

**RELATIONSHIP BETWEEN FOREIGN EXCHANGE HEDGING  
METHODS AND FINANCIAL PERFORMANCE OF FIRMS LISTED AT  
THE NAIROBI SECURITIES EXCHANGE**

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## DECLARATION

I declare that this research proposal is my original work and has not been presented for a degree in any other university.

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## **DEDICATION**

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## **ABSTRACT**

A number of Kenyan companies that are listed at the NSE have transactions both in Kenya Shillings and in Foreign Currencies such as the Japanese Yen, United States Dollar, British Pound or the European Union Euros. However, their cash-flows are in Kenya Shillings and they are required to pay these loans in the respective currencies in which they were borrowed. The prices of these foreign currencies fluctuate against the shilling and there is no constant rate that is assured for future transactions. Some companies have tried to employ forward covers to reduce their risk but they are either difficult to source because their obligations are too big to be met by one bank or too expensive to finance due to the guarantee cover of promised futuristic prices. As a result many institutions do not hedge their FX exposures, and are running significant exchange rate risks and losses at the time of paying back their loans.

The study analyses the hedging methods used by various companies such as forwards, futures, swaps and options to curb against foreign exchange losses. A regression analysis is used to establish the relationship between those companies that employ any of the hedging methods and how they affect the company's book and NSE share price performance.

The results of the study confirm that those companies that employ hedging methods perform better, sometimes from loss making situations to profitability. The study concludes that listed companies that have foreign currency transactions should employ hedging mechanisms to plan for forecasted future transactions that entail purchase of foreign currency to meet their foreign currency obligations.

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## **ABBREVIATIONS AND ACRONYMS**

APT:	- Arbitrage Pricing Theory
CAPM:	- Capital Asset Pricing Model
FX:	- Foreign Currency
MPT:	- Modern Portfolio Theory
NSE:	- Nairobi Securities Exchange
SDR:	- Special Drawing Rights
SEC:	- Securities and Exchange Commission
SML:	- Security Market Line
SME's:	- Small and Medium Enterprises

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of Study

The foreign exchange market is characterized by volatility, which creates uncertainty in the market and makes predictions regarding future exchange rates difficult, both in the short and long term (Allayannis, Ihrig & Weston, 2001). However, it is these constant fluctuations in the foreign exchange market that make it possible for companies or individuals to take advantage of the movements in exchange rates through speculative activities. These fluctuations also pose a threat for any importer/exporter trading in the global marketplace as international businesses are naturally exposed to currency risk. This necessitates the adoption of hedging methods to mitigate risk. The volatility in the foreign exchange market needs to be dealt with in a proper, prudent and timely manner. Otherwise, adverse currency fluctuations can inflict painful lessons on a company or individual. Later in this thesis we will investigate in detail the volatility of the foreign exchange market and the potential risk exposure faced by all market participants (Allayannis, Ihrig & Weston, 2001). The adoption of a floating exchange rate regime, the rapid globalization of national economies and the attempts by listed companies to seek investment opportunities and markets beyond their immediate borders account for the increasing exposure of firms to foreign exchange risk in recent times (Allen, 2003).

Foreign exchange exposure is the sensitivity of a firm's cash flows, real domestic currency value of assets, liabilities, or operating incomes to unanticipated changes in exchange rates (Belk, Bidgood, Dounghoy, 2002).

Economies are getting more and more open with international trading constantly increasing and as a result companies become more exposed to foreign exchange rate fluctuations. Foreign exchange exposure is the sensitivity of changes in the real domestic currency value of assets liabilities or operating incomes to unanticipated changes in exchange rate (Adler and Dumas, 2004). Firms are exposed to three types of foreign exchange risk: accounting (translation), transaction (commitment) and economic (operational, competitive or cash flow) (Eiteman, Stonehill & Moffet, 2006). In practice, economic exposure is computed as the net sensitivity of some aggregate measure of firm value to currency fluctuations. By focusing on the net sensitivity, economic exposure includes the direct and indirect effects of currency fluctuations.

### **1.1.1 Foreign Exchange Hedge Methods**

A hedge is something which reduces the risk of future price movements (Horne & Wachowicz , 1995). Hedging provides relatively inexpensive and highly liquid positions similar to those obtained with diversified stock portfolios (Sharpe, Alexander & Bailey, 1999). Hedging is done by a firm or individual to protect against a price change that would otherwise negatively affect profits (Brigham & Ehrhardt, 2002).

Hedging ultimately benefits investors by providing them with greater liquidity that they would have otherwise (Sharpe, Alexander & Bailey, 1999). Rising interest rates and commodity (raw material) prices can hurt profits, as can adverse currency fluctuations. If two parties have mirror-image risks, then they can enter into a transaction that eliminates, as opposed to transfers, risks. This is a “natural hedge”. Of course, one party to a futures contract could be a speculator, the

other a hedger. Thus, to the extent that speculators broaden the market and make hedging possible, they help decrease risk to those who seek to avoid it (Brigham & Ehrhardt, 2002).

According to Brigham & Ehrhardt (2002), a derivative is a financial contract whose value is derived from the value of some other financial asset, such as a stock price, a commodity price, an exchange rate, an interest rate, or even an index of prices. The main role of derivatives is that they reallocate risk among financial market participants, help to make financial markets more complete.

A forward is a made-to-measure agreement between two parties to buy/sell a specified amount of a currency at a specified rate on a particular date in the future. The depreciation of the receivable currency is hedged against by selling a currency forward. If the risk is that of a currency appreciation (if the firm has to buy that currency in future say for import), it can hedge by buying the currency forward. The main advantage of a forward is that it can be tailored to the specific needs of the firm and an exact hedge can be obtained. On the downside, these contracts are not marketable, they can't be sold to another party when they are no longer required and are binding (Brigham & Ehrhardt, 2002).

