

**THE EFFECTS OF OPERATING FOREIGN EXCHANGE EXPOSURE ON  
SHARE PRICES IN COMMERCIAL AND SERVICES FIRMS AT THE  
NAIROBI SECURITIES EXCHANGE**

**BY**

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## **DECLARATION**

I declare that this research project is my own original work, and to the best of my knowledge has not been presented in any other university for a degree award.

Signed\_\_\_\_\_

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This project has been submitted for examination with my approval as the University Supervisor

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Besides i am also acknowledging my friends and my colleagues for their unfailing support during my period of study.

## **DEDICATION**

I dedicate this research project to my dear wife Rehema my daughters Ramona, Reimona and Rimona for the support and patience during the entire period of my study. Also to my parents and my siblings for their moral support and prayers.

Thank you and God bless you abundantly.

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## **LIST OF ABBREVIATIONS**

ARMA	Auto-regression and Moving Average
CAPM	Capital Asset Pricing Model
CAPT	Capital asset pricing Theory
CMA	Capital Markets Authority
DCC	Dynamic Conditional Correlation
EVT	Extreme Value Theory
FAS	Financial Accounting Standards
GARCH	Generalized Auto-regression Conditional Heteroskedasticity
GDP	Gross Domestic Product
KQ	Kenya Airways
MNCs	Multi-National Corporations
NMG	Nation Media Group
NSE	Nairobi Securities Exchange
PPP	Purchasing Power Parity
SG	Standard Group
TWC	Time Warner Cable
UK	United Kingdom
US	United States
VaR	Value-at-Risk
VECM	Vector Error Correlation Model

## ABSTRACT

Foreign exchange exposure is important in a multinational corporation as it influences working capital management decisions, since cash flow values are mainly affected by these exposures. These firms therefore need to be ready to address exposure issues once they arise. Another important aspect of foreign exchange exposure is that it could influence the share prices for MNCs whose shares are listed in stock markets. The objective of the study was to study the effect of foreign exchange exposure on the share prices of firms listed in the commercial and services sector at the NSE. The study was an event study, sampling four of the nine firms in the commercial and services sector at the bourse. Secondary data from the NSE was collected, and analysed through the use of t-tests, correlation and multivariate regression analysis. The overall findings confirm that share price movements reflect the available information in the market. The nature of the foreign exchange exposure information is negative but the extent varies across firms. The practical implications of these findings are on the management of the foreign exchange exposure by firms to reduce the negative influence of information about the exposure on share price movements. The correlation results showed that there are negative relationships between foreign exchange exposure and share prices at the NSE, though such relationships were observed to be either weak or very weak. The study revealed that a unit increase in foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return negatively affect the share prices of firm listed in the Nairobi securities Exchange, thus the study concludes that there is a negative relationship between foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return and share prices of firm listed in the Nairobi securities Exchange. The study revealed that a unit increase in domestic market portfolio would positively affect share prices, thus the study concludes that there is a positive relationship between domestic market portfolio and share prices of firm listed in the Nairobi securities exchanges. The study recommends that firms listed in the Nairobi Stock Exchange should explore avenues to enhance capacities within firms for managing foreign currency risk exposure. They should explore the route of continued education for those in workplaces through short term training that should be very practical oriented, this could involve professional organizations for finance specialists, bankers, accountants and consultants.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background to the Study

As the nature of business becomes international, many firms are exposed to the risk of fluctuating exchange rates. Changes in exchange rates may, according to Eun and Resnick (2009), affect the settlement of contracts, cash flows, and the firm valuation as measured by share prices. It is thus important for financial managers to know the firm's foreign currency exposure and properly manage the exposure. By doing so, managers can stabilize the firm's cash flows and enhance the firm's value.

While many managers understand the effects of random exchange rate changes on the dollar value of their firm's assets and liabilities denominated in foreign currencies, they often do not fully understand the effects of volatile exchange rates on operating cash flows. As the economy becomes increasingly globalised, more firms are subject to international competition. Fluctuating exchange rates can seriously alter the relative competitive positions of such firms in domestic and foreign markets, affecting their operating cash flows (Eun and Reswick, 2009).

The effect of exchange rate changes on the operations, cash flows and market values of MNCs is well documented. Several studies on MNCs, hedging, and exchange rate risk have stressed the fact that as MNCs expand their involvement throughout the world, the higher the probability that they will face exchange rate fluctuations/volatility in their operations. In turn, they face the possibility of negative effects on their cash flows. To safeguard the company's overall interests, cash flows, and equity, the extensive use of various hedging techniques by most companies has been widely recognized. In a survey, Mathur (1982) finds that most companies

institute a hedging program to reduce the negative effects of foreign exchange rate changes on their cash flows and reported earnings. He also finds that a formal foreign exchange management policy is more common among larger firms. Bartov, Bodnar and Kaul (1996) find a relationship between exchange rate variability and stock return volatility, and attribute this to foreign currency transaction. They also find that MNCs that do not use hedging strategies are more vulnerable to losses due to exchange rate fluctuations. Choi and Prasad (1995) also find a link between exchange rate risk and declines in cash flows and market values.

### **1.1.1 Operating Foreign Exchange**

As defined by Eiteman, Stonehill and Moffert (2010), foreign exchange exposure is a measure of the potential for a firm's profitability, net cash flows and market value to change because of a change in exchange rates. An important task of the financial manager is to measure foreign exchange exposure and to manage it so as to maximize the profitability, cash flows, and market value of the firm. These three components—profits, cash flows and market value – are the key financial elements of how the relative success or failure of a firm is viewed. The reported earnings of any publicly traded company are fundamental to the market's opinion of that company (Copeland, 2008).

Formally, operating exposure can be defined as 'the extent to which the firm's operating cash flows would be affected by random changes in exchange rates' (Eun & Reswick, 2009). Since these transactions are in the future and the price is not set, it is changes in the real exchange rates (relative competitiveness) that generate the gains or losses in future cash flows. The effects of operating exposure are more important for the financial position of the firm than the effects of transaction exposure. However,

unlike transaction exposure, which is easily identified (directly from looking at the transaction contracts), operating exposure is somewhat subjective: it depends on assessing the impact of exchange-rate changes on transactions into which the firm has not yet entered. To determine operating exposure it is necessary to measure the change in the expected future cash flows of the firm in response to changes in the exchange rate.

A firm's operating exposure, according to Pringle and Collony (1993) is determined by (1) the structure of the markets in which the firm sources its inputs such as labour and materials, and sells its products, and (2) the firm's ability to mitigate the effect of exchange rates by adjusting its markets, product mix, and sourcing. Since prices have not been set for future transactions, operating exposure depends not on changes in nominal exchange rates, but on changes in real exchange rates. As with transaction exposure, operating exposure should only be a function of unexpected changes in the real exchange rate as expected changes should be incorporated into current expectations about future firm performance (i.e. current market valuation). However, under relative PPP the expected change in the real exchange rate is zero. Under absolute PPP, the change in the exchange rate is determined by its movement back toward the assumed equilibrium. Unless there is large sudden devaluation, this typically happens slowly. However, to the extent that deviations from PPP are expected to cause real exchange rate changes over the medium term, the firm should incorporate these expectations into its pricing, production, and location decisions and should be prepared for such movements.

