EFFECT OF EXCHANGE RATE VOLATILITY ON STOCK MARKET RETURNS AT THE NAIROBI SECURITIES EXCHANGE

BY

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DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

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

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DEDICATION

This research is dedicated to my loving family, for the support, encouragement and prayers during the entire period of my study.

God bless you

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LIST OF ABBREVIATIONS

AFC   Africa Finance Corporation

CBK   Central Bank of Kenya

CFO   Chief Finance Officer

CMA   Capital Market Authority

EMH   Efficient Market Hypothesis

GBP   Great Britain Pound

GDP   Gross Domestic Product

KES   Kenya Shillings

NSE   Nairobi Securities Exchange

SPSS   Statistical Package for Social Sciences

UK   United Kingdom

PPP   Purchasing Power Parity

USA   United States of America

ABSTRACT

In the recent past and specifically 2015 and early 2016, the Kenya shilling was depreciating in value and at the same time the NSE 20 share index and all-share index were also declining. Different opinions have been given towards the fall in the indexes. The main argument is that a weak currency increases the finance cost of the listed company leading to increased debt and relatively less profit. Athi River Mining, one of the listed companies has been experiencing this problem due to the amount it owes to a Lagos-based Africa Finance Corporation (AFC). This has led its reduction in profits and share price. The main observation against this relationship is that despite the Kenya shilling weakening, stock prices have increased in some sectors of the economy e.g. the agricultural sector, whose current stock prices has increased due to cheap exports.

This study thereby confirms if this reason given by analysts is true and whether investors, borrowers, stock brokers and the regulatory authority can use this study to predict the stock market performance. This research sought to determine the relationship between exchange rate volatility and stock market performance in the Nairobi Securities Exchange. Three major theories relating to the two variables are introduced to explain the relationship. Results of different scholars who have conducted their studies in stock markets across the globe will be presented in this research and an explanation of how they arrive at their conclusion.

Descriptive research design was adopted for this study in which secondary data from the Central Bank of Kenya was gathered over the period January 2007- June 2017. The collected data was analyzed by use of Statistical Package for Social Sciences (SPSS) version 21. Regression and correlation analysis were done to determine the effects of exchange rate volatility on the performance of the stock market. Other macro-economic factors i.e. Inflation volatility and interest rate volatility were also included to determine the impact it had on the performance in the stock market. It was established that exchange rate volatility is among the determinants of stock market performance though not very key.

Lastly, results showed evidence of time varying in stock market returns and from the asymmetric model, results indicate that bad news has larger impact on stock volatility than good news in the NSE using change in inflation, whereas the opposite, was established for inflation itself. Secondly, results show that inflation is one of the underlying determinants of stock market volatility. But, previous inflation change was found to have less impact compared to inflation rate itself on stock returns. These results, therefore, would be useful to investors and other market operators in making good portfolio decisions and for stemming the adverse effect of inflation on stock market.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Inter-temporal link between returns in stock and exchange rates has become a major concern to economists for varied reasons, as both contribute immensely towards influencing the level of economy expansion in a country. Persistent upsurge in capital movements and trade in world have rendered exchange rates key equity price and business profitability determinants (Kim, 2003). The impact of exchange rate on both output and input price directly determine the value and international competitiveness of firms (Joseph, 2002). The fluctuation of foreign exchange normally plays quite a crucial role in the decision that investors will take in relation to taking up investment opportunities. This availability to evaluate risk has majorly been brought about by the fact that a decline in foreign exchange fluctuation usually leads to risky investment decisions (Muriu, 2003).

This study will be based on three theories. Efficient Market Hypothesis (EMH) by Fama (1981) described that the existing price of a stock reflect the information acquired about an organization's value and it is difficult to make extra earnings by use of available information. The EMH theory supports this study in that the returns at the stock market reflect happenings in the exchange rates disparity. The Purchasing Power Parity Theory, developed by Cassel (1918) which examines the exchange rates across different countries and how they relate is another theory that will guide this study. This study is also centered on International Fisher Effect theory established by Fisher (1930) which states that considering the possibility of arbitrage opportunities

across financial markets of any two countries, the real interest rates of these countries should be equal.