A futures contract is similar to the forward contract but is more liquid because it is traded in an organized exchange i.e. the futures market. Depreciation of a currency can be hedged by selling futures and appreciation can be hedged by buying futures. Advantages of futures are that there is a central market for futures which eliminates the problem of double coincidence. Futures require a small initial outlay (a proportion of the value of the future) with which significant amounts of

money can be gained or lost with the actual forwards price fluctuations. This provides a sort of leverage (Brigham & Ehrhardt, 2002).

A currency option is a contract giving the right, not the obligation, to buy or sell a specific quantity of one foreign currency in exchange for another at a fixed price called the Exercise Price or Strike Price. The fixed nature of the exercise price reduces the uncertainty of exchange rate changes and limits the losses of open currency positions. Options are particularly suited as a hedging tool for contingent cash flows, as is the case in bidding processes. Call Options are used if the risk is an upward trend in price (of the currency), while Put Options are used if the risk is a downward trend (Brigham & Ehrhardt, 2002).

A swap is a foreign currency contract whereby the buyer and seller exchange equal initial principal amounts of two different currencies at the spot rate. The buyer and seller exchange fixed or floating rate interest payments in their respective swapped currencies over the term of the contract. At maturity, the principal amount is effectively re-swapped at a predetermined exchange rate so that the parties end up with their original currencies. The advantages of swaps are that firms with limited appetite for exchange rate risk may move to a partially or completely hedged position through the mechanism of foreign currency swaps, while leaving the underlying borrowing intact. Apart from covering the exchange rate risk, swaps also allow firms to hedge the floating interest rate risk (Brigham & Ehrhardt, 2002).

### **1.1.2 Financial Performance**

Financial Performance is defined as a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation.

There are many different ways to measure financial performance, but all measures should be taken in aggregation. Line items such as revenue from operations, operating income or cash flow from operations can be used, as well as total unit sales. Furthermore, the analyst or investor may wish to look deeper into financial statements and seek out margin growth rates or any declining debt. (ABS, 2001)

### **1.1.3. Relationship between Hedging Methods & Performance**

Mwangi & Muga (2012) in their International Journal of Humanities and Social Science states that in exchange rate arbitrage, advantage is taken of differentials in the price of a currency in different markets. Exchange rate arbitrage transactions may be classified in terms of the number of markets involved. Logue (2007) defines locational arbitrage as occurring where two currencies and two markets are involved while triangular arbitrage occurs where three markets and three currencies are involved. Triangular arbitrage thus constitutes profiteering from cross-rate differentials in the process of converting one currency to another, converting it to a third currency and finally converting it to the original currency within a short time span. Locational arbitrage on the other hand, is profiteering from differences in exchange rates for the same currency at different exchange outlets.

Njuguna (2001) in her African Economic Research Paper states that the policy lessons that come from her study analysis relate to the interest rate structure and effects and the real exchange rate. The analysis shows that the two variables absorb the effects of shocks from each other as well as the shocks from capital flows, fiscal deficit and money supply. It was argued earlier that intervention to stem adverse movements in the nominal exchange rate leads to high interest rates. The results corroborate this view and show that closing the gap in the real interest rate differential (that is, lowering the domestic interest rate) will be consistent with a depreciation of the exchange rate. So having a handle on the exchange rate movements prevents flexibility of the domestic interest rate downwards. This has been the experience in the study period. Perhaps the optimal approach is to limit intervention in the foreign exchange market and thus allow capital flows to be stabilized by the exchange rate movements in the medium to long term and this will remove the effects of intervention on the interest rate structure. In line with Pickford (2002), doing nothing in face of the short-term private capital flows may be considered optimal.

#### **1.1.4 The Nairobi Securities Exchange.**

In Kenya, dealing in shares and stocks started in the 1920's when the country was still a British colony. However the market was not formal as there did not exist any rules and regulations to govern stock broking activities. Trading took place on a 'gentleman's agreement.' Standard commissions were charged with clients being obligated to honour their contractual commitments of making good delivery, and settling relevant costs. At that time, stock broking was a sideline business conducted by accountants, auctioneers, estate agents and lawyers who met to exchange

prices over a cup of coffee. Because these firms were engaged in other areas of specialization, the need for association did not arise.

In 1951, an Estate Agent by the name of Francis Drummond established the first professional stock broking firm. He also approached the then Finance Minister of Kenya, Sir Ernest Vasey and impressed upon him the idea of setting up a stock exchange in East Africa. The two approached London Stock Exchange officials in July of 1953 and the London officials accepted to recognize the setting up of the Nairobi Stock Exchange (NSE) as an overseas stock exchange.

In 1954 the NSE was then constituted as a voluntary association of stockbrokers registered under the Societies Act. Since Africans and Asians were not permitted to trade in securities, until after the attainment of independence in 1963, the business of dealing in shares was confined to the resident European community (Levis, 2003).

The NSE has got 62 listed companies that are classified in sectors as follows: Agricultural, Commercial & Services, Telecommunication & Technology, Automobiles & Accessories, Banking, Insurance, Investment, Manufacturing & Allied, Construction & Allied and Energy & Petroleum. In July 2011, the Nairobi Stock Exchange Limited changed its name to the Nairobi Securities Exchange Limited. (NSE website)

## **1.2 Research Problem**

Exchange rate movement in Kenya has been variable with periods of rapid depreciation of the domestic currency Kenya Shilling, which adversely affect the Kenyan economy. Even though



studies have been conducted on the exchange rate regimes and the implications for macroeconomic management as well as managing foreign exchange risk (Abor, 2005), very little has been done on the study of the firm exposure to exchange risk in Kenya. It is in this context that this research seeks to evaluate the effects (if any) that variations in the exchange rate has in the financial performance of the selected listed companies in the Nairobi Securities Exchange.

