THE EFFECT OF FOREIGN EXCHANGE RATES ON THE PERFORMANCE OF THE NAIROBI SECURITIES EXCHANGE

BY:

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DECLARATION

This Research project is my original work and has not been presented in any other University.

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DEDICATION

I dedicate this project to my daughter Marie Mutheu and my son Max

Mumo; may this be an inspiration to work hard.

ACKNOWLEDGEMENT

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LIST OF ABBREVIATIONS

ANOVA   Analysis of Variance

FOM   Flow Oriented Model

SOM   Stock Oriented Model

ROA   Return on Assets

ROC   Return on Capital

ROE   Return on Equity

ROS   Return on Sales

NSE   Nairobi Securities Exchange

NPV   Net Present Value

US   United States

USD   United States Dollar

ABSTRACT

The changes in foreign exchange rates have diverse effect across the economic spectrum in any country. The sectoral and economy wide effects of foreign exchange rates may ultimately be reflected in the stock prices.

The objective of this study was to examine the effect of foreign exchange rates on performance of NSE over the period January 2011 to December 2013.The study used a multiple regression model of NSE 20share index dependent on three variables; foreign exchange rate, inflation and interest rate. The main source of data was NSE and the Central Bank of Kenya statistics.

The regression results show that foreign exchange rates, inflation and interest rates explain 72.9% changes in stock prices. Foreign exchange rate has insignificant relationship. So it does not have a significant effect on the performance of the NSE.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Exchange rate movements have been a big concern for investors, analysts, managers and shareholders since the breakdown of Bretton Woods system in the 1970s. The recent emergence of new capital markets, the relaxation of foreign capital controls and the adoption of more flexible exchange rate regimes have increased the interest of academics and practitioners in studying the interactions between the stock and foreign exchange markets. The gradual abolition of foreign exchange controls in emerging economies opened the possibility of international investment and portfolio diversification. At the same time, the adoption of more flexible exchange rates regimes in the late 1980's and early 1990's increased the volatility of foreign exchange markets and the risk associated with such investment. The choice of currency denomination added an important dimension to the overall portfolio decision. Contrary to expectations, exchange rate risk, as measured by volatility increased tremendously affecting cash flow and stock prices of firms.

It is widely believed that exchange rate movements affect corporate expected cash flows, and hence stock returns, by causing changes in the home currency value of foreign currency denominated revenues (costs) and the terms of competition for multinationals and firms with international activities (importers and exporters). These have important

implications on financial decision making and the profitability of the firms. In general, however, if purchasing power parity is violated, exposure to exchange rate risk is not limited to firms with direct foreign trade activities. The growing emphasis on exchange risk management, the extensive use of foreign currency derivatives and other hedging instruments by corporations to protect their foreign currency denominated cash flows from unexpected exchange rate movements, implies that the market value of the firm is sensitive to exchange rate uncertainty.

1.1.1 Exchange Rates

Exchange rate is one of the most important prices in the economy. It's the price of one country's currency in terms of another and as such it converts prices dominated in one currency into prices dominated in another currency.

Economists and financial experts are yet to agree on a single theory that defines the exchange rate. Hitherto, there are at least five competing theories of the exchange rate concept, which may either be classified as traditional or modern. The traditional theories are based on trade and financial flows, and purchasing power parity, and are important in explaining exchange rate movements in the long run. These theories are: the elasticity approach to exchange rate determination, the monetary approach to exchange rate determination, the portfolio balance approach to exchange rate determination, and the purchasing power theory of exchange rate determination. The modern theory, however, focuses on the importance of capital and international capital flows, and hence, explains

the short run volatility of the exchange rates and their tendency to overshoot in the long run.

The interaction between equity and currency markets has been the subject of much academic debate and empirical analysis over the past 25 years. This is understandable given the crucial role that equity and currency markets play in facilitating economic activity. Classical economic theory hypothesizes that stock prices and exchange rates can interact by way of the 'flow oriented' and 'portfolio balance' models. Flow oriented models, first discussed by Dornbusch and Fisher (1980), affirm that currency movement affect international competitiveness and balance of trade position and consequently the real output of the country, which in turn affects current and future cash flows of companies and cause movements in stock prices. This approach is built on the macroeconomic view that because stock prices represent the discounted present value of a firm's expected future cash flows, then any phenomenon that affects a firm's cash flow will be reflected in that firm's stock price if the market is efficient as the Efficient Market Hypothesis suggests. Movements in the exchange rate are one such phenomenon. Movements in the stock market may also affect exchange rates. Equities being part of the wealth may affect the behavior of exchange rate determination Galvin (1989). Similar links can be traced through the portfolio balance model as well Branson (1983)

Portfolio balance approaches, or 'stock oriented' models developed by Branson et. al. (1977) postulates the opposite to flow models, that is, that movements in stock prices can cause changes in exchange rates via capital account transactions. The buying and selling

of domestic securities in foreign currency (either by foreign investors or domestic residents moving funds from offshore into domestic equities) in response to domestic stock market movements has a flow through effect into the currency market. Although the literature on this subject has examined the between stock prices and exchange rates in various economies, the results have been mixed in terms of the evidence as to which of the above models is most applicable to, or prevalent within an economy. Ramasamy and Yeung (2005) suggest that the reason for these divergent results is that the nature of the interaction between stock and currency markets is sensitive to the stage of the business cycle and wider economic factors, such as developments or changes in market structures within an economy.

1.1.2 Firm Performance

Although "performance" may appear to be an easy concept, a unique definition in the literature does not exist. Moreover, academics often use special definitions tailored to fit the individual research purposes Langfield-Smith (1997). Performance at the firm level is measured in many different ways. Such ways include accounting measures of profitability, the Lerner index, sales per input and total factor productivity.