The size and sign of a firm's operating exposure will be a function of several factors: the activities in which it participates (such as exporting, importing, foreign

investments etc.), the nature of the competition it faces (such as a perfectly competitive output market or an oligopolistic output market where firms have some market power), and the structure of the markets for its factors of production.

### **1.1.2 Share Prices**

The movement in the price of shares at the stock market most of the times has been an issue of concern to market players. The change in the price of shares of quoted firms are said to be due to change in certain fundamental factors, this include the financial performance (measured by dividend paid by the firm, the earning made by the firm etc.) and the macroeconomic variables (such as interest rate ruling, inflation rate etc.) however, experience in the capital market have shown that there are other factors that are responsible for the change in share price but are not captured in these variables. Such variables include the market noise - this may arise as result of popular opinion on the stock but such opinion can be spurious at times, it can be baseless sometimes also it can be a calculated attempt by certain interested individuals, financial analyst of repute or due to certain insider information that may not yet be known in the market. The fact that it is baseless may make the change in price expected to be worthless at the same time. At other times this insider information may end up being false, however, it would force the price of the shares to fluctuate (D'Avolio, 2002).

A successful prediction of stock's future price would yield significant profit for predictor. Some market participants believes that stock price movements are governed by the random walk hypothesis and thus are unpredictable but others disagree and have a myriad of methods and technologies which purportedly allow them to gain future price information. The ability to predict stock price changes based on a given set of information lies behind the notion of market efficiency. Where the market

efficiency is low, predictability of the stock price movement is high (Mobarek & Keasey, 2000).

### **1.1.3 Operating Foreign Exchange Rate Exposure and Share Prices**

Adler and Dumas (1984) point to that we cannot automatically interpret significant correlations between stocks and exchange rates as evidence of a causal effect. Stock prices and exchange rates are determined jointly and are partly affected by the same common shocks to the economy. Hence, no causal relationship can be established. Naturally; the relationship between endogenous variables such as stock prices and exchange rates depends on the nature of the shocks affecting the economy.

Exposure may just be reflecting the simultaneous impact of monetary factors on exchange rates and stock prices. On the other hand, such shocks and movements should be accounted for by inserting the market return into a regression model, and these should thereby theoretically not have a significant impact in the result. However, it could still be of interest to consider important macro-economic variables operating during the chosen time period. The market index added to a regression model, accounts for the aggregated exposure of the whole market to the macroeconomic changes, but individual firms maybe more or less exposed to these changes. The aggregated market index may therefore not reflect the true importance of the macroeconomic changes for each individual firm which the regression is performed upon.

### **1.1.4 Commercial and Services Firms at the NSE**

The Nairobi stock exchange (NSE) is a public market for the trading of securities issued by publically quoted companies and government of Kenya at an agreed price. The Nairobi stock exchange is the center point of Kenya capital market; stocks are

listed and traded on the exchange. The apex regulatory body is the Capital Market Authority. With permission of the London stock exchange Nairobi stock exchange started its operations in 1954 as an overseas stock exchange. At first it was voluntary association of stock brokers registered under societies act and share trading was restricted to residential European community. In 1963, after independence, African and Asian were permitted to deal in securities, but it was hard to convince native Kenyans of the significance of the exchange.

NSE has been the subject of significant changes towards the development of Kenya capital market in the recent years. Development of capital market is crucial for capital accumulation, efficient allocation of resources and promotion of economic growth of a country. Since its incorporation NSE has seen an increase in the number of stock brokers, introduction of investment banks, establishment of custodial institutions and credit rating agencies and the number of listed companies have increased over time. Securities traded include, equities, bonds and preference shares. The NSE has been one of the most popular investments in Kenya in the recent past due to its high return. However there are operating exposures which can result to the unexpected change of the firm cash flow due the unexpected changes in exchange rate. It has become an integral part of the Kenya economy and any fluctuation in this market influences financial lives of individuals as well as corporate entities. Presently 63 companies are listed at NSE and two indexes are computed daily; the NSE-20 share index which is equal weighted geometric mean for twenty large and most active stocks that represents of all sectors and the NSE all stock index which is value weighted arithmetic mean. Companies listed in NSE are classified into two market segments; main investment market segment and the alternative investment market segment. The main segment had 55 listed companies, which are further classified into four

categories; Agriculture, Commercial and services, Finance and investment and investment and allied. The commercial and services segment has 9 listed companies that form the target for the current study.

## **1.2 Research Problem**

There are at least two theoretical approaches to the causal relations between stock prices and exchange rates (Granger, 2000). The first one is the traditional approach. For a multinational firm, volatility in exchange rates causes changes the value of that firm's foreign operation. This can either lead to a profit or a loss on its balance sheet. The profit or loss will change the firm's stock price. In this approach, exchange rate change is expected to lead to a change in stock price. According to this argument, devaluation could either raise or lower a firm's stock price depending on whether that firm is an exporting firm or it is a heavy user of imported inputs. Moreover, Adler and Dumas (1984) showed that even firms whose entire operations are domestic in nature may be affected by exchange rates, if the movements in currency influence their input and output prices, hence the demand for their goods and services.

The second theoretical basis is the portfolio approach. In this approach, changes in stock prices may influence movements in exchange rates via portfolio adjustments (Tabak, 2006). A drop in stock prices causes a reduction in the wealth of domestic investors, which in turn leads to a lower demand for money with ensuing lower interest rates. The lower interest rates encourage capital outflows *ceteris paribus*, which in turn cause local currency depreciation. In this case, stock price is expected to lead exchange rate with a negative correlation.

Bartov and Bodnar (1995) investigated the impact of different currencies under the two accounting rules and found that it did make a difference in investors' ability to

discern the impact on firm value. Shin and Soenen (1999) concluded that there was a significant relationship between currency risk (using the U.S. dollar as the benchmark currency) and stock market performance. They also found that the relationship exists with a one-month lag after the fiscal year with the impact decreasing over time. Bazaz and Senteney (2001) found that unrealized foreign currency gains and losses were valued by investors under FAS 52. Pinto (2001), using a sample of 204 MNCs with operations in Germany and Mexico, found that per share foreign currency translation gains and losses predicted changes in earnings per share. Louis (2003), however, found that the translation gain or loss was not important in valuing a sample of manufacturing firms. A related study on stock prices and currency risk has been published by Jorion (1991) who found a statistically significant relationship between stock returns and the value of the U.S. dollar. DeBondt (2008) tested a stock price model that indicated fundamental factors beyond a firm's price-earnings ratio, such as exchange risk, are important in determining share price. In general, the results on the return or pricing impacts of the currency accounting under FAS 52 (and relative to its predecessor FAS 8) have been mixed with initial results not indicating significant abnormal returns and later studies providing evidence of some impact as it relates to earnings.

Local studies in Kenya done by Ngari (2012) was on foreign exchange exposure on firms listed in the Nairobi Stock Exchange. The study found out that foreign exchange exposure can be minimized where firms have been able to match their foreign currency revenues and costs leaving them with little net exposure. Wekesa (2012) conducted a study on relationship between foreign exchange risk management and profitability of airlines in Kenya and found out that the airlines fully hedged using forwards, futures and money contracts but they partially hedged options and swaps

but failed to link foreign currency risk to operational costs. Wanyonyi (2011) conducted a survey of the Foreign Exchange Risk Management Practices of Kenyan Based Subsidiaries of Multinational Corporations but failed to link foreign currency risk to operational costs. Anene (2011) studied the behavior of stock prices at the Nairobi Securities exchange and concluded that the overall volatility of the currency has a spiral effect of stock prices, hence making them vary with foreign currency fluctuations. Further studies have concluded that financial leverage and other factors along with currency translation effects influence stock prices and returns. These studies have looked at the overall effect of the various forms of foreign exchange exposure and the risk management practices. The current study goes deeper to assess the influence of operating foreign exposure on stock prices at the NSE. Existing studies on the determinants of firms' exposure to exchange rate movements tend to use cross-sectional analysis, which ignores the temporal dimension of both dependent and explanatory variables.