The Nairobi stock exchange (NSE) takes an extensive past going back to the 1920's. It comprises a number of listed companies under the four main market segments (Jumah, 2003). Companies listed on this market are a no exception of the effects of adverse exchange rate movements. During the last five years, the Kenya Shilling exchange rate has unrelentingly exhibited a significantly greatnotch of unpredictability responding to inconsistent variations in international aversion of risk and has lost ground to the US Dollar as a result of the USD strengthening against world currencies(Mugambi & Okech, 2016).

1.1.1 Exchange Rates Volatility

A primary condition that is needed for a common market currencies trading is that particular currency must be quoted in relation of the other. A rate of exchange is the one currency price quoted in relations of another (Mishkin & Eakins, 2009). Quotations in rate of exchange can be direct that is the quantity required of home currency to exchange to a given foreign currency unit or quotation that is indirect is the foreign currency units obtainable from the home currency (Howells & Bain, 2007). Exchange rate is called the nominal rate of exchange when inflationary repercussions influencing the rate are included though it is called the real rate if these effects have not been included in the rate. Before the year 1972, countries in the world operated on a fixed rate regime where every country's currency was quoted against the dollar (Lothian & Taylor, 1997).

The significance of exchange rate is that it can be adjusted continuously relative to demand and supply of foreign exchange in a given economy. It generates equilibrium

between demand and supply by affecting the exchange rate without influencing the reserve level. This allows a country to be flexible in the pursuit of monetary policy without being concerned about effects on the balance of payments. Exchange rate movements reflect external shocks and imbalances which do not have an effect on movement in reserves and does not need the intervention of the central bank to control the process of adjustment. By use of the flexed exchange rate system, pricing of currencies is hence a result of forex market demand forces and supply forces (Ndungu, 2001).

In freely floating system of rates of exchange, the foreign currency worth in regards to the local currency is dependent on law of supply and demand like other commodities and services selling in the market. In a system of exchange rate that is fixed, a par value rate is set by the central bank between the local currency and the foreign currency. The rate might be changed over the trading period (Ndungu, 2001).

1.1.2 Stock Market Returns

This is the yield obtainable by an investor in a quantified period which is occasionally well-thought-out as synonymous to prices of stock. A market is considered strong if it is one that integrates innovative facts on stock prices hence resulting to the stock prices valuation stability and accuracy (Mwangi & Mwiti, 2015). Stock market returns have projective investment power and output since stock market returns are a forward-looking variable that incorporates expectations about future cash flows and discount rates. Stock market returns serve as an index to investors or governments in making their investment decisions. Investors of different financial capacity do investing in the stock market as long as they will get a yield that is higher than their cost of capital (Wang, 2012).

Stock returns determine the effectiveness and efficiency of stock markets in the allocation of equities and shares based on the availability and preference of the market information. The variations in stock prices increase the uncertainty levels of investors which in turn influence the stocks' demand and supply (Taofik & Omosola, 2013). Stock markets and shares are highly sensitive to any information which directly or indirectly influences price .Stock markets are relevant for predicting future market development and trends (Širucek, 2013). Firms and other corporate bodies attain higher profitability and contribute to economic prosperity when the stock returns level is higher (Aliyu, 2011). Therefore, return in stock markets uncertainty is a vital aspect of economic growth. Unstable economic trends make investment and consumption difficult in a country (Erdugan, 2012).

Stock return is the gain or loss of the value of a share in a particular period usually quoted as a percentage. It consists of capital gains as well as any income received by the investor from the stock (Mugambi & Okech, 2016). Stock performances are often measured using market indexing. Market capitalization is one of the measurements of stock performance; It measures stock market size and liquidity in stock market which is easiness through which the investors can trade securities. Others include Turnover ratio; which is an index of comparison for the level of transaction costs and market liquidity rating and the All Share Index; which reflects the performance and the condition of the stock market (Daferighe & Sunday, 2012). In Kenya, stock returns are normally calculated by the NSE 20 share index as it is often used as a benchmark for stock performance measurement.