Management researchers prefer accounting variables as performance measures such as ROE,ROI, and ROA along with their variability as measures of risk. Earlier studies typically measure accounting rates of return. These include: ROI, ROC, ROA and ROS. The idea behind these measures is perhaps to evaluate managerial performance-how well

is a firm's management using the assets (as measured in dollars) to generate accounting returns per dollar of investment, assets or sales. The problems with these measures are well known. Accounting returns include depreciation and inventory costs and affect the accurate reporting of earnings. Asset values are also recorded historically. Since accounting conventions make these variables unreliable, financial economists prefer market returns or discounted cash flows as measures of performance. While correlated, the various measures capture different aspects of firm performance, and exposure to a global market is not expected to affect these aspects in the same way.

One way of measuring firm performance is to distinguish the outcomes of organizational activities and the means by which these outcomes are reached, Govindarajan & Fisher (1990). The former is often called performance while the latter is commonly referred to as effectiveness. Interestingly enough, this distinction appeared only after 1978. Before that time both definitions were used interchangeably.

Another way to characterize performance is to distinguish between financial and non-financial performance. The financial performance is often measured using traditional accounting key performance indicators such as return on assets, return on sales, earnings before interest and tax, EVA or Sales growth Ittner & Larcker (1997).The advantage of these measurements is their general availability, since every profit oriented organization produces these figures for the yearly financial reporting Chenhall & Langfield-Smith (2007). However, balance sheet manipulations and choices of accounting methods may

also lead to values that allow only limited comparability of the financial strength of companies.

The non-financial performance can be measured using operational key performance indexes. Market share, innovation rate or customer satisfaction are prominent examples. Many researchers also use self-reported measures to operationalize performance. Others combine both, the accounted financial key performance indexes and self-reported measures in their reports. Langfield-Smith (1997) there are various ways non-financial performance can be measured; however the performance can be hardly assessed without the link to corporate strategy.

1.1.3 Foreign Exchange Rate and Firm Performance

The increased sensitivity of industries to movements in the exchange rate is largely attributable to the growing reliance on international trade. However, despite the substantial movements in exchange rates over the past decades, the implication of these movements for real economic activity remains an open question. Exchange rate can cause large shifts in relative unit input costs and influence the prices of goods sold in domestic and foreign markets. If producers are not perfectly hedged against exchange rate movements, their short- and long-run profitability could depend on exchange rates.

Substantial exchange rate movements have occurred in many of the developed and developing countries over the past two decades. The consequences of major changes in exchange rates are of interest for two reasons, firstly because they may have enduring

effects on international trade and secondly because these effects may be comparable to the effects of tariff reductions. Examining the effects of exchange rates on productivity, Harris (2001) suggested that the depreciation of the Canadian dollar may have been a contributory factor to the widening productivity gap between Canada and the US, since it may lead to the increasing costs of imported machinery and equipment, expanded the innovation gap, and slowed down the process of creative destruction. Landon and Smith (2004) found that currency depreciation led to a reduction in the importation of high technology products into Canada and Australia, which may in turn, have negatively affected productivity growth within these two countries.

Currency depreciation affects the real side of the economy through different channels. First, a real depreciation can have expansionary effects through increasing the operating profits in the export sector, as well as increasing the cost of the imported goods favoring tradable activities in the economy. The strength of this "competitiveness" effect depends heavily on the price elasticity of the export sector as well as on the price elasticity of the imports. In particular, when a large fraction of imports are highly inelastic to changes in the relative price, as is the case with imported inputs and capital goods, the higher cost of inputs and capital goods could offset the positive effects in the export/tradable sector, having an overall contractionary effect in aggregate output as well as in investment. The evidence of the existence of this channel is mixed. Some studies have argued that exports increase after a currency depreciation and others that there are contractionary effects of real exchange rate depreciation due to the cost-of-input mechanism.

Exchange rate fluctuation may have implications on the general price level in any economy depending on the share of imported goods in overall consumption (imports penetration ratio).Open economy macroeconomics theory postulates that a small open economy is an international price taker Krugman & Obstefeld, (2000). Therefore in every aspect of trade in exports, the government will make deliberate efforts to encourage exports at all costs. In this pursuit the government will deflate the exchange rate.

At the detailed industry level, the findings of Head and Ries (1999) demonstrated that the depreciation of the Canadian dollar led to an increase in the number of plants in Canada, while at the micro level, Bernard and Jensen (2004) concluded that the US exports boom in the late 1980s and early 1990s was attributable to the depreciation of the US dollar. Forbes (2002a, b) investigated the effects that significant depreciation (devaluation) has on a firm's output growth and on other performance measures, while Fung (2004) went on to explore, both theoretically and empirically, the effects of the considerable appreciation of the Taiwanese currency on firm turnover and the scale of production; the results of that study showed that real appreciation led to an increase in the total sales of surviving firms.

Models developed by Shapiro (1974) and Dumas (1978) predict that changes in exchange rates negatively impact a multinational firm's cash flows, its profitability and therefore its market value. However there has been limited empirical support for this hypothesis. Bartov and Bodar (1994) found a significant negative correlation between abnormal returns of U.S. multinational firms and lagged changes in the value of the

dollar. On the contrary studies by Jorion (1990), Amihud (1993), and Bailey and Cheung (1995) fail to establish a significant relationship between contemporaneous dollar fluctuations and U.S. multinational firms' stock returns. A more fruitful avenue of research focused on the relation of the second moments, namely, the relationship between exchange rate volatility and volatility of firms' profit growth. Along these lines Bartov, Bodnar and Kaul (1996) empirically examine the relationship between the second moment of exchange rate changes and stock returns, volatility by comparing five-year periods before and after the breakdown of the Bretton Woods system. They found support for the hypothesis that increased exchange rate variability leads to increased volatility of multinational firms' stock returns. Overall theory supports the existence of a relationship between the value of the firm and exchange rate movements.