The current study sought to assess the influence of operating foreign exchange exposure on share prices of selected firms operating at the Nairobi Securities Exchange, and answered the following question: what effect does foreign exchange exposure have on the share prices of commercial and services firms listed at the NSE?

### **1.3 Research Objectives**

The study assessed the effects of operating foreign exchange exposure on share prices for commercial and services listed at the Nairobi Securities Exchange.

#### **1.4 Value of the Study**

The study is beneficial to a number of parties. First, it will benefit the players in the stocks' market as they address the foreign exchange risk exposures and how it affects their operations, as well as the management strategies they can use to minimise the losses incurred due to the exposure.

Other firms that deal in inter-country trade (other multinational corporations not listed in the Nairobi Stock Exchange) will also benefit through the lessons on the valuation of shares as affected by the operating foreign exchange exposures. These players will also benefit from the recommendations the study will make.

A modeling basis is provided to scholars who can validate the model in similar firms elsewhere in the world. Further, the study also provides a source of motivation for future studies based on the areas of further study that will be recommended.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The chapter addresses the documented literature on foreign exchange exposure and is organized as follows: review of the relevant theories; a review of empirical studies on foreign exchange risk exposure; the theoretical framework; and the conclusions from literature.

#### **2.2 Theoretical Review**

Four theories are addressed: the purchasing power parity theory; the economic theory; and the Capital Asset Pricing Theory (CAPT); and the VaR model as discussed below.

##### **2.2.1 Purchasing Power Parity Theory**

Developed by Cassel (1918), the PPP theory of the exchange rate looks at the relationship between a country's foreign exchange rate and its price level, as well as the relationship between changes in those variables (Allen & Gandiya, 2004). Relative PPP is said to hold when the rate of depreciation of one currency relative to another matches the difference in aggregate price inflation between the two countries concerned (Lan, 2001). If the nominal exchange rate is defined simply as the price of one currency in terms of another, then the real exchange rate is the nominal exchange rate adjusted for relative national price level differences. When PPP holds, the real exchange rate is a constant, so that movements in the real exchange rate represent deviations from PPP. Hence, a discussion of the real exchange rate is tantamount to a discussion of PPP (Sarno & Taylor, 2002).

The relative PPP theory focuses on the change over time in the relative prices of trade baskets of similar goods and services in two countries. At any given time, the exchange rate between the two currencies is related to the rate of change in the price of the similar market baskets. According to relative PPP theory, as prices change in one country relative to those prices in another country for a traded basket of similar goods and services, the exchange rate will tend to change proportionately but in the opposite direction.

### **2.2.2 The Economic Theory**

Economic theory suggests that firms are subject to foreign exchange exposure as their cash flows are driven, directly or indirectly, by changes in exchange rates. The direct exposure involves transaction exposure of expected future foreign currency cash flows (i.e. foreign currency receivables and payables). Indirect exposure arises from the impact of foreign exchange movements on the competitiveness of the firm. Consistent with these arguments, analytical research (Shapiro, 1975; Heckman, 1985; Levi, 1994; Marston, 2001) predicts that exchange rate fluctuations are a major source of macroeconomic uncertainty that influence the returns and cash flows of corporations.

Given the theoretical expectation of a link between firm performance and exchange rates, one would expect empirical studies to establish this relationship. Yet, while early empirical studies (Jorion, 1990; Bartov & Bodnar, 1994; Amihud, 1994) almost suggest that foreign exchange movements do not affect stock prices, recent empirical research has produced mixed results. Dominguez and Tesar (2006) find that many publicly listed non-US firms from eight developed and emerging countries experience significant currency exposure. El-Masry *et al.* (2007) examines the foreign exchange

exposure of 394 UK firms over the period 1981-2001. They show that only 15% of their sample firms are significantly exposed to the fluctuations in the TWC. In a multi-country study, Hutson and Stevenson (2010) find that only 8% of their 312 UK firms are exposed to currency index movements during the period 1984-2003.

### **2.2.3 CAPM Theory**

The Capital Asset Pricing Model was developed by Sharpe (1964), Lintner (1965, 1969) and Mossin (1966), to investigate the effects risk had on the expected return of an investment relative to the market portfolio. The market portfolio in question is derived by applying the simplifying assumptions of the CAPM, with the foundations laid by portfolio theory. The first assumption of the CAPM is that investors are risk averse and seek to minimize their portfolio risk with a given level of expected return. Second, capital markets are perfect with no transaction costs or taxes, information is available to all investors, also allowing investors to borrow and lend at the risk-free rate. Third, the investment choices are homogenous for all investors. Lastly, all investors have the same estimates of the expected returns, standard deviations of return and correlations between returns of all assets (Perold, 2004).

In portfolio theory investors choose portfolios that are said to be mean-variance-efficient, and found along the efficient frontier for portfolios (Fama & French, 2004). The CAPM assumes that any portfolio that is mean-variance-efficient and lies on the efficient frontier is also equal to the market portfolio. The implications of this, according to Fama and French (2004), are that the relation between risk and expected return for any efficient portfolio must also hold for the market portfolio, if equilibrium is to be maintained in the asset market. The CAPM can be as below:

$$\text{CAPM: } R_{it} = r_f + \beta_{im} (r_m - r_f)$$

Where  $R_{it}$  is the return on stock,  $r_f$  is the risk free rate/return,  $\beta_{im}$  is the stocks correlation with the market ( $r_m - r_f$ ) is the risk premium.

The above equation illustrates how in the CAPM, an asset's expected return is determined by the risk-free rate plus a risk premium and, furthermore, is linearly related to the market beta. The risk premium consists of the market beta ( $\beta_{im}$ ) times the premium per unit of beta risk [ $E(R_m) - R_f$ ]. The CAPM has, however, come under criticism due to its unrealistic assumptions of investor behaviour as well as the condition of perfect capital markets. Roll (1977) suggests that the market portfolio itself presents a key weakness in the CAPM, since it does not state the assets to be included or excluded in the market portfolio. Due to these drawbacks, empirical evidence of the practical applicability of the CAPM has yielded inconsistent results, as noted by both Fama and French (2004) and Perold (2004).

#### **2.2.4 Value at Risk Model**

Developed by Markowitz (1952), Value-at-Risk (VaR) is widely utilized by financial institutions to manage their market risk. To correctly assess the possible losses of a portfolio over a certain horizon, an accurate measurement of correlations between asset returns in the portfolio is essential.

In the traditional Monte Carlo VaR approach, correlations are estimated by the Pearson product-moment correlation coefficient or Gaussian-based copulas, under which returns of financial assets are assumed to be normally distributed and the relationships between financial assets are assumed to be linear. However, recent studies (Ang & Chen, 2002; Boyer, Gibson, & Loretan, 1999; Kolari, Moorman, & Sorescu, 2008; Longin & Solnik, 2001; and Tastan, 2006) have shown that return

correlations among assets are non-linear and time-varying. Specifically, most return distributions show asymmetric downside and upside movements and fat tails.