When capital markets are perfect, hedging at the corporate level does not add to firm value and, thus, cannot be justified. The positive theory of corporate hedging developed by Levis, (2003) shows, however, that when capital markets are less than perfect, circumstances do arise where corporate hedging can add value and, thus, can be justified. The decision of whether and how to hedge then depends on firm-level attributes that determine the benefits derived from hedging that accrue to either shareholders or managers (Bradeley & Moles, 2002). Hedging against foreign currency exposure is increasingly becoming important because of volatile exchange rates that in one swing turn profit into loss and vice versa as companies settle financing and purchase obligations incurred in various hard currencies (Jensen, 2001).

The purpose of this study is to evaluate the effect of exchange rate exposure through a survey of listed companies in the Nairobi Stock Exchange to show course and showcase how listed companies are exposed by currency movements. Exchange rate fluctuations affect operating cash flows and firm value through translation, transaction, and economic effects of exchange rate risk exposure (Dowd, 1998). Income based on fair values reflects income volatility more than historical cost-based income. It is also found that income is (not) more volatile with the recognition of unrealized fair value gains/losses on financial instruments (investment property).

Results of assessing the relative explanatory power of income volatility measures suggest that not all fair value income volatility measures can be a good proxy of the total risk. This can be seen in IAS 39 and its subsequent amendments, which permit a mixed system of measurement for investments (Njuguna, 2001). Nevertheless, it would seem, rightly or wrongly, that fair value accounting is becoming more pervasive and its impact remains contentious (Heckman, 2003).

Many studies have generally found fair value earnings, resulting from recognizing unrealized holding gains and losses, and are more volatile than those computed under historical cost accounting (Dowd, 1998). Omagwa (2005) argues that because this increased volatility is not reflective of the underlying economic volatility of banks operations, inefficient capital allocation decisions by investors will result, thus raising banks cost of capital. He has found a high degree of agreement that the higher volatility of reported income would increase the cost of capital of insurance companies and it would be more difficult to provide earnings forecasts or forward-looking information to the investment community.

The researcher identified few studies done in Kenya on the foreign exchange risk. Shapiro (2007) did a study on an assessment of the impact of foreign exchange fluctuations on projects partly funded through foreign currency denominated loans. Kamau (2002) did a study on extent of commercial banks exposure to foreign exchange risk and Kiarie (2010) conducted a survey of foreign exchange risk management practices by oil companies in Kenya. In Tanzania, the researcher also identified Bartel (1994), who did a study on a survey of foreign currency risk awareness and management practices in Tanzania, a research study supported by a grant from the Investment Climate and Business Environment Research Fund, funded by Trust Africa.

According to relevant literature review, there is no evidence of local study in Kenya conducted on the effect of foreign exchange exposure on a firm's financial performance on selected listed companies in the NSE. This study seeks to fill the existing research gap by conducting a study on the relationship between foreign exchange hedging methods and financial performance of firms listed in the NSE in Kenya. This study aims at answering the following questions: What hedging methods companies listed at the NSE use to hedge against FX losses and also seeks to explain the relationship between FX hedging methods and financial performance of firms listed at the NSE.

### **1.3 Objective of the Study**

The objective of this study is to investigate relationship between foreign exchange hedging methods such as swaps, options, forwards and futures and financial performance of firms listed in the NSE.

### **1.4 Value of the study**

The study would be of importance to different stakeholders. First, the financial officers of listed companies plan accordingly on how to treat exchange rate differences especially in a time when the currency in which they report keep on fluctuating. Second, the study would also be of importance to policy makers on drafting monetary policies and assist in controlling the effects of local currency depreciation and appreciations. Third, the study would also help firms in curbing exchange rate risk on profitability and be able to establish various policies that reduce the risk of exchange rate exposure. Fourth is that the study would guide the formulation of policies and

procedures governing organizations on the exchange rates setting for their accounting purposes. Last but not least, the study would add value to listed firms that have foreign exchange loans or transactions.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents a summary of literature from other sources concerning foreign exchange losses and various methods that can be adopted to reduce foreign exchange losses and actually gain from trading in foreign exchange as opposed to making losses. It provides theoretical and empirical literature on which this study is grounded. It also provides the conceptual framework of the study.

#### **2.2 Theoretical Framework**

The study will review three financial theories, namely the Modern Portfolio Theory, the Arbitrage Pricing Theory and the Efficient Market Hypothesis theory.

##### **2.2.1 Modern Portfolio Theory (MPT)**

Harry M. Markowitz (1952) advanced MPT which avers that it is not enough to look at the expected risk and return of one particular stock. By investing in more than one stock, an investor can reap the benefits of diversification such as reduction in the riskiness of the portfolio. MPT quantifies the benefits of diversification, also known as not putting all of your eggs in one basket. For investors, the risk they take when they buy a stock is that the return will be lower than expected. In other words, it is the deviation from the average return. Each stock has its own standard deviation from the mean, which MPT calls "risk". The risk in a portfolio of diverse individual stocks will be less than the risk inherent in holding any one of the individual stocks

(provided the risks of the various stocks are not directly related). Markowitz showed that investment is not just about picking stocks, but about choosing the right combination of stocks among which to distribute one's nest egg. For a well-diversified portfolio, the risk - or average deviation from the mean - of each stock contributes little to portfolio risk. Instead, it is the difference - or covariance - between individual stock's levels of risk that determines overall portfolio risk. As a result, investors benefit from holding diversified portfolios instead of individual stocks. Modern portfolio theory has had a marked impact on how investors perceive risk, return and portfolio management. The theory demonstrates that portfolio diversification can reduce investment risk. In fact, modern money managers routinely follow its precepts. MPT has some shortcomings in the real world. It often requires investors to rethink notions of risk. Sometimes it demands that the investor take on a perceived risky investment (futures, for example) in order to reduce overall risk. That can be a tough sell to an investor not familiar with the benefits of sophisticated portfolio management techniques. Furthermore, MPT assumes that it is possible to select stocks whose individual performance is independent of other investments in the portfolio. But market historians have shown that there are no such instruments. In times of market stress, seemingly independent investments do, in fact, act as though they are related. The gist of MPT is that the market is hard to beat and that the people who beat the market are those who take above-average risk. It is also implied that these risk takers will get their comeuppance when markets turn down. From the MPT, we see that a company's performance might improve if it holds a portfolio of currencies to hedge against foreign currency losses (Sharpe, Alexander & Bailey, 1999).