The exchange rates have sectoral and economic wide effects and this has ultimately affected the stock prices and firms performance; they may affect a firm through a variety of business operation models: a firm may produce at home for export sales as well as domestic sales, a firm may produce with imported as well as domestic components, and a firm may produce the same product or a different product at plants abroad. If exchange rates impact the cost of imported inputs relative to other factors of production, they provide exporters with a relative cost advantage to foreign competitors, or generate higher borrowing costs and a contraction in lending. When exchange rates become extremely volatile the movements destabilize the cash flows of a business significantly. Such destabilization of cash flows affects the profitability of the business. The growing emphasis on exchange risk management, the extensive use of foreign currency

derivatives and other hedging instruments by corporations to protect their foreign currency denominated cash flows from unexpected exchange rate movements, implies that the market value of the firm is sensitive to exchange rate uncertainty.

Kenya's foreign exchange policy has undergone a marked evolution over the past three decades. A fixed exchange rate was maintained in the 1960s and 1970s. Floating exchange rate was adopted in 1990s. Since then the exchange rates have been determined by the market forces of demand and supply. Given the frequent changes of supply and demand influenced by numerous external factors, this new system is responsible for currency fluctuations. These fluctuations expose companies to foreign exchange risk and affect their performance.

Undoubtedly, the changes in exchange rates do have a diverse effect across the economic spectrum in any country. For instance, exchange rates will impact the cost of imports and value of exports in Kenya. If the cost of importing fuel is adversely affected by changes in exchange rates, the aftermath may be dire. Fuel costs determine the cost of production which may affect many sectors in the Kenyan economy. The sectoral and economy wide effects of exchange rates may ultimately be reflected in the stock prices. On the converse, performance of companies and businesses in Kenya may impact on economic growth. The economic growth may eventually affect levels of exchange rates. Policy makers, scholars, economists, business owners, regulators and the general Kenyan public are grappling with figuring out the effect of exchange rates on firm's performance.

1.1.4 Nairobi Securities Exchange

The Nairobi Stock Exchange was constituted as a voluntary association of stock brokers with the objective to facilitate mobilization of resources to provide long term capital for financing investments. It was registered under the societies Act in 1954 and in 1991 the Nairobi Stock Exchange was incorporated under the companies Act of Kenya as a company limited by guarantee and without a share capital. Subsequent development of the market has seen an increase in the number of stockbrokers, 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. As a capital market institution, the Securities Exchange plays an important role in the process of economic development.

There are sixty one companies listed on the Nairobi Securities Exchange. The companies are classified into eleven sectors which include; Agriculture, Commercial and Services, Telecommunication and Technology, Automobiles and Accessories, Banking, Insurance, Investment, Manufacturing and Allied, Construction and Allied, Energy and Petroleum and Growth and Enterprise management segment.

1.2 Research Problem

Although the incidences of substantial currency appreciation or depreciation have been quite numerous over the past twenty years, with such movements having potentially strong impacts on firm performance, surprisingly few systematic studies have been

carried out to examine the ways in which exchange rate movements can impact upon production and turnover decisions at the detailed industry or micro levels.

Substantial appreciation and depreciation can be traced to the latter half of the 1990's. These depreciations include not only the well-known currency crises where countries abandoned pegged exchange rates but also less well- documented examples where countries with more flexible exchange rates experienced unusually large depreciations such as in Mexico and South Africa in 1998. In some cases these depreciations were followed by a surge in production and improvement in economic growth, while in other cases the depreciations were followed by a decline in output and severe recession.

The growing emphasis on exchange risk management, the extensive use of foreign currency derivatives and other hedging instruments by corporations to protect their foreign currency denominated cash flows from unexpected exchange rate movements, implies that the market value of the firm is sensitive to exchange rate uncertainty. This is a central issue to several international financial management problems. If currency risk is not diversified away, currency exposure should yield a risk premium in an equilibrium asset market. However, the empirical evidence has produced mixed results.

Prior research has focused mainly on studying the currency exposure of U.S. firms and it is not clear how these empirical results relate to different countries. Without testing the robustness of these findings outside the U.S. environment, it is hard to determine whether these empirical regularities are merely a spurious correlation that may not be confirmed

in other countries. In addition, the empirical design of previous studies may be subject to sample biases as they have exclusively focused only on multinational or large exporting firms and data snooping problems associated with the selection of firms. Less is known about other markets and especially the Kenyan market.

Even though studies have been conducted on the exchange rate regimes and the implications for macroeconomic management as well as managing foreign exchange risk very little has been done on the study of effect of foreign exchange rate on firm's performance in Kenya. 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. Empirical studies on the same on Kenya did not yield any fruitful results. This is despite the numerous studies on exchange rates such as Kisaka(2008) on the casual relationship between exchange rates and stocks in Kenya Nyachileo (2008) on exchange rates and volume of horticultural exports and Nyamwange (2009) on real exchange rates and international trade, 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. 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.

From the literature and empirical evidence review it is still not clear on the direction of the relationship between exchange rates and stock prices. In some studies such as in the G7 countries Nieh & Lee (2001) no long run equilibrium relationship was found. The studies done in Sweden Hatemi-J & Irandoust (2002) and Cyprus Tsoukalas (2003) revealed a unidirectional relationship from stock prices to exchange rates. While in Japan, Kenya and USA the unidirectional relationship was from exchange rate to stock prices. Finally, the studies done in Turkey and other six Asian countries indicated a bidirectional relationship. Therefore, there is still no unanimity in the study of effects of exchange rates on stock prices.

This study will contribute to the growing literature in the Kenyan scene by examining the effect of foreign exchange rates (represented by the Kenya shilling price of one U.S. dollar) on the performance of the Nairobi Securities Exchange (measured by NSE 20 share index) over the period 2011-2013. The study poses the question: What is the effect of foreign exchange rates on the performance of the Nairobi Securities Exchange?

This study is motivated by the inconsistent results reported in earlier studies, the need to examine the robustness of previous findings across countries and the fact that a sample of Kenyan firms is expected to reduce the noise in the analysis because Kenyan firms are more likely to be susceptible to unexpected exchange-rate movements due to their heavy involvement in international trade activities.

1.3 Research Objective

To establish the effect of foreign exchange rates on the performance of the Nairobi Securities Exchange.