Previous study suggests that correlations are asymmetric across downside and upside market movements, and the tails of the return distributions are fatter than normal distribution. Ang and Chen (2002); Boyer, Gibson, and Mico (1999); Kolari, Moorman, and Sorescu (2008); Longin and Solnik, (2001); and Tastan (2006) suggest that correlation based on the normal distribution may generate misleading results in portfolio risk management. One of the possible solutions is to apply the dynamic conditional correlation (DCC) model proposed by Engle (2002) and Engle and Colacito (2006). The family of the DCC method considers the time-variation issue but does not take in account departure of normality as well as extreme values. Silvennoinen and Terasvirta (2009) and Tsafack (2009) find that the presence of asymmetry in the tail correlation may lead the DCC family models to biased estimation in portfolio management.

How to deal with fat tail is another crucial issue in risk modeling. Da Silva and Mendes, (2003); Ho, Burrige, Cadle, and Theobald (2000); and Neftci (2000) propose that modeling the tails of a multivariate distribution in extreme value theory (EVT) can provide a better measurement. Bali (2007) and Streetman's, Verschoor, and Wolff (2008) find that the EVT models perform better estimations in an extreme volatile market than the standard approach that assumes the normal distribution.

### **2.3 Determinants of Share Prices for Listed Commercial and Services Firms**

Theoretical literature suggests a number of macroeconomic factors that could influence the stock market (Fama, 1981; Chen *et al.*, 1986; Flannery &

Protopapadakis, 2002). These factors include GDP, inflation, and the exchange rate, interest rates, the money supply and foreign GDP.

There have been a number of studies done on stock price predictability and the theory has evolved greatly, but first the existence of stock price predictability must be established. It is often argued that if stock markets are efficient then it should not be possible to predict stock returns, namely that none of the variables in the stock market regression (1) should be statistically significant (Pesaran, 2003). Skeptics of stock price predictability argue that markets are efficient and any opportunity to make money will disappear as soon as it arises due to markets acting efficiently. So, any change in a company will be immediately reflected in the stock price. In theory this is sound but a number of studies have found fundamental variables to be significant when predicting stock movements. Recently, a large number of studies in the finance literature have confirmed that stock returns can be predicted to some degree by means of interest rates, dividend yields and a variety of macroeconomic variables exhibiting clear business cycle variations (Pesaran, 2003). This can be attributed to stock investor error.

Stocks are traded based on human action. One must actually go through the action to sell or buy the stock. Sometimes an investor will not always hear of changing information right away and thus it takes time for investors to sell their existing shares or buy new ones. This creates a lag from the time new information is introduced in the market and when it is actually reflected in the stock price. This leads one to assume that it would be possible to predict the movements of stock prices by using the current market information. This brings us to the theory on market efficiency. There are three believed forms of market efficiency: weak-form, semi-strong form, and strong form.

Weak-form was the initial theory and was believed to be true in the 1970's. Proponents of the weak-form hypothesis believe that stock prices follow a random walk and the only significant predictor of stock prices would be the past value of the prices themselves. This has some merit as it can be a good indicator of how variable a stock tends to be. Estimating ARMA models, Conrad and Kaul find that the autoregressive coefficients for weekly returns on stock portfolios are positive, near 0.5, and can explain up to 25 per cent of the variation in the returns on a portfolio of small-firm stocks (Ferson, 2008). For example, Microsoft has been quite stagnant at \$25 per share for years, so the past value can predict the future value very easily. The same is true for Apple as it has generally followed an upward trend for the past decade and the past values can show that. The weak-form hypothesis can also account for seasonal effects by accounting for when a certain company's stock tends to be higher or lower. However, it is too basic to create any truly accurate predictions, so the semi-strong form hypothesis arose.

This is most commonly assumed to be the company's financials such as sales, net income, book value, dividends, etc. Many studies have looked at numbers such as these and found many to be significant, giving further proof of the existence of both stock price predictability and semi-strong form efficiency. Ferson (2008) looked at a number of past studies on stock return regressions and found variables such as cash flows over price, dividend-price ratios and book value to be significant.

### **2.3.1 Sources of Finance**

Since multi-national corporations (MNCs) commonly invest in long-term projects, they rely heavily on long-term financing. When MNCs consider debt financing, they can normally engage in a public placement of debt in their home country or they can

also have a global debt offering. This debt financing is frequently done in foreign countries. A MNCs long-term financing decision is normally influenced by the different interest rates that exist among currencies. The actual cost of long-term financing is based on both the quoted interest rate and the percentage change in the exchange rate of the currency borrowed over the loan life.

According to financial theory changes in exchange rates and interest rates should affect the value of the firm. Exchange (interest) rate exposure refers to the extent to which the value of the firm is affected by changes in exchange (interest) rates. The issue of exposure to both exchange rate and interest rate risk is of importance to individual investors and firms. For example, changes in exchange rates and interest rates affect an investor holding portfolio consisting of securities from different countries. While changes in exchange rates naturally impact the cash flows of multinational firms with operations in different foreign locations, importers and exporters and even solely domestic firms through changes in the competitive environment and the terms of trade. For example, Bodnar, Dumas and Marston (2002); and Hutson and Stevenson (2010) highlight the fact that while local firms may not trade internationally, they may still be exposed to changes in exchange rates, if for example they are in competition with foreign firms in the domestic market. Hence there has been much interest in evaluating the level of exchange rate exposure a firm or industry faces. Similarly changes in interest rates will alter the firms' financing costs, affecting the amount of loan interest and principal payments and impacting cash flows of the firm.

### **2.3.2 Sourcing of Labour**

A goal of most MNCs is to remain competitive and increase market share, often implemented through effective uses of cost structures. As firms increase in size, they locate capital investments in production facilities where operational costs are low. Developing countries are increasingly attractive to MNCs because they enable bargaining power over wages, since labour supply is inelastic with respect to wages in developing countries. Cheap labour is central to the low-skilled industry's growth. Today, virtually all name brand and own-brand garments and shoes are based in developed countries and employ production facilities in developing countries. Labour costs account for only 1% to 3% of the retail price paid by the final customer, while profit margins are more than 50% (WRC, 2005).

### **2.3.3 Markets for Products**

The extent of a company's involvement in foreign markets can be estimated by using the ratio of foreign assets to total assets, foreign profits to total profits, and foreign sales to total sales of the firm. One would expect that the higher the previous three ratios the more sensitive the firm profit would be to exchange rate fluctuations. Malindretos and Tsanacas (1995) have argued that based on their survey, the chief financial officers (CFOs) of small sized multinational corporations (MNCs) have a better understanding of transaction or translation exposure than they have of economic exposure. Also, they find that diversification of the financial base is the hedging technique used against translation exposure, the forward hedging technique is used against transaction exposure, and the diversification of finance and operations technique are used against economic exposure.

### **2.3.4 Taxation Risk**

The issue of corporate tax policy has crept into the mainstream as profits rise and tax receipts fall. Increased public interest has spurred politicians and government leaders to push for regulatory change. Many multinational corporations look to minimize their tax burden by declaring profits in low-tax jurisdictions. However, such tax avoidance strategies pose material medium- to long-term risks to profitability. And due to a lack of transparency among companies about their tax policies, investors are unable to adequately assess company exposure to these risks.