1.1.3 Effect of Exchange Rate Volatility on Stock Market Returns

The rate of foreign exchange has been among the major financial and economic factors affecting common stocks value and cash flows. The fluctuation of currency prices begun subsequently due to the drop of the post-war Bretton Woods fixed exchange rates in the 1970's (Rose, 2000). The adoption of the floating exchange rate regimes in many nations and rapid expansion of international trade has led to increased volatility of the exchange rates. Karolyi (2001) asserts that as globalization and economic integration increases every year, both the financial and non- financial firms use exchange rate movements to manage risks. Jumah (2013) opines that exchange-rate movements influence the corporate expected cash flows which intern influence stock returns, by changing foreign currency' home currency value denominated costs and revenues and the competition terms for firms and multinationals with international activities.

Pan, Chi-Wind and Angela (2007) pointed out that constant rising fluctuations in stock prices are normally indicative of economic developments, which light growth of money as commercial banks respond to growing demand for supplementary loans. Growing money demand will consequently result in an increase in interest rates; rising interest rates in turn cause domestic currency increase as well as capital inflows. This means that stock price changes may impact outflows and inflows capital, which consequently results in domestic currency changes in exchange rate.

Aggarwal (1981) shows that there exists a positive exchange rate change impact on the US stock market, while Solnik (2000) reveals that exchange rate fluctuations can considerably affect the values of firms, and the foreign currency value disparities in denominated assets. According to Bodnar and Gentry (1993) research on Japan,

Canada and the US organization's stock prices and exchange rate movements, their findings show that the causality direction goes from rates of exchange to prices of stock.

Rey and Hau (2006) suggested that equity and foreign exchange performance bear a negative correlation due to portfolio rebalancing. This is based upon a viewpoint of a foreign institutional investor with the funds invested in the US. A rise in the US stock market relative to the foreigners market, over weights the investor with American equities. To bring back their portfolio to a favorable position, they sell and reduce their holding of US stocks and sell the US dollar for local currency. Selling of dollars leads the dollar to depreciate at the same time that American equities are outperforming other markets; tying in with the uncovered equity parity condition (Melvis & Prins, 2015).

1.1.4 Nairobi Securities Exchange

The NSE, a self-regulating firm in Kenya is an emergent market that's draws its membership from stock brokers, dealers and investment banks dealing with instruments listed (Muituri, 2014). Securities traded at NSE are bonds and shares that constitute the markets two broad segments, i.e. the Market Segment that is Main Investments and the other one which is for Alternative Investments typically categorized by its liquidity, market capitalization and turnover, the NSE may be classified as both emerging market and frontier market (Wabwire et al., 2013). The exchange is made up of over 60 active listed companies with a daily trading volume of over US $5 million and a total market capitalization of approximately US $15 billion. Apart from equities, government and corporate bonds are also traded on the exchange with an average of daily bond trading of US $60 million (NSE, 2016).

The NSE has been on a bear run over the recent past with most stocks losing an estimated 31% of their listed value in 2015 (Business Daily, 2015). The most affected sectors were Banking and Insurance. The poor performance in the last two years was not only caused by rising interest rates along with weakening of the shilling, but also by the mass exit of foreigners. According to Business Daily (Dec 29, 2015), "The NSE 20-Share Index is down 23 per cent since the beginning of the year while the overall market, as captured by the NSE All-Share Index, has declined 12 per cent over the same period". However, it is expected that the NSE is on a recovery stretch.