1.4 Importance of the Study

This study will help firm to understand better how exchange rates affect their firm's performance through share prices, profits, exports and imports. It will enhance export and import terms to help businesses remain competitive, it will help firms to reduce non-cash flows risk because of local currency devaluation, and also help firms understand and learn best practice procedures to monitor and manage these risks and their impact on profits.

The recommendations from the findings can guide policy makers in coming up with policies which manage exchange rates and spur growth and profitability. It sheds light on the nature of the strong co-movement between stock prices and Kenya shillings.

The study will be important because its findings will contribute to research and the existing knowledge. In addition, the research findings will make a great contribution to the world of academia as researchers in the field of finance and economics will find this study useful guide for carrying out further studies in the area and the findings will also act as a point of reference in their literature reviews.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter looks into what other researchers have done in the field on relationship between exchange rates and stock prices and overall effect on the performance of firms.

2.2 Theoretical Review

There is theoretical consensus neither on the existence of relationship between stock prices and exchange rates nor on the direction of the relationship. Considering flow oriented models (FOM) and stock oriented models (SOM) as two basic approaches to the exchange rate determination, a cardinal disagreement can be found. This section uncovers the theoretical literature applicable to this study with considerations being made to the Flow oriented model and Stock oriented model.

2.2.1 Flow Oriented Model

Flow Oriented Models assume that the exchange rate is determined largely by a country's current account or trade balance performance. These models posit that changes in exchange rates affect international competitiveness and trade balance, thereby influencing real economic variables such as real income and output Dornbusch and Fisher, (1980). Stock prices, usually defined as a present value of future cash flows of firms, should

adjust to the economic perspectives. Thus, flow oriented models represent a negative relationship between stock prices and exchanges rates with direction of causation running from exchange rates to stock prices. Causation can be explained as follows: domestic currency depreciation makes the local firms more competitive, making their exports cheaper in international market. Higher exports lead to higher incomes and increase in firms' stock prices.

2.2.2 Stock Oriented Model

Stock oriented models put much stress on the role of capital accounting the exchange rates determination. A rise in domestic stock prices leads to the appreciation of domestic currency through direct and indirect channel. A rise in stock prices encourages investors to buy more domestic assets selling simultaneously foreign assets to obtain domestic currency indispensable for buying new domestic stocks. Described shifts in demand and supply of currencies cause domestic currency appreciation. The indirect channel grounds in the following causality chain. An increase in domestic assets prices results in growth of wealth, which leads investors to increase their demand for money, which in turn raises domestic interest rates. Higher interest rates attract foreign capital inflow and initiate an increase in foreign demand for domestic currency and its subsequent appreciation Branson, (1983); Frankel, (1983).Thus, this postulate a positive relationship with causality running from stock prices to exchange rate.

The degree to which stock oriented models actually explain real world stock and currency market reactions is critically dependent upon issues such as stock market liquidity and segmentation. For example, illiquid markets make it difficult and/or less timely for investors to buy and sell stock, while segmented markets entail imperfections, such as government constraints on investment, high transactions costs and large foreign currency risks, each of which may discourage or hinder foreign investment Eiteman et. al. (2004).It is clear from this theoretical review that there are various ways by which stock and currency markets can interact. This makes empirical analysis of the degree and direction of causality between stock prices and exchange rates particularly interesting and has provided the motivation for several studies in examining the interaction between stock prices and exchange rates. Although theory such as the flow and portfolio models and the money demand equation hypothesize that a relationship should exist between exchange rates and stock prices, the evidence provided by the literature on this subject matter has been mixed.

2.3 Determinants of Firm Performance

One of the earliest distinctions of how exchange rates affected stock prices was according to whether the firm was multinational or domestic in nature Franck and Young (1972). In the case of a multinational entity, changes in the value of the exchange rate alter the value of the multinational's foreign operations, showing up as a profit or loss on its books which would then affect its share price. The manner in which currency movements influence a firm's earnings (and hence its stock price) depends on the characteristics of that firm. Indeed, today most firms tend to be touched in some way by exchange rate

movements, although the growing use of derivatives, such as forward contracts and currency options, might work to reduce the manner in which currency movements affect a firm's earnings.

Edwards (1994) noted that real exchange rate behavior occupies a central role in policy evaluation and design especially in the less developed countries. Since the real exchange rate is the price of foreign goods in terms of domestic goods, the real exchange rate plays a crucial role in guiding the broad allocation of resources in the domestic economy between foreign and domestic goods. It also signals inter-sectoral growth in the long-run and acts as a measure of international competitiveness. In the early 1980s the declining economic fortune of many sub-Saharan African Countries including Nigeria was attributed to over-valued exchange rates. Currency over-valuation often leads to a reduction in profits in the tradable goods sector, declining investment and adverse trade balance which may eventually lead to currency crisis Xiaopu, (2002).

Richards (1997) used two approaches in investigating the empirical relationship between the real exchange rate and USA manufacturing profits. First it estimated a single-equation error correction model and second, a vector autoregressive (VAR) in log levels. The study found that after taking into account output, costs, relative prices and exports, shifts in the real exchange rate have, over the floating rate period had a significant influence on real USA manufacturing.

Sparks and Wei (2003) argued that exchange rate movements are more likely to affect a firm through direct effects on short-term cash flows, which in turn depend on the firm's sensitivity to short-term cash flow volatility. For example, if a firm's liquidity is already low, then a large fluctuation in its cash flows due to an exchange rate movement can push the firm into financial distress, and as a result, lead to changes in its fundamental value. Similarly, when a firm has substantial growth opportunities, exchange rate movements can have greater effects on the firm's value due to its larger underinvestment costs. If exchange rate changes have pronounced effects on fundamental values primarily when the resulting short-term cash flow fluctuations force the firm into financial distress or cause it to forsake positive NPV investment opportunities, the magnitude of exposures would vary cross-sectional with the expected cost of financial distress in terms of both the probability of distress and the cost related to it, so that firms that have greater expected costs of financial distress should be more exposed to exchange rate risk.