The empirical analysis of Desai *et al.* (2004) suggests that multinationals trying to benefit from worldwide tax planning are more willing to establish their affiliates as wholly-owned establishments. This transfer pricing results in profit shifting and as result, MNCs end up reporting diminishing profits and at times report losses which make their shares to be less attractive, thus negative affecting the stock prices at bourses.

## **2.4 Empirical Studies**

### **2.4.1 International Evidence**

Adam and Tweneboah (2008) studied the impact of macroeconomic variables on stock prices. They used the Databank stock index to represent the stock market and inward foreign direct investments, the Treasury bill rate (as a measure of interest rates), the consumer price index (as a measure of inflation), average crude oil prices, and the exchange rate as macroeconomic variables. They analyzed quarterly data for the above variables from 1991 to 2007 using co integration test, vector error correction models (VECM). These tests examined both long-run and short-run dynamic relationships between the stock market index and the economic variables. This study

found that there is co integration between macroeconomic variables and stock prices in Ghana indicating long run relationship. The VECM analyses showed that the lagged values of interest rate and inflation had a significant influence on the stock market. The inward foreign direct investments, the oil prices, and the exchange rate showed weak influence on price changes.

Rahman and Uddin (2009) investigated the interactions between stock prices and exchange rates in three emerging countries of South Asia namely, Bangladesh, India and Pakistan. Their data were the average monthly nominal exchange rates of US dollar in terms of Bangladeshi Taka, Indian Rupee and Pakistani Rupee and monthly values of Dhaka Stock Exchange General Index, Bombay Stock Exchange Index and Karachi Stock Exchange All Share Price Index for period of January 2003 to June 2008. They found that exchange rates and stock prices data series are non stationary and integrated of order one. Thus, they applied Johansen procedure to test for the possibility of a co integrating relationship. Their results show that there is no co-integrating relationship between stock prices and exchange rates. Finally, they applied the Granger causality test to study any causal relationship between stock prices and exchange rates. Evidence provided indicated that there is no causal relationship between stock prices and exchange rates in the countries.

BongaBonga and Hoveni (2009) assessed the extent of volatility spill-overs between the equity market and the foreign exchange market in South Africa. They applied a multistep family of GARCH whereby volatility shocks obtained from the mean equation estimation in each market are included in the conditional volatility of the other market, respectively. The appropriate volatility models for each market were selected using several criteria such as covariance stationarity, persistence in

variance and leverage effects. The results show that there is a unidirectional relationship in terms of volatility spillovers, from the equity market to the foreign exchange market.

Agrwal, Srivastav and Srivastava (2010) analyzed the relationship between Nifty returns and Indian rupee US Dollar Exchange Rates. They applied several statistical tests in order to study the behaviour and dynamics of both the series. They also investigated the impact of both the time series on each other. The sample period for their study was from October, 2007 to March, 2009 using daily closing indices. They found that Nifty returns as well as exchange rates were non-normally distributed. Further investigation into the causal relationship between the two variables using Granger Causality test highlighted unidirectional relationship between Nifty returns and Exchange Rates, running from the returns towards the exchange rates.

Kös, Doqanay, and Karabacak (2010) investigated the existence and direction of relationship between stock prices and exchange rates for Turkish financial market. Granger (1969) causality testing methodology was employed to reveal the nature of relationship between the two variables. The data used included five currencies: US dollar, Euro, Japanese Yen, Pound Sterling, Swiss Franc and two baskets of currencies of Under-secretariat of Foreign Trade of Turkey. Their results show that there is a unidirectional causality running from stock prices to exchange rates using the daily observations for the sample period, which runs from February 23, 2001 to November 4, 2009.

### **2.4.2 Local Evidence**

Nyamute (1998) studied the relationship between stock prices and other financial variables like money supply, interest rates, inflation rates and exchange rates in Kenya. The findings were that, a positive relationship exists between stock prices and exchange rates.

Olweny and Omondi (2011) sought to find out the impact of macroeconomic factors on the performance of the stock market. The results showed evidence that foreign exchange rate, interest rate and inflation rate, affect stock return volatility. On foreign exchange rate, magnitude of volatility as measured by beta was relatively low at 0.209138 and significant since the probability is almost zero, 0.3191. This implies that the impact of foreign exchange on stock returns is relatively low though significant. Volatility persistence as measured by alpha was found low at -0.251925 and significant. This implies the effect of shocks takes a short time to die out following a crisis irrespective of what happens to the market. There was evidence of leverage effect as measured by  $\lambda$ , 0.6720. This means that volatility rise more following a large price fall than following a price rise of the same magnitude.

Sifunjo and Mwasaru (2012) investigated the causal relationship between exchange rates and share prices in Kenya. The empirical results obtained over the period November 1993 to May 1999 indicated that the exchange rates granger causes stock prices in Kenya. The study also found out a unidirectional causality from exchange rates to stock prices. Therefore, the movements in exchange rates exert significant influence on stock price determination in Kenya. They tested for stationarity, cointegration and finally used the error correction model to test causality.

Chirchir (2013) examined how changes in exchange rates and stock prices are related to each other for Kenya over the period November 1993-April 2011. The research used Toda and Yamamoto method to determine the relationship between stock prices and exchange rates. The results indicate that there is bi-directional causal relationship between exchange rate and share price. As regards the sign of causality, negative causality exists in both directions.

## **2.5 Summary of Literature Review**

One problem in modeling the relation between exchange rates and firm value is that perhaps it is too simplistic to assume that exchange rate changes have a linear and constant impact on firm value. Only in simplified situations does the theoretical literature predict a linear relation and these methodological issues may mask exposure (Dewenter, Higgins and Simin, 2002). Even if the exposure-return relation is linear, it varies through time (Allayannis, 1997), an exposure regression will be mis-specified if an imperfect proxy is used to capture the time-variation in exposure. To address these concerns, in addition to tabulating results based on standard regression approaches, we propose a different method to examine exposure. We form portfolios of firms with high international sales and portfolios of firms with no international sales and then compute the average returns of the portfolios during periods of appreciating or depreciating currency movements. Therefore, we can analyze exposure without assuming a linear or constant exposure relation.

Since the exact nature of derivative positions is usually not disclosed, a potential problem with the analysis and most other analyses of exposure is that the effect of exchange rate movements on firm value is observed without knowledge of potentially offsetting positions taken in a firm's derivative portfolio. A recent study by

Allayannis and Ofek (2001) shows that use of foreign currency derivatives do reduce exposure. However, other evidence suggests that the magnitude to which derivatives reduce exposure may be small. Bodnar, Hayt, and Marston (1998) show that less than half of payables and receivables are hedged and that most hedges are short-term.

Brown (2001) and Brown, Crab, and Haushalter (2001) find that firms hedge for many speculative reasons that are inconsistent with financial theory. Guay and Kothari (2001) argue that even assuming perfect hedging, derivatives positions held by U.S. non-financial firms are only around 1/15<sup>th</sup> the size of the estimated effect on firm market value from a three standard deviation movement in relative currency value.