As a result of the adoption of the floating exchange rate system, there has been a considerable foreign exchange rate movement observed at the NSE and this has seen the Kenya Shilling (KES) depreciating against the world's major currencies. A decreasing trend has also been observed in regards to the NSE all-share-index and the NSE 20 share index. The exchange rate movements have had an implication on the prices firm's shares registered in the exchange (Mwangi, 2013). There have been both positive and negative movements of foreign currencies affecting share prices and the overall firm value.

1.2 Research Problem

The study on exchange rate volatility has drawn various studies with most of them concluding that fluctuations in the stock market returns continue to be directly interconnected with exchange rate volatility. According to Fama (1970), the returns at the stock market are perceived in terms of market efficiency. The point of stock market efficiency depends on the speed and accuracy within which macroeconomic variable information is built into the stock market returns. According to Lee (2010), depreciation of the local currency could lead to improved stock performance since this

depreciation could lead to cheaper exports hence more demand of commodities leading to increased cash flows and profits due to increased sales hence share price. Depreciation could also lead to increased interest cost on loans hence a reduction in cash flows and as a result share price demand. An increase in the stock market index will attract foreign investors to diversify shares in that stock market leading to investors demanding that currency hence currency appreciation.

In the recent past and specifically 2015 and early 2016, the Kenya shilling was depreciating in value and at the same time the NSE 20 share index and all-share index were also declining. Different opinions have been given towards the fall in the indexes. The main argument is that a weak currency increases the finance cost of the listed company leading to increased debt and relatively less profit. Athi River Mining, one of the listed companies has been experiencing this problem due to the amount it owes to a Lagos-based Africa Finance Corporation (AFC). This has led its reduction in profits and share price. It would be easy to conclude the existence of a constructive association between rates of exchange and returns in stock market based on this observation but some observations suggest otherwise. The main observation against this relationship is that despite the Kenya shilling weakening, stock prices have increased in some sectors of the economy e.g. the agricultural sector, whose current stock prices has increased due to cheap exports.

Empirical evidence is largely inconsistent and quite varied on volatility of foreign exchange rate impact on stock market returns. Benita and Lauterbach (2004) maintained that fluctuations in rate of exchange have costs in economy that impact inflation, productivity and economic stability of a firm. Sekmen (2011) examined how exchange rate volatility affects United States' returns in stock and exposed that United

States' stock returns are influenced negatively through exchange rate variations. Owoeye (2013) studied exchange rates volatility and performance of Nigerian banks and found insignificant effect. Kolari, Moorman, and Sorin (2008) found stock returns said to be uncertain and to be very sensitive to foreign exchange risk. Pilinkus (2009) explained that the relationship only exists in the short run where exchange rate and other macroeconomic variables affect the stock market. A study by Liu (2013) in the Chinese market revealed an association that is inverse between depreciation and stock market returns.

Locally, Omondi and Olweny (2011) carried out a study on foreign exchange and its influence on the stock market and found that there was a low and significant magnitude of volatility. Chirchir (2011) investigated the relationship between foreign exchange rates and share prices in Kenya during the period from November 1993 to April 2011 and found out that exchange rates have an influence on share prices in the Kenyan market. Ambunya (2012) interrogated how exchange rate movement relates with the stock market returns volatility at the NSE between January 2007 and December 2011. The results revealed that a strong correlation existed between exchange rate movement and stock market returns volatility. Makeri (2014) researched on the association between exchange rate volatility and stock market performance and noted that exchange rate volatility had no significant effects on the performance of the stock market. Jumah (2013) established a weak correlation between exchange rate volatility and stock market returns. From the above discussion of previous studies it is clear that there is no consensus on this area of study. Ambunya (20120 found a strong significant correlation while Makeri (2014) found no significant effect. The current study will seek to identify how exchange rates volatility influence stock market returns at the NSE. It will attempt to give an explanation to the

research question, what is the effect of exchange rate volatility on stock market returns at the NSE?

1.3 Objectives of the Study

To determine the effect of exchange rates volatility on stock market returns at the NSE.