2.4 Empirical Review

A study by Ajayi et al. (1998) examined the relationship between exchange rates and stock prices among developing and developed nations. Like Bahmani-Oskooee and Sohrabian (1992) and Yu Qiao (1997), Ajayi et al. (1998) used Granger-Sim causality to examine the relationship between movements in the stock price indexes and movements in the exchange rates. Importantly, the findings of Ajayi et al. (1998) appeared to have uncovered a consistency in the relationships between stock prices and exchange rates among developed economies, which were in accordance with the portfolio model. On the

contrary, the patterns of causality among the emerging Asian economies examined were mixed.

No significant causal relationships were detected in Hong Kong, Singapore, Thailand or Malaysia. Notably, this result is again in contrast with those of Yu Qiao (1997), which found uni-directional causality from exchange rates to stock returns in Hong Kong, although the findings of Ajayi et al. (1998) are consistent with those of Yu Qiao (1997) in that neither study found a relation between stock prices and exchange rates for Singapore. Ajayi et al. (1998) attributed the difference in their findings between developed and emerging economies to structural differences between the currency and stock markets of each. Specifically, the authors suggest that markets are likely to be more integrated and deep in advanced economies, and that emerging markets tend to be much smaller, less accessible to foreign investors and more concentrated. The authors also made note of wider risks such as political stability and the legislative environments which might make investment in emerging markets less attractive. Hence, the study concluded that activity in emerging stock markets tends to portray wider macroeconomic factors less strongly than in developed markets and as a result, these markets tend to have weaker linkages to the currency market

While most literature in this context had previously focused on developed markets or on comparisons between developed and emerging markets, the Asian financial crisis of the late 1990s sparked interest in the interaction between currency and stock markets solely in developing markets. Indeed, the Asian crisis was characterized by plunging currency

and stock markets within South East Asia. Granger et al. (2000) was one such study which focused on this region. It examined the interaction between stock and currency markets in Hong Kong, Indonesia, Japan, South Korea, Malaysia, the Philippines, Singapore, Thailand and Taiwan, all of which were affected by the crisis. The empirical results showed that, with the exception of Singapore (where exchange rate changes led stock prices as per the flow model), all countries displayed little evidence of interaction between currency and stock markets during the first period. In the second period, the exchange rate in Singapore again led its stock market, while the reverse (as per the portfolio model) was evident in the cases of Taiwan and Hong Kong.

Granger, Huang and Yang (2000) and Hatemi-J and Irandoust (2002) Most of the studies used Granger causal relationship between the two markets and the results show that traditional and portfolio approaches have supportive evidences. Hatemi-J and Irandoust (2002) found that changes in stock markets lead exchange rates which support the portfolio approach. Baharumshah et al. (2002) suggested that the stock market is an important determinant of exchange rate. However, Nieh and Lee (2001) indicated that there is no long-run significant relationship between stock prices and exchange rates in the G-7 countries and short-run significant relationship has only been found for one day in certain G-7 countries.

Abdalla and Murinde (1997) investigated the relationship between stock prices and exchange rates in India, Korea, Pakistan and the Philippines. They found out that exchange rates granger cause stock prices in India, Korea and Pakistan. Empirical

evidence also indicated that stock prices cause exchange rates in Philippines. Doong et al. (2005) studied the relationship between stocks and exchange rates for six countries for the period between 1989 and 2003. The result showed bidirectional causality in Indonesia, Korea, Malaysia, and Thailand.

Aydemir and Demirhan (2009) investigated the relationship between stock prices and exchange rates in Turkey for the period 23 February 2001 to 11 January 2008. They used Toda and Yamamoto (1995) method to analyze the data. The results of empirical study indicated that there is bidirectional causal relationship between exchange rate and all stock market indices. While the negative causality exists from national 100, services, financials and industrials indices to exchange rate, there is a positive causal relationship from technology indices to exchange rate. On the other hand, negative causal relationship from exchange rate to all stock market indices is determined

A study by Aggarwal (1981) provided some evidence in support of the flow model. This study examined the relationship between exchange rates and stock prices by looking at the correlation between changes in the US trade-weighted exchange rate and changes in US stock market indices each month for the period 1974 to 1978. The study found that the trade-weighted exchange rate and the US stock market indices were positively correlated during this period, leading Aggarwal (1981) to conclude that the two variables interacted in a manner consistent with the flow model. That is, movements in the exchange rate could directly affect the stock prices of multinational firms by influencing the value of its overseas operations, and indirectly effect domestic firms through

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influencing the prices of its exports and/or its imported inputs. Soenen and Hennigar (1988) found a significant negative correlation between the effective value of the US dollar and changes in US stock prices using monthly data between the period from 1980 to 1986. While this finding is in contrast to Aggarwal (1981), who found a positive correlation, it still provides evidence in support of the flow model.

While the above studies focused exclusively on the United States, a later study by Ma and Kao (1990) examined the relationship between exchange rates and stock prices in six industrialized economies, including the UK, Canada, France, West Germany, Italy and Japan. Using monthly data between January 1973 and December 1983, the authors tested the degree of stock price reaction to exchange rate changes in each of the above jurisdictions. Their findings were consistent with the flow model, leading the authors to conclude that the relationship between exchange rates and stock prices hinged on the extent to which an economy depended on exports and imports. These early studies were useful in establishing a foundation for further studies on the interaction between exchange rates and stock prices, but they were limited in that they only applied simple regression analysis to establish a correlation between the variables, or only tested the 'reaction' of one variable to changes in the other.

Bahmani-Oskooee and Sohrabian (1992) were one of the first to utilize tests of causality in examining the relationship between stock prices and exchange rates in the US context. They also used a much longer time period (15 years) and also utilized tests of co-integration. Co-integration techniques allow one to establish if the variables share a long-

run relationship, as the interactions uncovered by the Granger (1969), Sim (1972) method are intrinsically short-run in nature. Using monthly data of the US S&P 500 index and the effective exchange rate of the US dollar, the authors employed an autoregressive framework, finding that US stocks and the exchange rate shared a dual or bi-causal relationship (i.e. changes in the exchange rate effected stock prices and vice versa) in the sample period, 1973 to 1988.These results would seem to affirm both the portfolio and flow models. Meanwhile, the co-integration test (carried out using the methodology outlined by Engle and Granger 1987) found little evidence that the variables shared any relationship in the long-run.

