researcher relied on the data from 38 commercial banks which was sufficient to draw conclusions from the study.

5.6 Suggestions for further research

More studies should be conducted in order to ascertain more on the part played by other bank specific characteristics like profitability in the use of derivatives among the Kenyan commercial banks as the results from the study was based on only three bank specific characteristics.

This study was limited to the forwards and swaps as derivatives used by commercial banks in Kenya. Similar research should also be done on the use of other derivatives like options by the commercial banks in Kenya only.

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APPENDICES

APPENDIX I: LIST OF COMMERCIAL BANKS TO BE STUDIED

NO	BANK	NO	BANK
1	ABC Bank	20	First Community Bank
2	Bank of Africa	21	Giro Commercial Bank
3	Bank of Baroda	22	Guardian Bank
4	Bank of India	23	Gulf African Bank
5	Barclays Bank of Kenya	24	Habib A.G. Zurich
6	CFC Stanbic Bank	25	Habib Bank Ltd
7	Chase Bank	26	I&M Bank
8	Citibank	27	Kenya Commercial Bank
9	Commercial Bank of Africa	28	K-Rep Bank
10	Consolidated Bank	29	Middle East Bank
11	Co-operative Bank of Kenya	30	National Bank of Kenya
12	Credit Bank	31	NIC Bank
13	Development Bank of Kenya	32	Oriental Commercial Bank
14	Diamond Trust Bank	33	Paramount Universal Bank
15	Ecobank	34	Prime Bank
16	Equatorial Commercial Bank	35	Standard Chartered Bank
17	Equity Bank	36	Trans-National Bank
18	Family Bank	37	Victoria Commercial Bank
19	Fidelity Commercial Bank	38	UBA Kenya limited.

Source (Central Bank of Kenya, 2016)

APPENDIX II: DATA COLLECTION TOOL


1. BANK'S CHARACTERISTICS AND DERIVATIVES

DATA COLLECTION TOOL				
NAME OF THE BANK.....				
BANK TYPE				
BANK SPECIFIC CHARACTERISTIC/DERIVATIVES				
YEAR	FORWARDS(KSHS'000)	SWAPS (KSHS'000)	TOTAL ASSETS (KSHS '000)	LIQUIDITY RATIO
2009				
2010				
2011				
2012				
2013				
2014				
TOTAL				

2. MARKET CHARACTERISTICS AND REGULATIONS

DATA COLLECTION TOOL				
MARKET SPECIFIC CHARACTERISTICS AND REGULATIONS(TC/TRWA)				
YEAR	QUARTER	INTEREST RATES	EXCHANGE RATES	TC/TRWA
2009	Q.1			
	Q.2			
	Q.3			
	Q.4			
2010	Q.1			
	Q.2			
	Q.3			
	Q.4			
2011	Q.1			
	Q.2			
	Q.3			
	Q.4			
2012	Q.1			
	Q.2			
	Q.3			
	Q.4			
2013	Q.1			
	Q.2			
	Q.3			
	Q.4			
2014	Q.1			
	Q.2			
	Q.3			
	Q.4			

APPENDIX III: LETTER OF APPROVAL OF RESEARCH PROPOSAL


KENYATTA UNIVERSITY
GRADUATE SCHOOL

E-mail: dean-graduate@ku.ac.ke P.O. Box 43844, 00100
Website: www.ku.ac.ke NAIROBI, KENYA
Tel. 810901 Ext. 57530

Internal Memo

FROM: Dean, Graduate School DATE: 12th April 2016

TO: Shadrack Kipkoech Ng'eno REF: D58/ PT/22608/12
C/o Accounting & Finance Department.

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

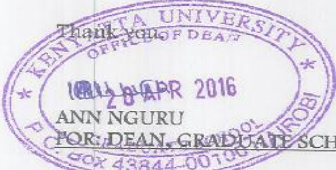
=====

This is to inform you that Graduate School Board, at its meeting of 30th March 2016, approved your Research Proposal for the M.Sc. Degree Entitled, "Effects of Banks and Market Specific Characteristics on the use of Derivatives among Commercial Banks in Kenya".

You may now proceed with data collection, subject to clearance with the Director General, National Commission for Science, Technology and Innovation.

As you embark on your data collection, please note that you will be required to submit to Graduate School completed Supervision Tracking forms per semester. The form has been developed to replace the progress report forms. The supervision Tracking Forms are available at the University's website under Graduate School webpage downloads.

Thank you



c.c. Chairman, Department of Accounting & Finance

Supervisors:

1. Dr. Eddie Simiyu
C/o Department of Accounting & Finance
Kenyatta University

AN/mt

(Graduate School, Kenyatta University, 2016)

APPENDIX IV: RESEARCH PERMIT



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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NAIROBI-KENYA

Ref: No.

Date:

NACOSTI/P/16/29816/10962

11th May, 2016

Shadrack Kipkoech Ngeno
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on “*Effect of banks and market specific characteristics on the use of derivatives among Commercial Banks in Kenya*,” I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **10th May, 2017**.

You are advised to report to **the Chief Executive Officers of selected Commercial Banks, the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR. STEPHEN K. KIBIRU, PhD.
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The Chief Executive Officers
Selected Commercial Banks.

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.