1.4 Value of the Study

The study finding forms a future reference to researchers, scholars and students who might desire to carry out research on the similar or interrelated field. The study will be supportive too to scholars and researchers in additional extents of research identification on other correlated studies through emphasizing interconnected matters requiring further study and rereading the empirical literature to launch research areas.

Value of this research is to the various managers who are tasked with the management of companies listed on the NSE; this study provides useful information and recommendations to assist them in making more informed management decisions leading to shareholders' wealth maximization. The study increases the pool of knowledge available to assist both NSE listed companies and firms seeking to list in future to improve their performance and ensure sustainability.

To government and organizations such as the Capital Markets Authority and the Central Bank, in the formulation and implementation of policies and regulations governing monetary policies and exchange rates to ensure stable currency rates so as to promote economic growth and reduce its spiral effects on the economy. This will contribute to the advancement of monetary development and improvement the economy.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the theoretical framework applied in the study and former researches assessments done on exchange rates volatility and stock market returns. It contains the theoretical review, determinants of stock market returns, empirical review, the conceptual framework and finally a literature review summary.

2.2 Theoretical Framework

This presents review of the relevant theories that explains the association between volatility in exchange rate and returns in stock market. The theoretical reviews covered are; Efficient Market Hypothesis, Purchasing Power Parity and the International Fisher Effect theory.

2.2.1 Efficient Market Hypothesis (EMH)

The Efficient Market Hypothesis (EMH) postulates that at any given time, stock prices of an efficient market reflect all the available information (Fama, 1965). The implication of this hypothesis is that no investors can "beat the market" and gain abnormal profits given that stocks are traded at their intrinsic value. Therefore, investors wanting higher returns can only do so by making riskier investment decisions as opposed to market timing and stock selection. This hypothesis assumes that traders are rational and that stock prices rapidly regulate to assimilate any fresh statistics. Later in 1965, Fama affirmed the Random Walk Hypothesis (RWH), which is consistent with the EMH. RWH holds that stock prices are independent of each other and follow a random pattern, and cannot therefore be forecasted using previous market data.

Fama (1965) classified EMH into three basic levels. These levels of efficiency in market are of robust form, Semi-strong form efficiency, and Weak-form efficiency. In Strong-form, prices of stockecho all data presented, both private and public; in Semi-strong form, prices of stockecho only openly accessible information to the public; whereas, in Weak-form efficiency, stock values replicate all relevant historical data available. Despite all these, stock markets often exhibit certain patterns that could lead to abnormal returns; these are referred to as market anomalies, for example, the January effect, neglected firms effect, day-of-the-week effect, small firms effect, etc.

Despite the EMH being the backbone of financial markets, it has a fair share of critics. The main point of contention being that the EMH assumes that investors are rational in their dealings, they have access to all available information and that their market expectations are homogenous. These assumptions beat the point of trading after all given that trade signals existence of heterogeneous expectations. While the seller expects a dip, the buyer anticipates a rise in the stock price, and hence bears and bulls. Also, it is not practical for all market participants to have the same information; if it were so, there would be no need for communication. Likewise, behavioural economists do not agree with the notion of rational investors, it purports irrational exuberance (Shostak, 1997). This theory is related to this study in that if markets are efficient, then exchange rate volatility should be immediately be reflected in the stock prices and so investors would not beat the market.

2.2.2 Purchasing Power Parity Theory

The Purchasing Power Parity (PPP) was established to examine the correlation between the rates of exchange of diverse countries in 1920 by the Swedish economist Cassel. The theorem seeks to explain the association between relative goods prices

and their individual rates of exchange. The PPP theorem proposes that during a regime of floating exchange rate, whichever purchasing power parity adjustment for two currency calculated as a ratio of price for goods traded would incline to approximation by an equivalent but contrasting equilibrium change in exchange rate of these two currencies rates move to offset the inflation rate differentials. The PPP asserts that the rate of exchange of two currencies must be alike to the price level ratio of undistinguishable services and goods in these countries. The Purchasing Power Parity theorem expounds on the connection between exchange rates and comparative good's prices (Imbs et al., 2002).