Therefore, it seems reasonable to conclude that our lack of hedging data is not likely to be a large concern; however, we do indirectly examine this relation through firm size as a proxy for hedging, since large firms are more likely to use derivatives than small firms. In summary, therefore, there is no empirical consensus on the causal relationship between exchange rates and stock prices. Specifically, the causal direction between the two financial price variables is not resolved.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

The chapter is a blueprint of the methodology that was used to conduct the study. It explains the research study designs that was employed; the target population from which data was collected and the data collection and analysis tools that were used.

#### **3.2 Research Design**

The study was descriptive conducted through an event study methodology. An event study attempts to measure the valuation effects of a corporate or market event, such as a merger or earnings announcement, or changes in operating aspects like foreign exchange, by examining the response of the stock-price around the event. One underlying assumption is that the market processes information about the event in an efficient and unbiased manner.

#### **3.3 Target Population**

The study covered firms that have been listed at the Nairobi Securities Exchange that are exposed to foreign exchange risk due to the nature of their business. Nairobi Securities Exchange had 63 firms as at the end of 2013, grouped into 11 sectors namely: agricultural; automobiles and accessories; banking; commercial and services; construction and allied; energy and petroleum; insurance; investment; manufacturing and allied; telecommunication and technology; and growth and enterprise markets segment. The study targeted the firms that operate under the commercial and services sector of the Nairobi Securities Exchange, as most of these firms have international activities that involve massive foreign exchange exposures.

### **3.4 Sampling**

Due to time availability, the study sampled firms in the commercial and services sector and do a 5 year analysis of their share prices to determine if there was any influence of foreign exchange exposure on the stock prices. The commercial and services sector is made up of nine firms, out of which four were sampled. These were Kenya Airways; Nation Media Group; the Scan Group Limited; and TPS Serena. The sample was selected purposively.

### **3.5 Data Collection**

The study made use of secondary data sourced from the daily newspapers as well as the target companies' press releases as well as financial reports filed with the NSE, the CMA and Central Bank. Data was collected for a 5-year period (2009 – 2013). The data sought by the study was mainly quantitative in nature.

### **3.6 Data Analysis**

Adler and Dumas (1984) define the exposure elasticity as the change in the market value of the firm resulting from a unit change in the exchange rate. This is the definition of exposure that an investor is interested in, and it can also be the definition of the exposure that the risk manager of the firm would be interested in if the change in the value of the firm is directly related to the change in the firms expected cash flows.

This elasticity indicates the firm's average exposure over the estimation period, in home currency units, as a percentage of the firm's market value. As they point out, this definition of exchange rate exposure is simply variance decomposition of firm's returns into a component that was correlated with the exchange rate. To control for other macroeconomic influences on realized returns, most empirical studies include a

return to a market portfolio in the empirical model. This market portfolio return not only controls for macroeconomic influences but also dramatically reduces the residual variance of the regression.

### 3.6.1 Research Model

The study will adopt the following model:

$$Y_{it} = \alpha + \beta_1 FX_t + \beta_2 ER_t + \beta_3 IR_t + \beta_4 IF_t + \beta_5 RM_t + e_{it}$$

Where,

$Y_{it}$  = is the 52-week aggregate market share price of a firm i at time t measured as the annual average market valuation unit share value of the company

$\alpha$  = is the regression constant, representing the value of the aggregated share price for time t when there is no exposure to foreign currency

$\beta_1, \beta_2, \beta_3, \beta_4$  and  $\beta_5$  = regression coefficients

$FX_t$  = Foreign exchange exposure measured as foreign exchange gains and losses resulting from the settlement of transactions and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies Given by: Average Accounts receivable and payables (Average Dollar exchange rate - Stated Dollar Exchange range)

Translation Exposure Average Cash and Cash Equivalents (Average Dollar exchange Rate – Actual Dollar exchange Rate)

$ER$  = Exchange rate volatility which affects company i's obligations to make or receive payments denominated in foreign currency measured as the annual variance of the Kenyan Shilling denominated by the US Dollar Given by Average Accounts Receivable, payables (Average dollar rate - Stated Dollar rate)

IR = Interest rate measured by the aggregate market lending interest rate in year t

Given by Average market lending interest rate

IF = Inflation rate measured as change or rise in overall price levels of a basket of

goods indicated by the consumer price index. Given by change or rise in overall

price levels of a basket of goods Given by average price index

RM = Return on domestic market portfolio (share weighted average turnover). Given

by Average share weighted turnover

$e_{it}$  = Error term or disturbance term.

### 3.6.2 Measurement of Variables

Variable	Source	Operationalization
Share price	NSE	Annual average market share prices of the company
Foreign exchange exposure	NSE	Aggregate foreign exchange gains and losses
Exchange rate volatility	CBK	Annual variance of the Ksh/USD
Interest rate	CBK	market lending interest rate
Inflation rate	(KNBS) Kenya National Bureau of Statistics	Annual Consumer Price Index
Return on domestic market portfolio	NSE 20 Share Index	Share /weighted average turnover

**Source: Researcher, 2014**

Greatest advantage with regression analysis is that the parameters were estimated to show causality between explanatory variables and regressors. Parameters estimated suggest magnitude and direction the independent variables have on the explanatory variables. In order to test the significance of the model in measuring the relationship between independent and dependent variables, the study conducted an Analysis of Variance (ANOVA). On extracting the ANOVA statistics, the study looked at the significance value. The model was tested at 95% confidence level and 5% significant level.

## **CHAPTER FOUR**

### **DATA ANALYSIS, RESULTS AND DISCUSSION**

#### **4.1 Introduction**

The chapter presents the data findings on the effects of foreign exchange exposure on stock prices for Commercial and Services sector companies listed at the Nairobi Securities Exchange for five years from 2009 to 2013. In order to examine Kenyan firm's foreign exchange exposure, annual aggregated data was used to estimate exchange rate sensitivity of the equity for the period from January 2009 to December 2013. Sample firms' stock returns were regressed on exchange rate change, exchange rate volatility, interest rate, inflation rate and market return. Data was collected from the Nairobi Securities Exchange.

#### **4.2 Response Rate**

The study targeted a sample size of 4 firm listed in the NSE within a period of 5 years, out of which 4 sampled companies; data was obtained for 4 companies and within a period of 5 year making a response rate of 100%. This response rate was satisfactory to make conclusions for the study as Cooper and Schindler (2003), states that a response rate of between 30 to 80% of the total sample size can be used to represent the opinion of the entire population. The high response rate was attributed to the efficiency in data collection.

#### **4.3 Descriptive Statistics**

This section present the descriptive statistic on the effects of operating foreign exchange exposure on share prices for commercial and services listed at the Nairobi Securities Exchange.

**Table 4.1 : Descriptive Statistics**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Share Prices (Shs)	20	22.17	47.76	27.3157	1.12813
Foreign Exchange Exposure (Ksh, 000)	20	-0.195	0.710	0.168	0.143
Exchange Rate Volatility (Ksh, 000)	20	0.014	.094	.2733	.18814
Interest Rate	20	13.0	22.44	16.84	.11334
Inflation Rate	20	1.44	8.04	5.8613	.51698
Return On Domestic Market Portfolio (Ksh, 000)	20	-.67	1.27	.4011	.49977

**4.4 Correlation Analysis**

Correlation analysis is the statistical tool that can be used to determine the level of association of two variables (Levin & Rubin, 1998).