Muhammad and Rasheed (2002) examined the exchange rates and stock price relationships for Pakistan, India, Bangladesh and Sri Lanka using monthly data for the period between 1994 and 2000. The empirical results showed a bidirectional long-run causality in Bangladesh and Sri Lanka. No significant relationship was found for Pakistan and India

Nyamute (1998) studied the relationship between stock prices and other financial variables like money supply, interest rates, inflation rates and exchange rates in Kenya. He found a positive relationship between stock prices and exchange rates. However, his research performed data analysis on non-stationary series which may adversely affect the validity of the results.

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 stationary, co integration and finally used the error correction model to test causality.

2.5 Summary of Literature Review

The contrasting results across the body of literature regarding this issue suggest that there is no underlying or intrinsic causal relationship between exchange rates and stock markets across jurisdictions. Rather, the differing causal relationships uncovered through empirical analysis implies that the interaction between currency and stock markets are influenced by the business cycle and different economic structures present within individual countries, meaning causality between the two financial variables is sensitive to the time period in which the analysis is undertaken. This view is confirmed by Ramasamy and Yeung (2005), who suggest that causality is unique within jurisdictions, within specific time periods and is even sensitive to the frequency of data utilized. In their study, the authors examined the degree of exchange rate and stock price causality in the same nine Asian economies studied in Granger et al. (2000), but during the period 1 January, 1997 to 31 December, 2000 – the entire period of the Asian currency crisis. The empirical results of Ramasamy and Yeung (2005) differ from those of Granger et al.

(2000). While Granger et al. (2000) found a bi-causality for Malaysia, Singapore, Thailand and Taiwan, Ramasamy and Yeung (2005) found that stock prices lead exchange rates for these countries. On the other hand, Granger et al. (2000) found that stock prices lead exchange rates for Hong Kong, but a bi-causality was detected by Ramasamy and Yeung (2005).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlights the various methods and procedures adopted in conducting the study in order to achieve objective outlined in chapter one. Specifically, it describes the research design, population of the study, data collection methods, sampling design and sample size, research procedures, data analysis methods.

3.2 Research Design

Descriptive and longitudinal designs were employed with a view to making statistical inferences about NSE. Descriptive research design was used to obtain information that describes what exists with respect to the variables tested while the longitudinal design helped track changes over time. The variables considered were NSE 20 share index and Foreign Exchange Rate (FOREX).

3.3Population and Sample Design

The NSE 20 share index was selected as the proxy representing the overall stock prices. The share index reflects the change in different types of asset securities in the stock exchange representing all the segments in the in the market Berk et al (2009). The NSE 20 index is sampled to be surrogate representative of the different industries and the general change in price in line with Dubravka & Petra (2010) finding that the market index had the largest statistical significance in explaining stock returns. The sample is the

related monthly market level data covering the period January 2011 to December 2013 for the companies listed in the Nairobi Securities Exchange. The period was selected so as to use the most recent data, to make the findings more current.

3.4 Data Collection Method

The study relied on secondary data collected from the NSE and Central bank of Kenya statistics.

3.5 Data Analysis Method

The sensitivity of stock prices to changes in macroeconomic factors is estimated using ordinary least squares (OLS) in the framework of factor model applied by Chen et al (1986), Wang (2010), Benakovic & Posedel (2010), Cheng et el (2011). The model is based on the assumption that the disturbance terms are uncorrelated across stocks, meaning that stock prices change only as a reaction to a specific factor. To carry out data analysis SPSS is used to compute multi-linear regression and Pearson correlation to answer the study questions, and ANOVA to test the hypothesis.

The econometric model under analysis is given by the following equation;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

The variables are identified as follows;

Dependable variable Y - NSE 20 index; it's the official Nairobi Stock exchange stock index consisting of stocks from 20 companies. The NSE 20 share index is selected as the proxy representing the overall stock prices. Berk et al (2009) found that the share index reflects the change in different types of asset securities in the stock exchange representing all the segments in the in the market. The NSE 20 index is sampled to be surrogate representative of the different industries and the general change in price. Dubravka & Petra (2010) found that the market index had the largest statistical significance in explaining stock returns.

Independent variable X1- Foreign exchange rate represented by the Kenya Shilling price of one U.S. dollar derived from Central bank of Kenya website. The exchange rate is changing proportion of currency between countries. If a currency appreciates it will reduce competition internationally, and have adverse effect on import whereas it will be beneficial to export trade. Abugri (2008) showed that the stock return was negatively affected by exchange rate. Cheng et al (2011) found that exchange rate had a positive significant impact on Taiwan electronic stock return, mainly because being an export based industry investors saw an opportunity for better returns, in case of currency appreciation. Based on these findings the study predicts that exchange rate will have a negative impact on stock prices.

Control variable X2-Inflation rate ; Inflation is the change in prices of commodities. Rapach et al (2005) and Chen et al (1986) found that inflation had a negative impact on stock prices. Based on this argument the study predicts that the variable of inflation will have a negative impact on stock prices.

Control variable X3-Interest rate; the interest rate for each month is calculated as an average of daily interest rates. High interest rates decrease the present value of future cash flows, thus reducing the attractiveness of investment. Dubravka & Petra (2010) found that an increase in interest rates led to a drop in stock prices in the Croatia Market. The study predicts that interest rate will have a negative impact on stock prices.