PPP theorem can be drawn in past in Spain to sixteen-century, though Swedish economist Cassel named the theory PPP first. Cassel at one point argued that in deficit of it, all the ways would be meaningless in discussing a currency mispricing. Absolute PPP theory was presented first with aim of dealing with the good's price relationship with different currencies value. This theory necessitates very strong prerequisites. Normally, Absolute PPP grasps in an incorporated, viable product market with the implicit assumption of a world that is risk-neutral, though which trading of the goods can be done spontaneously eliminating transportation costs, tariffs, export quotas, and so on (Dwivedi, 2002). Nevertheless, in actual society it is impractical to have assumption that no transport costs of goods are needed to facilitate mobility. In the real world, every economy yields and guzzles thousands of commodities and services in tens, numerous having unlike prices from country to country caused by costs transportation, tariffs, and other trade barriers (Kanamori& Zhao, 2006).

According to the PPP, making price of indistinguishable goods relatively the same through countries will be when there is an upsurge in the country's price level

resulting into the downgrading of its rate of exchange as compared to other countries. This theory suggests that, when the Law of One Price grips the rate of exchange change is usually offset by relative price indices/inflation. PPP trails from the law of one price that conclude that goods which are identical will have same prices in selling upon been valued in similar currency in competitive markets. It relates to product in individual level and its overview is the PPP absolute version. Relative PPP does not relate to absolute price levels but have connection to prices changes and rates of exchange. It states that with constant structural relationships, an adjustment in rates of exchange is proportional inversely to the ratio change of the price levels in two nations (Hau, 2002).

The PPP theorem relates prices to exchange rates therefore implying that good's prices and service's prices will incline to change with changes in exchange rates. Stock prices, being not an exception from these prices described in the theory, will therefore change in relation to exchange rate changes, if the assumptions of the PPP theory are to hold. Relying on the theory, it is therefore possible to draw an association flanked by rate of exchange movements and prices of stock, which will most certainly be followed by fluctuating returns in the stock markets.

2.2.3 International Fisher Effect Theory

The International Fisher Effect (IFE) is an exchange rate framework established by Irving Fisher in the 1930s. This theory implies that fluctuations in the rate of exchange between states is derived from differences in their nominal interest rates. Differences in nominal rates between nations will results to a currency rise of the state with the lower nominal rate. The rationale being that the nation having rate of interest higher regime will similarly have price index which is higher, causing currency

depreciation in the high interest economy vis-a-vis the nation experiencing a lower interest rate level.

Fisher (1930) tested the common stock and his studies revealed that the nominal return expected on a share includes a real return rate plus the inflation rate expected. Additionally, the study proved that indeed there existed a negative and unfavorable correlation between the return on stocks and the inflation which is expected together with the changes in the amount of unexpected inflation (Kaul, 1987). Gultekin (1983) tested the Fisher hypothesis using a sample of 26 countries using time series and cross-sectional analyses. The results of his time series analysis were unfavorable compared to the Fisher Hypothesis, while the cross-sectional study revealed that nations with increased rates of inflation often had high nominal returns on shares and in this case contrasted the results of the time series.

Fama and Schwert (2002) demystified the general understanding of the fisher effect by publishing that if a particular market was a perfect market that analyzed and reflected the information available at a particular time t-1, then this would incorporate the precedence of the price of common shares such that the nominal return expected from t-1 to t would be the same as the total of the required equilibrium that would be anticipated by real rate and the particular assessment of the market's rate of inflation expected for a similar period of time investors usually reduce their investment from financial assets and increase their real assets when it is anticipated that the inflation rate would increase. Hence, according to the research and analysis by Fama the equities normally represent claims to real assets and hence act as hedges against the inflation, which therefore suggests that the expected inflation rate is correlated to a positive stock price and appreciation in stock price (Dimand, 2003).