**Table 4.2: Correlation analysis**

	Foreign Exchange Exposure	Exchange Rate Volatility	Interest Rate	Inflation Rate	Return On Domestic Market Portfolio	Share price
Foreign Exchange Exposure	1					
Exchange Rate Volatility	.449**	1				
Interest Rate	.340**	.418**	1			
Inflation Rate	.312*	.599*	.483*	1		
Return On Domestic Market Portfolio	.006**	-.145**	-.157**	-.419**	1	
Share price	-.261*	-.134**	-.017**	-.203**	.356**	1

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

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

Correlation value of 0 shows that there is no relationship between the dependent and the independent variables. On the other hand, a correlation of  $\pm 1.0$  means there is a perfect positive or negative relationship (Hair et al., 2010). The values were interpreted between 0 (no relationship) and 1.0 (perfect relationship). The relationship was considered small when  $r = \pm 0.1$  to  $\pm 0.29$ , while the relationship was be considered medium when  $r = \pm 0.3$  to  $\pm 0.49$ , and when  $r = \pm 0.5$  and above, the relationship was considered strong.

The study conducted Pearson product moment correlation to determine the strength of the relationship between operating foreign exchange exposure and n share prices for commercial and services listed at the Nairobi Securities Exchange. From the finding the study found that there was negative correlation between share prices and foreign exchange exposure as shown by correlation coefficient of 0.261, relationship between share price and exchange rate volatility was found to be negative as shown by correlation coefficient of 0.134, the study found that there was negative correlation between share prices and interest rate as shown by correlation coefficient of 0.017 , the study revealed that there was negative correlation between share prices and inflation rate as shown by correlation coefficient of 0.203, however there was positive correlation between share prices and return on domestic market portfolio as shown by correlation coefficient of 0.356.

#### **4.5 Regression Analysis**

A multivariate regression analysis was one for all the four companies to establish the respective models for depicting the share prices as a result of foreign exchange exposure. The results are discussed in the sections that follow.

**Table 4.3: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.924(a)	.853	.812	.0482

a Predictors: (Constant), FX, ER, IR, IF, RM

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. From the findings in the table below the value of adjusted R squared was 0.812 an indication that there was variation of 81.2% on share prices due to changes in foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio at 95% confidence interval. This shows that 81.2 % changes in share prices could be accounted to changes in foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table below there was a strong positive relationship between share prices and foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio as shown by 0.812.

**Table 4.4: Analysis of variance**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1272.720	5	254.544	2.668	.002(a)
	Residual	1335.684	14	95.406		
	Total	2608.404	19			

From the ANOVA statics in the table below, the processed data, which is the

population parameters, had a significance level of 0.2% which shows that the data is ideal for making a conclusion on the population parameters as the value of significance (p-value ) is less than 5%. The calculated value was greater than the critical value (2.668 >1.645) an indication that there were significant difference between share prices and foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio, this an indication that foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio were significantly influencing share prices.

**Table 4.5: Coefficients (a)**

Model		Non-standardized Coefficients		Standardized Coefficients	t	Sig.
		$\beta$	Std. Error	Beta	B	Std. Error
1	(Constant)	22.720	14.316		1.587	.279
	FX	-.054	.012	-.052	-4.186	.002
	ER	-.041	.019	-.038	-2.102	.000
	IR	-.034	.016	-.030	-2.125	.021
	IF	-.038	.014	-.031	-2.620	.018
	RM	.063	.024	.057	2.625	.014

The established regression equation was

$$Y = 22.72 - 0.054FX - 0.041ER - 0.034IR - 0.038IF + 0.063RM,$$

From the above regression equation, it was revealed that foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio to a constant zero to a constant zero, share prices would stand at 22.720, a unit increase in foreign exchange exposure would lead to decrease in share prices by a factor of 0.054, a unit increase in exchange rate volatility would lead to decrease in share prices by factors of 0.041, a unit increase in interest rate would lead to decrease in share prices by a factor of 0.034 , also unit increase inflation rate would lead to

decrease in share prices by a factor of 0.038, the study further revealed that a unit increase in domestic market portfolio would lead to increase in share prices by a factor 0.063. The study further revealed that foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio were statistically significant affecting the share prices, as all the p value (sig) were less than 0.05%.

#### **4.6 Discussion of Research Findings**

From the correlation and regression, it is clear that some relationship exists between the independent variables (foreign exchange exposure, exchange rate volatility, interest rates, inflation rates, and market return) and share prices. This relationship is such that the first four independent variables affect share prices at the NSE negatively, while market returns affects the share prices positively. This implies that an increase in any of the former four would result in a decrease in share prices.

From the finding on the regression analysis the study revealed that there was variation of 81.2% on share prices due to changes in foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio, this is an indication that changes in share prices could be accounted to changes in foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio.

From the correlation coefficient the study found that there was a strong positive relationship between share prices and foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio. From the anova statistics the study revealed that foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio were

significantly influencing share prices. The established regression equation was  $Y = 22.72 - 0.054FX - 0.041ER - 0.034IR - 0.038IF + 0.063RM$ .

From the above regression equation, it was revealed that foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return negatively affect the share prices, as the study revealed that a unit increase in foreign exchange exposure, exchange rate volatility, interest rate, inflation rate would lead to decrease in share prices, the study further revealed that a unit increase in domestic market portfolio would lead to increase in share price, thus positive relationship between domestic market portfolio and share price.

These findings concur with the findings Adam and Tweneboah (2008), who found that inward foreign direct investments, the oil prices, and the exchange rate showed weak influence on price changes. Rahman and Uddin (2009) that there is no causal relationship between stock prices and exchange rates in the countries. BongaBonga and Hoveni (2009) found that there is a unidirectional relationship in terms of volatility spillovers, from the equity market to the foreign exchange market. Agrwal, Srivastav and Srivastava (2010), found that Nifty returns as well as exchange rates were non-normally distributed.

Kös, Doqanay, and Karabacak (2010) found that there is a unidirectional causality running from stock prices to exchange rates using the daily observations for the sample period. Nyamute (1998) found a positive relationship exists between stock prices and exchange rates. Sifunjo and Mwasaru (2012) found out a unidirectional causality from exchange rates to stock prices. Chirchir (2013) results indicate that there is bi-directional causal relationship between exchange rate and share price. As regards the sign of causality, negative causality exists in both directions.

## **CHAPTER FIVE**

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

#### **5.1 Introduction**

From the analysis and data collected, the following discussions, conclusion and recommendations were made. The responses were based on the objectives of the study. The researcher had intended to determine the effects of foreign exchange exposure on stock prices for Commercial and Services sector companies listed at the Nairobi Securities Exchange.

#### **5.2 Summary of Findings**

The study objective was to determine the effects of foreign exchange exposure on stock prices for Commercial and Services sector companies listed at the Nairobi Securities Exchange. Secondary data was collected from the NSE handbook, company's financial reports and Kenya Bureau of Statistics. Regression analysis and correlation analysis was done for the periods to determine the effects of foreign exchange exposure on stock prices for Commercial and Services sector companies listed at the Nairobi Securities Exchange. The study covered a period of 5 years from year 2009 to 2013.

From the correlation and regression, it is clear that some relationship exists between the independent variables (foreign exchange exposure, exchange rate volatility, interest rates, inflation rates, and market return) and share prices. This relationship is such that the first four independent variables affect share prices at the NSE negatively, while market returns affects the share prices positively. This implies that an increase in any of the former four would result in a decrease in share prices.