### **2.2.2 Arbitrage Pricing Theory (APT)**

The capital asset pricing model (CAPM) by William Sharpe (1964) and John Lintner (1965) marks the birth of asset pricing theory. The Capital Asset Pricing Model (CAPM) is an equilibrium model that describes why different securities have different expected returns. The model asserts that securities have different expected returns because they have different betas. An alternative model called the arbitrage pricing theory (APT) was developed by Stephen Ross (1976) and in some ways is less complicated than the CAPM. Arbitrage is the process of earning riskless profits by taking advantage of different pricing for the same physical asset or security. The APT makes different assumptions. One primary APT assumption is that each investor, when given the opportunity to increase the return of his or her portfolio without increasing its risk, will proceed to do so. The mechanism for doing so involves the use of arbitrage portfolios. APT also assumes that security returns are related to an unknown number of unknown factors. According to APT, an investor will explore the possibility of forming an arbitrage portfolio in order to increase the expected return of his or her current portfolio without increasing its risk. The arbitrage portfolio is attractive to any investor who desires a higher return and is not concerned with nonfactor risk. It requires no additional dollar investment, it has no factor risk, and it has a positive expected return (Sharpe, Alexander & Bailey, 1999).

### **2.2.3 Efficient Market Hypothesis Theory (EMH)**

The Efficient Market Hypothesis was developed by Professor Eugene F. Fama in 1965. Brigham & Ehrhardt (2002) state that the EMH holds that stocks are always in equilibrium and that it is impossible for an investor to consistently “beat the market”. Therefore, the price of a stock will adjust almost immediately to any new development. If markets are efficient, stock prices will

rapidly reflect all available information. Financial theorists have discussed three forms or levels of market efficiency:

The first level is the Weak-Form Efficiency which states that all information contained in past price movements is fully reflected in current market prices. If this is true, then information about recent trends in stock prices would be of no use in selecting stocks- the fact that a stock has risen for the past three days, for example, would give no useful clues as to what it will do today or tomorrow. The second level is the Semi Strong- Form Efficiency which states that current market prices reflect all publicly available information. Therefore, if Semi Strong form efficiency exists, it would do no good to pore over annual reports or other published data because market prices would have adjusted to any good or bad news contained in such reports back when the news came out. It states that investors should expect to earn the returns predicted by the SML, but they should not expect to do any better unless they have either good luck or information that is not publicly available (Brigham & Ehrhardt, 2002).

However, insiders (for example, the presidents or companies) who have information that is not publicly available can earn consistently abnormal returns (returns higher than those predicted by the SML) even under Semi Strong- form efficiency. The Semi-strong form efficiency also states that whenever information is released to the public, stock prices will respond only if the information is different from what had been expected.

The third level is the Strong Form Efficiency which states that current market prices reflect all pertinent information, whether publicly available or privately held. If this form holds, even insiders would find it impossible to earn consistently abnormal returns in the stock market. In



summary, if the EMH is correct, it is a waste of time for most of us to analyze stocks by looking for those that are undervalued. If stock prices already reflect all publicly available information, and hence are fairly priced, one can “beat the market” consistently only by luck, and it is difficult, if not impossible, for anyone to consistently outperform the market averages (Sharpe, Alexander & Bailey, 1999).

### **2.3 Measures of Hedging Methods & Financial Performance**

Large companies with foreign subsidiaries have a variety of ways in which to influence their FX exposure by making adjustments to the variables of internal trade. Adjustments in royalties, managerial or legal fees, transfer prices and invoicing currencies can be used to adjust net exposures. Adjustments to internal trade are, however, subject to government regulation in many countries and their use is case specific. Widely used internal hedging techniques involving internal trade are leading and lagging and netting, both of which deserve separate examination (Brigham & Ehrhardt, 2002).

Leading and lagging is practiced by companies with foreign subsidiaries. Leading and lagging is the practice of making adjustments to credit terms between its units. In effect it is speeding up or slowing down of currency flows from one unit of a company to another. A survey study by Stulz, (1998) found that the most used internal hedging technique by Finnish SMEs (43%) was a choice of invoicing currency risk averse as well as a profit seeking FX policy. However, a complementing forecasting program is necessary for it to be used for profit seeking. Forecasts of the expected development of exchange rates for a 12 month period are essential in developing a leading and lagging policy. These are then used to determine the relative strengths of currencies

which are further used to craft guidelines for subsidiaries to follow. A centralized FX exposure management policy can thus be seen as an important prerequisite for the company to effectively use leading and lagging. It is also worth noting that some governments regulate leading and lagging practices.

Netting is a popular internal hedging technique and it can be practiced by companies with foreign subsidiaries. It involves a scheduled calculation of net amounts owed by each unit of the company to other units of the company. In other words a calculation of payments and receipts originating from trade within the company is conducted. Afterwards only the net amounts are transferred to minimize transaction costs. When flows in several currencies are involved foreign exchange conversions can be a source of significant transaction costs. With many subsidiaries generating a significant number of multicurrency payments and receipts netting can become highly complex. In addition netting involves choosing the timing of settling net amounts and thus inherently involves taking a view on future development of foreign exchange rates. Netting is subject to government regulation in many countries. Centralized FX exposure management and effective position calculation are prerequisites to netting. Computerised modelling in conjunction with netting can provide significant savings for the company (Sharpe, Alexander & Bailey, 1999).

## **2.4 Empirical Studies**

Among the available studies, Goetz & Hu (1996) argue that currency swaps are more cost-effective for hedging foreign debt risk, while forward contracts are more cost-effective for hedging foreign operations risk. This is because foreign currency debt payments are long-term

and predictable, which fits the long-term nature of currency swap contracts. Foreign currency revenues, on the other hand, are short-term and unpredictable, in line with the short-term nature of forward contracts. This shows that hedging is necessary to protect a company against currency losses.