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2.4 Determinants of Stock Market Returns

Returns in stock market is a matter of great interest to the stock market investors, in that it directly affects the wealth they hold. Key factors thought of playing a part in the overall stock markets performance are as follows:

2.4.1 Exchange Rates Volatility

Exchange rate volatility may have effect on the relative prices, thus the local and foreign producer's competitiveness. A substantial increase of the local currency results in locally goods been expensive as related to goods that are foreign hence shifting the demand away to goods of foreign nature. Appreciation of currency in circumstances of an export-oriented country, it is anticipated that there will be competitiveness a reduction in her exports causing an impact influencing negatively the stock market domestically(Kirui, Wawire & Perez, 2014).

Dwivedi (2002) blames the foreign exchange volatility on high technological levels in the developed nations. He argued that the industrialized produced a lot of surplus commodities which increased their export volumes their foreign currency's supply in the domestic countries leading to the currency depreciation; thus increased the exports commodities prices and a subsequent reduction in value. Some currencies are perceived to be more risky than others, especially those in the developing nations. A fight to safety occurs when the fundamentals of the global economy are suspicious. Flight to safety is a situation whereby the investors only hold safe investments and avoid riskier investments.

2.4.2 Inflation

Tucker (2007) in his works describes inflation as the general increase in the standard price levels of services or goods in any given economy. Inflation is referred to as an

overall increase in the average level of prices and not specifically in relation to a unit of a given product or service. Sloman and Kevin (2007) in their research paper expound that inflation could take the form of either demand pull inflation which is brought about by increase in demand of goods or the form of cost push inflation. Demand-pull inflation arises as a result of a general rise in the market demand in general which results to higher prices and partially increases of the output in a given economy. Cost push inflation is caused by the rice in the levels or cost of production which may affect the firms thus resulting in the companies charging the consumers more (Hendry, 2006).

Higher inflation rates lead to higher prices for consumers which tend to slow business and reduce earnings for firms. Higher prices also tend to trigger a higher interest rate regime. Fama (1981) argued that inflation would have a negative correlation with real economic activity, which in turn would have a positive association to market performance. Thus, the stock index should be negatively correlated with the anticipated price level, with short-term interest rates serving as the proxy similar to the International Fisher Effect.

2.4.3 Interest Rates

The interest rate is an income function. Having key role of helping in mobilizing of financial resources and ensuring the resources utilization efficiency in the advancement of economic growth and development (Osoro & Ogeto, 2014). The rate of interest can also be said to be the yearly worth charged by an investor to a debtor so as to secure a loan and is articulated frequently as the total amount loaned percentage The neoclassical theory of interest rate states that, the cost of loans for investment by

entrepreneurs becomes costly when there is an upshot in interest rates, therefore, investment activities in an economy shrinks as a result (Barnor, 2014).

The interest rate is considered the capital cost and rise or a fall in rate of interest may influence the investment choice of the venture capitalist (Olweny & Omondi, 2010). Accordingly, Rehman, Sidek and Fauziah (2009) argue that rates of interest or discount rates that are high usually reduces the cash flows present value, hence a rise in the interest rate rises the opportunity cost of retaining cash, later on leading to a substitution effect between stocks and other interest bearing securities like bonds. According to Barnor (2014), a rise in interest rate influences investing decisions, thus investors make modifications in their structure of investment, commonly from capital market to income securities which are fixed.

2.4.4 Money Supply

Money supply comprises of the legal tender of a country and all other liquid instruments flowing through economy at a particular period of time. It could consist money in form of short term investments, the coins and notes currency, safe assets, cash and bank balance held in the savings and currents accounts. The economy of a country is affected by the money in supply and therefore the monetary authority has to regulate the amount in circulation through the monetary policies (Osamwonyi, 2003).

Tobin (1969) found a clear relationship of movement between the monetary policy and the stock market. The study laid emphasis on the importance of stock returns as a connection amongst the economic results. The study established a clear link in the economy and the stock returns. He also demonstrated that growth in money supply led to deficits in budgets that eventually affected stock returns.