From the finding on the regression analysis the study revealed that there was variation of 81.2% on share prices due to changes in foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio, this is an indication that changes in share prices could be accounted to changes in foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio. From the correlation coefficient the study found that there was a strong positive relationship between share prices and foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio. From the ANOVA statistics the study revealed that foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return on domestic market portfolio were significantly influencing share prices.

From the regression equation, it was revealed that foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return negatively affect the share prices, as the study revealed that a unit increase in foreign exchange exposure, exchange rate volatility, interest rate, inflation rate would lead to decrease in share prices, the study further revealed that a unit increase in domestic market portfolio would lead to increase in share prices, thus positive relationship between domestic market portfolio and share prices.

### **5.3 Conclusion**

Foreign Exchange exposure of Kenyan companies and its influence on share prices determined. The results revealed that between 19% and 30% of the changes in share prices for different companies listed within the commercial and services sector can be explained by the independent variable in combination with the control variables used in the study (exchange rate volatility, interest rates, inflation rates, and domestic

portfolio market return). Overall, therefore, the share prices were seen to be sensitive to foreign exchange exposure at the NSE.

The correlation results showed that there are negative relationships between foreign exchange exposure and share prices at the NSE, though such relationships were observed to be either weak or very weak, at less than 40% for all the four firms studied. Further, the level of individual explanatory power of foreign exchange exposure on share prices at the NSE is weak; showing changes in share prices can be explained by foreign exchange exposure.

The study revealed that a unit increase in foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return negatively affect the share prices of firm listed in the Nairobi securities Exchange, thus the study concludes that there is a negative relationship between foreign exchange exposure, exchange rate volatility, interest rate, inflation rate and return and share prices of firm listed in the Nairobi securities Exchange. The study revealed that a unit increase in domestic market portfolio would positively affect share prices, thus the study concludes that there is a positive relationship between domestic market portfolio and share prices of firm listed in the Nairobi securities exchanges.

#### **5.4 Recommendations**

The study recommends that firms listed in the Nairobi Stock Exchange should explore avenues to enhance capacities within firms for managing foreign currency risk exposure. They should explore the route of continued education for those in workplaces through short term training that should be very practical oriented, this could involve professional organizations for finance specialists, bankers, accountants and consultants. Such training should ideally be out of site because of the need to

meet participants from diverse businesses and orientations for training and assessment to avoid internal interruptions.

There is need for the policy maker at Central bank of Kenya to control the inflation rate in the country through various monetary policy as it was found that inflation rate negatively affect the share price of companies listed in the NSE, there is need for the policy maker at Central Banks to use various fiscal policy to control, interest rate as the study found that interest rate negatively affects the share prices of firm listed in the NSE.

There is need for the management of firm listed in the NSE to hedge against foreign exchange exposure, as the study revealed that an increase in foreign exchange exposure an exchange rate volatility negatively affect their share prices and thus reduction in the company value, there is need for better strategies to ensure that share prices are not affected by foreign exchange exposure and exchange rate volatility

### **5.5 Limitations of the Study**

While all regressions are run in a multivariate framework, it is realistic to expect that not every firm is exposed to all exchange rates. Nevertheless, the lack of availability of detailed data on the foreign operations (including foreign currency costs, foreign sourcing, foreign competition, exports, imports) as well as limited information regarding the currency denomination of debt and the extent of derivatives use, it is generally difficult to identify the most important currencies for each individual firm, particularly in large samples.

This suggests that some firms are sensitive to one exchange rate, while others are sensitive to another. Using an exchange rate index that is representative for the economy as a whole may not be appropriate for the individual firm and thus mask

some of the underlying exposure of firms that can be identified when considering individual exchange rates.

In attaining its objective the study was limited to 4 firms listed companies in the NSE under the Commercial and Services sector. Secondary data was collected from the firm financial reports. The study was also limited to the degree of precision of the data obtained from the secondary source. While the data was verifiable since it came from the Nairobi Securities Exchange publications, it nonetheless could still be prone to these shortcomings.

### **5.6 Suggestions for Further Research**

The study sought to determine the effects of foreign exchange exposure on stock prices for Commercial and Services sector companies listed at the Nairobi Securities Exchange. There is need for a study to be done on determine the effects of foreign exchange exposure on profitability for Commercial and Services sector companies listed at the Nairobi Securities Exchange.

The study was limited to Commercial and Services sector companies listed at the Nairobi Securities Exchange; there is need for a similar study to be done to determine the effects of foreign exchange exposure on profitability for firm that are not listed in the NSE.

With the independent variables explaining only between 20 and 30% changes in share prices, a study trying to establish the remaining percentage (other factors affecting share prices for firms listed at the NSE) should also be conducted. Further, a comparison between the share prices for firms that are net exporters and those that are

net exporters could also be carried out. Additionally, a study comparing firms in different segments of the NSE could also be conducted to see what sector's share prices are affected most by foreign exchange exposure.

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## **APPENDICES**

### **Appendix I: Companies Listed at the NSE**

#### **AGRICULTURAL**

1. Eaagads Ltd
2. Kapchorua Tea Co. Ltd
3. Kakuzi Ltd
4. Williamson Tea Kenya Ltd
5. Rea Vipingo Plantations Ltd
6. Sasini Ltd
7. Limuru Tea Co. Ltd
8. Unilever Tea Kenya Ltd

#### **COMMERCIAL AND SERVICES**

1. Kenya Airways Ltd
2. Nation Media Group
3. Standard Group Ltd
4. TPS Eastern Africa (Serena) Ltd
5. Hutchings Biemer Ltd
6. Uchumi Supermarket Ltd
7. Express Ltd

#### **AUTOMOBILES AND ACCESSORIES**

1. Car and General (K) Ltd
2. CMC Holdings Ltd
3. Sameer Africa Ltd
4. Marshalls (E.A.) Ltd

#### **BANKING**

1. Barclays Bank Ltd
2. CFC Bank Ltd
3. Diamond Trust Bank Kenya Ltd
4. Housing Finance Co Ltd
5. Kenya Commercial Bank Ltd
6. National Bank of Kenya Ltd
7. NIC Bank Ltd
8. Standard Chartered Bank Ltd

#### **INSURANCE**

1. Jubilee Holdings Ltd
2. Pan Africa Insurance Holdings Ltd

## **INVESTMENT**

1. City Trust Ltd
2. Olympia Capital Holdings ltd
3. Centum Investment Co Ltd

## **MANUFACTURING AND ALLIED**

1. B.O.C Kenya Ltd
2. British American Tobacco Kenya Ltd
3. Carbacid Investments Ltd
4. East African Breweries Ltd
5. Mumias Sugar Co. Ltd
6. Unga Group Ltd
7. Eveready East Africa Ltd
8. Kenya Orchards Ltd
9. Athi River Mining

## **CONSTRUCTION AND ALLIED**

1. A.Baumann CO Ltd
2. Bamburi Cement Ltd
3. Crown Berger Ltd
4. E.A. Cables Ltd
5. E.A. Portland Cement Ltd

## **ENERGY AND PETROLEUM**

1. KenolKobil Ltd
2. Total Kenya Ltd
3. Kenya Power & Lighting Co Ltd