βo- Constant term

βi – Sensitivity of a stock *i* to a set of *k* macroeconomic

ε -Error term with an expected value of zero and constant variance

The study was carried out a T-test at 95% confidence level to establish the significance of the foreign exchange rate in explaining the changes in the stock prices.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The monthly data covering the period January, 2011 to December 2013 for the companies listed in the Nairobi stock exchange was compiled using secondary data, the main source of which was the NSE and the Central Bank of Kenya statistics. The data analyzed covered a period of 36 months, and the NSE 20 share index was used as a proxy to measure the return variations for the firms listed in the Nairobi Securities Exchange.

4.2 Estimation of Sensitivity of Prices to the Factors

The analysis of the model was implemented by running multiple regression of the return on stock (Y) as a dependent variable and the three selected macroeconomic variables as independent variables. This was done to analyze the relationships between the variables and the average change of the dependent variable when the independent variable changes 1 percentage point Kothari (2009). The Pearson correlation coefficient was calculated to determine the degree of correlation. The results of the Pearson correlation coefficients analysis are presented in table 1 below;

Table 1: Correlation Coefficients Matrix of the Variables

		X1	X2	X3	Y
X1	Pearson Correlation	1	.513[**]	-.148	-.302
	Sig. (2-tailed)		.001	.388	.074
	N	36	36	36	36
X2	Pearson Correlation	.513[**]	1	.304	-.788[**]
	Sig. (2-tailed)	.001		.072	.000
	N	36	36	36	36
X3	Pearson Correlation	-.148	.304	1	-.553[**]
	Sig. (2-tailed)	.388	.072		.000
	N	36	36	36	36
Y	Pearson Correlation	-.302	-.788[**]	-.553[**]	1
	Sig. (2-tailed)	.074	.000	.000	
	N	36	36	36	36
**. Correlation is significant at the 0.01 level (2-tailed).					

Table 1 exhibits the correlation coefficient matrix of the change in prices represented by Y and the macroeconomic factors. Through the correlation matrix it is noticeable that all the three variables have a negative relationship with share prices; Foreign exchange rate -0.302, Inflation -0.788 and Interest rate -0.553.Interest rate and inflation have a strong relationship with the share prices because their correlation is significant at the 95% confidence level. The results confirm the prediction assumed in the study and the findings of Rapach et al (2005), Chen et al (1986) and Abugri (2008).

The coefficient of determination (R squared) was carried out to measure how well the statistical model was likely to predict future outcomes. R squared is the overall measure of the strength of the association between dependent and independent variables. It is the square of the sample correlation coefficient between outcomes and predicted values. As such it explains the extent to which changes in the stock prices can be explained by the change in foreign exchange, inflation and interest rates. The results of regression analysis are presented in table 2 below;

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.854[a]	.729	.703	323.785

The multiple regression results represented in table 2 shows; overall, the variables that were studied (foreign exchange, inflation and interest rates) explain 72.9% of the changes in stock prices. 27.1% changes in stock prices are explained by other factors.

Table 3: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	β_0	5386.801	1459.538		3.691	.001
	X1	-.722	17.012	-.005	-.042	.966
	X2	-74.621	13.163	-.680	-5.669	.000
	X3	-45.720	13.695	-.347	-3.338	.002
a. Dependent Variable: NSE 20 Share Index						

The table above shows the ability of each individual independent variable to predict the dependent variable.

From the results, taking all the factors (foreign exchange rate, inflation and interest rate) constant at zero, the NSE20 share index in stocks would be 5386.801.The constant was statistically significant as its p value was less than 0.05 (0.001).

For the foreign exchange rate, the coefficient was -0.722 so, for every unit increase in foreign exchange rate a 0.722 decrease in NSE20 share index was predicted, holding all other variables constant. This variable was statistically insignificant since the p value is greater than 0.05 (0.966).

The inflation coefficient was -74.621 so, for every unit increase in inflation a74.621 decrease in NSE20 share index was predicted, holding all other variables constant. This variable was statistically significant since the p value is smaller than 0.05 (0.000).

The interest coefficient was -45.72 so, for every unit increase in interest rate a 45.72 decrease in NSE20 share index was predicted, holding all other variables constant. This variable was statistically significant since the p value is smaller than 0.05 (0.002). Based on the above explanations, the predictor model for NSE20 share index was therefore rewritten as $Y = 5386.801 - 0.722X_1 - 74.621X_2 - 45.72X_3 + \varepsilon$ meaning that share prices are dependent on inflation and interest rate.

Table 4: Analysis of Variance

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9018953.701	3	3006317.900	28.676	.000[b]
	Residual	3354777.575	32	104836.799		
	Total	12373731.276	35			
a. Dependent Variable: NSE 20 Share Index						
b. Predictors: (Constant), Interest rate, Exchange rate, Inflation						

The analysis of variance represented in Table 4 shows the F Value of the entire regression model was 28.676 df (3, 32) $p < .05$. The overall p value was less than 0.05 (0.000) and it was deduced that the group of independent variables when used together reliably predicted the dependent variable therefore showed a significant statistical relationship. This implies that the variables were significant in influencing the NSE20 share index.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter conclusions are presented and based on them suitable recommendations are made.

5.2 Summary

The reviewed literature indicated that there is lack of consensus in both the empirical and theoretical world on the relationship between the stock and the foreign exchange rates. This is because the different methods used in explaining the relationship have produced different results. Empirical investigations have also produced different results of no relationship, negative or positive relationship, weak and strong relationship. From the literature, there are two diverging viewpoints namely: Flow Oriented Model which represents a negative relationship between stock prices and exchange rates and the Stock Oriented Model which postulate a positive relationship between stock prices and exchange rate.

However, the empirical world has been able to assign concrete reasons for the differing results in the different research. Methodological and different currencies, direction of analyses (whether it is the exchange rate that affects the stock market or it is the other way round), the period in which the investigation is undertaken and the level of financial

markets development have been identified as some of the causes of the differences in the results that have been obtained in the study of the relationship between the two.