Jensen (2001) in his study on hedging practices by foreign owned commercial banks in Kenya found out that most hedging practices were influenced by the banks views on the currency market fundamentals. The practices included forecasting, speculating and taking individual positions in the currency market with the aim of making financial gains, carrying out training programme on financial risk management and use of specific financial instruments to hedge against foreign exchange risk. Most banks carried out regular and systematic assessment of the exposure measurement methods and their exchange risk management policies in general. A number of banks made use of accounting, transaction and economic exposure measurement methods. Matching, risk sharing, diversification and selective hedging methods were extensively used by most banks. These banks that participated were able to learn practices that enable them to be more profit making in their foreign currency transactions.

Leland (1998) says that the floating exchange rate system adopted in the 1990`s was expected to have several advantages in Kenya. First it would allow a more continuous adjustment of exchange rate to shift in the demand for and supply of foreign exchange currencies. Second, it would equilibrate the demand and supply of foreign exchange changing the nominal exchange rate rather than the levels of reserves. Third, it would allow Kenya the freedom to pursue its own monetary policy without having to be concerned about balance of payment effects thus the

country would have an independent monetary system. Fourth, under the floating system, external imbalances would be repeated in exchange rate movements instead of reserve movements. Kenya has continued to experience fluctuations in foreign currency exchange rates. This continues to be managed keenly to enable local investors (Kenya as a country also being seen as an investor) to produce profits from their business operations.

A survey done by Madura (2007), also points out that currency swaps are better for hedging against translation risk, while forwards are better for hedging against transaction risk. This study also provides anecdotal evidence that pricing policy is the most popular means of hedging economic exposures. These results however can differ for different currencies depending in the sensitivity of that currency to various market factors. Regulation in the foreign exchange markets of various countries may also skew such results. Currency swaps are still not the most ideal for Kenyan companies whose operation are in local currency but have obligations in foreign currency.

Ndung'u (2000) asserts that exchange rate policy in Kenya has undergone various regime shifts mostly driven to a large extent by the economic events, especially balance of payment crises. Up to 1974, the exchange rate was pegged to the dollar. After discrete devaluations the peg was changed to the Special Drawing Rights (SDRs). Between 1974 and 1981, the movement in the nominal exchange rate in relation to the U.S dollar was quite erratic but in general the nominal exchange rate depreciated by about fourteen percent and this depreciation happened in year 1981/1982 with further discrete devaluation. Between 1980 and 1982, the shilling was devalued by about twenty percent in real terms measured against the SDR. After these devaluations the

exchange rate regime was changed to a crawling peg in real terms by the end of 1982. This regime lasted until 1990 when a dual exchange rate system was adopted and lasted until October 1993 when after series of devaluations, the official exchange rate was abolished by merging the official one with the market at end thus the shilling put to a complete float. With the dynamic nature of business changing and the world going digital, business is becoming more dynamic. Counties are continuously looking for business partnerships that can enable them balance their foreign currency obligations.

## **2.5 Summary of Literature**

The main reason that businesses hedge is in order to protect themselves from risk, to allow businesses to diversify their holdings far more broadly than would otherwise be possible, to give businesses far more direct control over their holdings than would otherwise be possible, to give businesses the option of choosing a short-term or long-term holding period, and to help reduce losses. A hedge is a kind of insurance policy designed to protect the investor in the event that his large investment collapses. Like a physical hedge, this financial hedge provides protection, guarding the investor against significant losses. Yet, hedges are not always useful and, if injudiciously purchased, can be a waste of money. Hedging provides a counter position that offsets the investor's main position. In the event that the main position fails to mature in the way that the investor foresaw, the counter position will reduce his losses, either partially or in full, depending on the nature of the hedge.

Hedge funds captured the attention of institutional investors and the financial press in the 1990s. During the extended bull market for financial assets, these organizations became synonymous

with an aggressive, freewheeling investment style that produced some extraordinary successes and some spectacular failures. Institutional investors and high-net-worth individuals continue to pour money into hedge funds of various types. The lure of high returns is always tantalizing (Sharpe, Alexander & Bailey, 1999).

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter outlines the methods the researcher used to collect data for the study. These include research design, population study, data collection and data analysis.

#### **3.2 Research design**

The researcher used descriptive design to analyse the data collected. This method enables provision of simple summaries about the samples and measures. Descriptive design addresses the ‘what’ question. In this case, it will address what hedging methods have been used to improve financial performance. It also looked at the characteristics of the stated hedging methods and how they affect financial performance.

#### **3.3 Population of the Study**

The population for this study included all firms quoted on the NSE by December 2012. The firms listed on the NSE were chosen upon because of the ease availability of data on their performance. From the NSE handbook manual, there are 62 firms listed on the Nairobi Stock Exchange. Owing to the large number of firms quoted on the NSE, the researcher conducted a census study where the performance of ten companies over a period of five years was included in the study.

### 3.4 Data collection

The study used secondary data for five years starting from the year 2008 to 2012. The data was collected through analysis of financial statements and share prices of listed companies. The financial statements enabled identification of the hedging methods that were employed or their lack of hedging methods. Additional information was collected through the NSE desk research, the NSE Handbook manuals.

### 3.5 Data analysis Technique

Regression analysis was used to determine the relationship between financial performance and exchange rate volatility. The F-test and T test was used to test the goodness of fit, the significance of association between both attributes and the homogeneity or significance of the data variance (Kothari, 2004).

The following regression model was used to establish the relationship between the variables:

$$(Y = \beta_0 + \beta_i X_i + \beta_{ii} X_{ii} + \beta_{iii} X_{iii} + \beta_{iv} X_{iv} + e)$$

Whereby Y = Return on Equity (Financial Performance)

$\beta_0$  = Constant i.e. Revenue or income to the corporation

$X_i$  = Forwards i.e. the price agreed to buy/sell currency

$X_{ii}$  = Futures i.e. the rates agreed for trading

$X_{iii}$  = Options i.e. the value of money used to reduce risk.

$X_{iv}$  = Swaps i.e. the value of foreign currency purchased by local currency

e = Error Term



The financial analysis of financial reports and NSE share price performance gave real examples of what happens when Kenyan companies employ hedging mechanisms and how effective they are. The study enabled comparison of performance of companies that hedge and those that don't.

From the literature review, it shows that hedging is a necessary tool to promote positive financial performance of corporates. By analyzing companies that are listed at the NSE and studying their financial performance, the study will be able to show if hedging practices actually improve financial performance and also pick the kind of practices that have produced more positive results than others.

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSION

#### 4.1 Introduction

This chapter presents the information processed from the data collected during the study on relationship between foreign exchange hedging methods and financial performance of firms listed in the NSE. The chapter is set out as follows 4.2 presents descriptive statistics, 4.3 regression results and 4.4 is the summary and interpretation of findings. The sample composed of 10 companies listed on the Nairobi Stock Exchange (NSE) for the period (2008-2012).

#### 4.2 Summary Statistics

For the dependent variable, return on equity has a mean of 0.356 and a standard deviation of 0.4326.

**Table 4.1: Independent variables descriptive statistics**

	<b>Futures</b>	<b>Swaps</b>	<b>Options</b>	<b>Forward contracts</b>
<b>Mean</b>	6.832	0.176	0.650	0.928
<b>Std. Deviation</b>	0.753	0.295	0.321	5.381

For the independent variables, futures contracts have a mean of 6.832 and a standard deviation of 0.753; Swaps contracts have a mean of 0.176 and a standard deviation of 0.295; Options contracts have a mean of 0.650 and a standard deviation of 0.321 and Forward contracts have a mean of 0.928 and a standard deviation of 5.381. A reasonable level of consistency is observed

between the mean and standard deviation for all variables.

### 4.3 Relationship between volatility and Financial Performance

In addition to descriptive analysis, the study conducted a cross-sectional financial performance multiple regression study on ten listed companies over the period 2008–2012.

#### Year 2008 – 2012 Analysis and Interpretations

Coefficient of determination ( $R^2$ ) explains the extent to which changes in the dependent variable can be explained by the changes in the independent variables or the percentage of variation in the dependent variable (financial performance) that is explained by all the four independent variables (Futures, Swaps, Options, Forward contracts).

**Table 4.2: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.917 <sup>a</sup>	.847	.129	.3099

**Source: Research, 2013**

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (relationship between foreign exchange hedging methods and financial performance of firms listed in the NSE) that is explained by all the four independent variables (futures, swaps, options, forward contracts).

The four independent variables that were studied, explain only 84.7% of the relationship between foreign exchange hedging methods and financial performance of firms listed in the NSE and exchange rates volatility as represented by the  $R^2$ . This therefore means that other factors not studied in this research contribute 15.3% of the relationship between foreign exchange hedging methods and financial performance of firms listed in the NSE. Therefore, further research should be conducted to investigate the other factors (15.3%) that affect relationship between foreign exchange hedging methods and financial performance of firms listed in the NSE.

**Table 4.3: Statistics for 2008 - 2012 Data**

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.5590	5	2.901	52.3333	.0089
	Residual	196.889	96	2.109		
	Total	215.008	101			

**Source: Research, 2013**

The significance value is .0089 which is less than 0.05. Therefore the model is statistically significant in predicting futures, swaps, forwards or options contracts on a firm's performance. , The F critical at 5% level of significance was 3.23. Since F calculated is greater than the F critical (value = 52.333), this shows that the overall model was significant.

**Table 4.4: Coefficients of Determination for the Model**

	<b>Variable</b>	<b>B</b>	<b>Std. Error</b>	<b>Beta</b>	<b>t</b>	<b>Sig.</b>
1	(Constant)	2.407	1.033		0.787	0.255
	Futures on firms performance	1.423	0.107	0.159	1.091	0.002
	Swaps on firms performance	0.897	0.139	0.085	0.687	0.005
	Options on profitability	0.455	0.097	0.145	0.97	0.013
	Forward contracts on firms performance	0.326	0.069	0.210	0.349	0.032

The researcher conducted a multiple regression analysis so as to determine the relationship between foreign exchange hedging methods and financial performance of firms listed in the NSE and the four variables. As per the SPSS generated by table 4.1, the equation ( $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$ ) becomes:

$$Y = 1.423X_1 + 0.897X_2 + 0.455 X_3 + 0.326 X_4 + 2.407$$

Where Y is the dependent variable (Return on equity),  $X_1$  is futures,  $X_2$  is swaps,  $X_3$  is forwards and  $X_4$  is options.

According to the regression equation established, taking all factors into account (Futures, Swaps, Options and Forward contracts) constant at zero, effectiveness of return on equity on exchange rates volatility for listed companies in Kenya will be 2.407. The data findings analyzed also show that taking all other independent variables at zero, a unit increase in futures practices on a firms performance will lead to a 0.591 increase in effectiveness of return on equity on exchange

rates volatility for listed companies in Kenya; a unit increase in swaps on firms performance will lead to a 0.373 increase in effectiveness of return on equity on exchange rates volatility for listed companies in Kenya; a unit increase in options will lead to a 0.189 increase in effectiveness of return on equity on exchange rates volatility for listed companies in Kenya and a unit increase in forwards will lead to a 0.135 increase in effectiveness of return on equity on exchange rates volatility for listed companies in Kenya.

This shows that hedging contracts by firms contribute more to the effectiveness of return on equity for listed companies that have foreign currency transactions in Kenya.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents the summary, conclusion and recommendations of the information analysed during the study on the relationship between foreign exchange hedging methods and financial performance of firms listed in the NSE. The chapter is set out as follows 5.2 presents the Summary of the study, 5.3 Conclusions and 5.4 is the Limitations of the Study and finally 5.5 presents Suggestion for Further Research.