The findings of this study support the Stock Oriented Model that foreign exchange rates have a positive effect on stock prices. When the national currency appreciates, it encourages foreign currency inflows; which increases liquidity resulting in more investments, and enhanced activity in the stock market. Further, stability of the national currency increases investor confidence attracting more foreign currency inflows, as opposed to erratic volatility which subjects the market to uncertainty. Prospective investors are attracted to other jurisdictions where stability can be assured.

5.3 Conclusion

This paper applied multiple regression analysis to estimate the effect of foreign exchange rate on performance of the NSE using NSE20 share index. The analysis covered firms listed in the NSE, and sampled monthly market level data for 36 months covering the period 2011 to 2013. By means of multiple regression analysis of stock returns to foreign exchange rate, sensitivity of the price changes was estimated. According to the empirical analysis results foreign exchange rates have a positive effect on stock prices. This therefore means that foreign exchange rates have a positive effect on performance of Nairobi Securities Exchange.

5.4Recommendations

The R-Square values of 72.9 percent indicate that there are other unexplored factors that might influence share price. This research centered on twenty firms for a three year

period. Stock markets are very complex hence finding a pattern in share price is quite difficult when using limited data and time period. Due to the seasonality and cyclic nature of stock markets the time period selected may have affected the final results. The selection of variables could also be of concern because they affect the results.

Possible further researches recommended in line with the present study are:

i) The present research can be extended to cover longer time periods, more firms and more macroeconomic variables.

ii) This study focused on the linear relationships and could be extended to include non-linear relationships between the variables. Also, other multivariate statistical forecasting models could be employed to verify the results.

The study makes the following recommendation to policy makes; since the findings conclude that foreign exchange rate have a significant impact on stock prices, there should be a deliberate policy framework aimed to create favorable foreign exchange market. This will bolster investor confidence attracting more currency inflows and with the increased liquidity activity will be enhanced at the stock market. Managers of an economy would have to put in place strategies to control abnormalities in the foreign exchange rates.

Similarly, corporate executives would have to keep pace with the volatile foreign exchange rate market to promote corporate growth, investor confidence and shareholder wealth maximization.

5.5 Limitations

The limitations of the study were;

The study used the NSE 20share index which might not be a true representative of all other firms listed on NSE. Other firms could react to the effects of exchange rate differently.

The exchange rate used for this study was USD only. There are other foreign currencies in addition to USD that can influence the share prices.

Performance of the NSE was measured using share prices only. There are many other variables that can be used to measure performance.

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APPENDICES

Appendix 1: COMPANIES LISTED ON NAIROBI SECURITIES EXCHANGE

AGRICULTURAL
Eaagads Ltd Ord 1.25
Kapchorua Tea Co. Ltd Ord Ord 5.00
Kakuzi Ord.5.00
Limuru Tea Co. Ltd Ord 20.00
Rea Vipingo Plantations Ltd Ord 5.00
Sasini Ltd Ord 1.00
Williamson Tea Kenya Ltd Ord 5.00
AUTOMOBILES AND ACCESSORIES
Car and General (K) Ltd Ord 5.00
CMC Holdings Ltd Ord 0.50
Sameer Africa Ltd Ord 5.00
Marshalls (E.A.) Ltd Ord 5.00
BANKING
Barclays Bank Ltd Ord 0.50
CFC Stanbic Holdings Ltd ord.5.00
I&M Holdings Ltd Ord 1.00
Diamond Trust Bank Kenya Ltd Ord 4.00
Housing Finance Co Ltd Ord 5.00
Kenya Commercial Bank Ltd Ord 1.00
National Bank of Kenya Ltd Ord 5.00
NIC Bank Ltd 0rd 5.00
Standard Chartered Bank Ltd Ord 5.00
Equity Bank Ltd Ord 0.50
The Co-operative Bank of Kenya Ltd Ord 1.00
COMMERCIAL AND SERVICES
Express Ltd Ord 5.00
Kenya Airways Ltd Ord 5.00
Nation Media Group Ord. 2.50
Standard Group Ltd Ord 5.00
TPS Eastern Africa (Serena) Ltd Ord 1.00
Scangroup Ltd Ord 1.00

Uchumi Supermarket Ltd Ord 5.00
Hutchings Biemer Ltd Ord 5.00
Longhorn Kenya Ltd
CONSTRUCTION AND ALLIED
Athi River Mining Ord 5.00
Bamburi Cement Ltd Ord 5.00
Crown Berger Ltd 0rd 5.00
E.A.Cables Ltd Ord 0.50
E.A.Portland Cement Ltd Ord 5.00
ENERGY AND PETROLEUM
KenolKobil Ltd Ord 0.05
Total Kenya Ltd Ord 5.00
KenGen Ltd Ord. 2.50
Kenya Power & Lighting Co Ltd
Umeme Ltd Ord 0.50
INSURANCE
Jubilee Holdings Ltd Ord 5.00
Pan Africa Insurance Holdings Ltd 0rd 5.00
Kenya Re-Insurance Corporation Ltd Ord 2.50
Liberty Kenya Holdings Ltd
British-American Investments Company (Kenya) Ltd Ord 0.10
CIC Insurance Group Ltd Ord 1.00
INVESTMENT
Olympia Capital Holdings ltd Ord 5.00
Centum Investment Co Ltd Ord 0.50
Trans –Century Limited
INVESTMENT SERVICES
Nairobi Securities Exchange Ltd Ord 4.00
MANUFACTURING AND ALLIED
B.O.C Kenya Ltd Ord 5.00
British American Tobacco Kenya Ltd Ord 10.00
Carbacid Investments Ltd Ord 5.00
East African Breweries Ltd Ord 2.00

Mumias Sugar Co. Ltd Ord 2.00
Unga Group Ltd Ord 5.00
Eveready East Africa Ltd Ord.1.00
Kenya Orchards Ltd Ord 5.00
A.Baumann CO Ltd Ord 5.00
TELECOMMUNICATION AND TECHNOLOGY
Safaricom Ltd Ord 0.05
GROWTH ENTERPRISE MARKET SEGMENT
Home Afrika Ltd Ord 1.00

Source; Nairobi Securities Exchange website