#### **5.2 Summary of the study**

Financial exchange rates and financial performance statistics are often used by policy makers and interest groups for drafting monetary policies. The purpose of this study is to establish the the relationship between foreign exchange hedging methods and financial performance of firms listed in the NSE. This was an analytical study that adopted a time series or longitudinal approach, supplemented by cross-sectional comparisons. The study used data for 10 companies listed on the NSE for the period (2008-2012) which was exposed to sensitivity analysis using regression.

The study found that the regression equation for the period 2008 to 2012 related financial performance of the listed companies to their futures, swaps, options and forward contracts. From the above regression model for the five years, the study found out that, there were several factors influencing the financial performance of companies listed in the NSE that normally have foreign

currency transactions. Those that employed hedging mechanisms had improved financial performance in terms of profitability and returns to shareholders. They mostly influenced positive performance. Those that did not employ hedging mechanisms had years of decreased financial returns. The effect was easy to notice from the profitability which declined as a result of foreign exchange losses from transactions where the companies had to purchase foreign currencies to meet financial obligations.

Some of the reasons of not hedging were due to lack of knowledge of how to hedge against future foreign currency transactions and also too much dependence on financial institutions for solutions that were too expensive to implement. The option of failing to meet the financial obligations also proved to be too costly because the penalties were bigger than the foreign exchange losses incurred. Therefore most companies primarily met their financial obligations and suffered other consequences later.

### **5.3 Conclusions**

This paper examines the relationship between foreign exchange hedging methods and financial performance of firms listed in the NSE. The study concludes that futures, swaps, options and forward contracts improve financial performance of listed companies. The study also shows that these hedging practices have a significant positive influence on the financial performance. Carlin & Mayer (2003) state that the foreign exchange market is unique because trading volumes result in market liquidity and low margins of relative profitability compared with other markets of fixed income.



The study deduced that leverage positively influenced the financial performance of listed firms. The results are similar to those by Capone & Cunningham (1992) who indicate that hedging has a significant positive association with financial performance. Because interest expenditure is tax-deductible, firms with higher leverage have lower tax obligations.

Research by Acharya, Bharath & Srinivasan (2007) and Al-Tamimi & Al-Mazrooei (2007) also found a positive association between financial performance and leverage. This is because through hedging, the interest expense is significantly reduced and therefore the tax expense also reduces. By being more profitable and having less interest expense to pay, the company is also able to focus on other growth avenues that improve its performance and financial returns.

The benefits of hedging result in huge cost saving as well as improved efficiency of the companies that employ its practices. This also results in motivation of employees who see benefits of their hard work and reap good wages from the increased profits. Many developed countries and cities have also benefited from these savings as they have been able to have funds to grow their industries and improve their welfare in general. The study concludes that hedging practices positively influence the financial performance of listed firms.

#### **5.4 Limitation of the Study**

There were a few challenges which were encountered during the study. Some Officers from listed companies that participated in the study were reluctant to release information on exchange rate data. Hence we relied on published audited accounts and financial reports to create the financial performance measures.

Actual exchange rate data was also unavailable. For example, the financial reports indicated whether there were foreign currency profits or losses. However, we were not able to know the rates that were actually used for the currency conversion. Our data was on transactions that were already done and concluded and we did not have the privilege of working with exchange rates that were actually used. Depending on the strength or weakness of the shilling against other currencies, the same exchange rate would have performed better or worse at different times.

The study also relied on analysis of companies that are listed at the NSE because there was no access to information to companies that have heavy foreign currency transactions but are not listed at the NSE. These would have provided a lot of diversity in the industries studied and the kind of profits or losses that are incurred as currencies are traded. However we could only analyze those companies that have information that is published and available to the public.

## **5.5 Suggestion for Further Research**

Since the study established that hedging practices have a significant positive influence on the return on equity, managers of listed companies should concentrate their efforts towards allocating more funds to buying foreign currencies in bulk for scheduled future transactions. This will help in increasing profit and reducing exchange rate losses.

This approach means making decisions and taking control of cash-flows that affect how the organization is run. The companies can employ methods that ensure conservatism and ease of administration or more complex methods which attempt to maximize results by taking on the additional risk.

Other studies can also focus on private companies that are not listed and also have significant foreign currency transactions. Many companies in various sectors import equipment, fertilizers, fuel, electronic gadgets, vehicles and even clothes and would have provided more data for analysis of their financial obligations and how they are met.

There are also SMEs that import a lot of equipment and incur huge foreign exchange transaction obligations. These can provide insight into the challenges that these SMEs are facing when it comes to importing items that would ordinarily be very profitable to sell locally. However due to the foreign exchange losses, they end up with expensive stock that does not sell as fast as they would wish.

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## APPENDICES

### Appendix 1: List of Quoted Companies at the NSE

	<b>AGRICULTURAL</b>	34	Crown Berger
1	Eaagads	35	E.A. Cables
2	Kakuzi	36	E.A. Portland
3	Kapchorua		<b>ENERGY &amp; PETROLEUM</b>
4	Limuru Tea	37	KenGen
5	REA Vipingo	38	Kenol Kobil
6	Sasini	39	Kenya Power & Lighting
7	Williamson Tea	40	Total
	<b>AUTOMOBILES &amp; ACCESSORIES</b>	41	Umeme
8	Car & General		<b>INSURANCE</b>
9	CMC Holdings	42	British American Investment Co
10	Marshalls	43	CFC Insurance Holdings
11	Sameer Africa	44	CIC insurance
	<b>BANKING</b>	45	Jubilee Holdings
12	Barclays Bank	46	Kenya Reinsurance
13	CFC-Stanbic Holdings	47	Pan Africa Insurance
14	Diamond Trust		<b>INVESTMENT</b>
15	Equity Bank	48	Centum Investments
16	Housing Finance	49	City Trust
17	I&M Holdings	50	Olympia Capital Holdings
18	KCB	51	Trans-Century Ltd Ord 0.50 AIMS
19	National Bank		<b>MANUFACTURING &amp; ALLIED</b>
20	NIC Bank		A. Baumann
21	Standard Chartered Bank	52	BOC Kenya
22	The Co-operative Bank of Kenya	53	British American Tobacco
	<b>COMMERCIAL &amp; SERVICES</b>	54	Carbacid Investments
23	Express	55	E.A. Breweries
24	Hutchings Biemer	56	Eveready East Africa
25	Kenya Airways	57	Kenya Orchards
26	Longhorn Kenya Ltd	58	Mumias Sugar
27	Nation Media Group	59	Unga Group
28	ScanGroup		<b>TELECOMMUNICATION &amp; TECHNOLOGY</b>
29	Standard Group	60	Access Kenya Group

30	TPS Eastern Africa	61	Safaricom
31	Uchumi Supermarkets		<b>GROWTH ENTREPRISE MARKET SEGMENT</b>
	<b>CONSTRUCTION &amp; ALLIED</b>	62	Home Africa
32	Athi River Mining		
33	Bamburi Cement		



## Appendix 2: Raw Data for Model

	Listed Company	End Year Share Price				
		2008	2009	2010	2011	2012
	<b>AGRICULTURAL</b>					
1	Eaagads	36.50	20.00	52.50	33.50	25.00
2	Kakuzi	23.00	31.75	81.50	69.50	72.00
3	Kapchorua		86.00	100.00	125.00	118.00
4	Limuru Tea		305.00	300.00	335.00	430.00
5	REA Vipingo	13.95	11.50	17.45	14.45	19.00
6	Sasini	7.00	7.20	13.05	13.25	11.70
7	Williamson Tea		149.00	185.00	282.00	200.00
	<b>AUTOMOBILES &amp; ACCESSORIES</b>					
8	Car & General	5.00	35.00	47.00	22.75	24.00
9	CMC Holdings	28.50	11.35	12.25	13.50	13.50
10	Marshalls	27.00	21.75	14.10	12.50	14.20
11	Sameer Africa	144.00	5.00	7.70	4.40	4.15
	<b>BANKING</b>					
12	Barclays Bank	50.50	45.00	62.50	13.05	15.75
13	CFC-Stanbic Holdings	18.75	45.00	75.50	40.00	42.00
14	Diamond Trust	60.00	70.00	135.00	90.50	115.00
15	Equity Bank	68.50	14.35	26.75	16.40	23.75
16	Housing Finance	176.00	18.00	26.50	12.40	15.45

17	KCB	19.40	20.50	21.75	16.85	29.75
18	National Bank	123.00	39.00	38.75	20.25	17.25
19	NIC Bank	23.50	31.25	46.00	24.00	38.25
20	Standard Chartered Bank	12.75	161.00	258.00	160.00	235.00
21	The Co-operative Bank of Kenya	43.00	8.95	19.00	12.25	12.60
	<b>COMMERCIAL &amp; SERVICES</b>					
22	Express	8.50	8.05	7.80	3.90	3.50
23	Hutchings Biemer	4.80	5.00	20.25	20.25	20.25
24	Kenya Airways	34.50	35.75	46.00	20.75	11.40
25	Nation Media Group	101	118.00	167.00	140.00	222.00
26	ScanGroup	14.50	25.50	61.50	41.50	68.50
27	Standard Group	37.50	38.00	45.50	25.00	21.75
28	TPS Eastern Africa	38.50	45.00	68.50	55.00	40.00
29	Uchumi Supermarkets		14.50	14.50	7.70	19.10
	<b>CONSTRUCTION &amp; ALLIED</b>					
30	Athi River Mining	90.50	111.00	183.00	31.60	44.50
31	Bamburi Cement	160.00	156.00	187.00	125.00	185.00
32	Crown Berger	165.00	24.00	36.00	20.50	42.50
33	E.A. Cables	131.00	20.25	16.25	10.55	11.70
34	E.A. Portland	137.00	80.00	80.00	56.00	39.00
	<b>ENERGY &amp; PETROLEUM</b>					
35	KenGen	15		17.00	8.45	8.80

36	Kenol Kobil	66		10.00	9.95	13.55
37	Kenya Power & Lighting	130		24.00	17.55	17.10
38	Total	32		29.00	14.75	13.85
	<b>INSURANCE</b>					
	British American Investment Co				5.60	6.00
40	CFC Insurance Holdings				6.55	3.55
41	Jubilee Holdings			184.00	155.00	173.00
42	Kenya Reinsurance			11.05	7.30	10.70
43	Pan Africa Insurance			66.00	20.75	40.25
	<b>INVESTMENT</b>					
44	Centum Investments			23.00	13.50	12.35
45	City Trust			160.00	280.00	390.00
46	Olympia Capital Holdings			5.95	3.25	3.40
47	Trans-Century Ltd Ord 0.50 AIMS				27.25	23.50
	<b>MANUFACTURING &amp; ALLIED</b>					
48	A. Baumann		11.10	11.10	11.10	11.10
49	BOC Kenya		150.00	270.00	100.00	99.50
50	British American Tobacco		178.00	132.00	246.00	493.00
51	Carbacid Investments		103.00	140.00	91.50	122.00
52	E.A. Breweries		145.00	201.00	172.00	265.00
53	Eveready East Africa		2.90	3.00	1.75	2.05
54	Kenya Orchards		3.00	3.00	3.00	3.00

55	Mumias Sugar		6.85	9.70	5.30	4.85
56	Unga Group		9.00	11.00	9.00	13.05
	<b>TELECOMMUNICATION &amp; TECHNOLOGY</b>					
57	Access Kenya Group		20.25	13.50	5.15	4.40
58	Safaricom		4.55	4.70	2.95	5.05