2.4.5 Company News and Performance

The securities markets are affected profoundly by rumors and news. The news can affect the sentiments and prospect of the investors and performance of corporations as people construe news differently depending on their own cognitive power. The enterprise particular factors that may influence the share price include: change of management; earnings news releases, profits and future projected earnings; declaration of dividends; introduction of new products; obtaining a new large contract; accounting errors or scandals; employee layoffs; and expected takeover or merger (Alanyali, Moat &Preis, 2013).

Certain enterprises are exposed more to own-industry specific circumstances as opposed to the wide conditions of the economy thus investors monitor price movements of the industry's products, entry into the industry and industry sales forecasts. An improvement in dividends may signify the prospect that the company can certainly afford to pay more dividends. The declaration of less than anticipated incomes can lead to investors trimming their company's valuation of stock and flows. The diversities are often considered as an encouraging indicator about a company if the stripped assets isolated from the company's core business. This naturally leads to an enhanced stock demand and as a result increases stock prices (Mayo, 2016).

2.4.6 Market Sentiments

Muriuki (2013) noted that market sentiment entails the sensibility of market contestants, independently as well as communally. This possibly is the annoying class since we know it is substantial disapprovingly, but we start to comprehend it. Market sentimentality is normally personal, unfair and fixed. For instance, it is possible to make a concrete verdict concerning a stock's forthcoming development predictions as

well as the future might even authorize your forecasts, nonetheless temporarily the market may shortsightedly dwell on a single piece of newscast that keeps the stock theatrically high or low.

Market sentimentality is being discovered by the comparatively new arena of social money. It begins with the supposition that social money are actually not effectual more time, and this inadequacy could be elucidated by thinking and other communal disciplines. The notion of applying communal science to economics was completely legalized when Daniel Kahneman, won the 2002 Nobel Memorial Prize in Economics. Numerous of the thoughts in interactive business approve noticeable doubts: that stakeholders tend to exaggerate data which emerge effortlessly to mind; that numerous stakeholders respond with superior pain to losses than with preference to equal gains; and that shareholders tend to carry on in an error (Muriuki, 2013).

2.5 Empirical Review

There are numerous empirical studies both locally and internationally supporting the relationship between rates of exchange and market returns of stock, but these researches have produced mixed results.

2.5.1 Global Studies

Tumwebaze (2011) studied the effect done on the profitability of export companies as a result of foreign exchange rate volatility. He did this by taking a case of a multinational firm. The study targeted employees of Mairye Estate Limited and selected 63 respondents. The findings revealed that differentials in terms of trade, high levels of inflation and interest rates, cause exchange rate volatility. While profitability levels of a company are determined by the sales volume, export companies' profitability is normally determined by the foreign exchange volatility.

This implies that profits are affected negatively by unfavorable volatility while positively affected by favorable volatility. This study concentrated on the impact of exchange rate volatility on profitability and not stock market returns which the current study seeks to address.

Pal and Mittal (2011) conducted an analysis on the Indian Capital Markets and exchange rates relationship, inflation rate, gross domestic savings and interest rates of India economy which are the key macroeconomic variables. That study was conducted for a period of fourteen years commencing January 1995. The tests applied on the study were the error correction mechanism, co-integration test and the unit rate interests. The results of that analysis concluded that there was dependence relationship on indices of capital markets and rates of exchange, gross domestic savings, inflation and interest rates even though it may seem that theyare not statistically significant in all the areas. This study concentrated on exchange rates but not its volatility and this forms the basis of which the currents study pursues to investigate.

Osamwonyi and Evbayiro-Osagie (2012) explored correlation between variables of macroeconomic nature and the Nigeria capital market index. The research covered the period from 1975 to 2005 and data for each year was used. The macroeconomic economic variables that were selected for the study were rates of interest, rate of inflation, GDP, exchange rate, fiscal deficit and supply of money. The Vector Error Correction Model was used for analyzing data to establish the short run and long run connection between macroeconomic variables and the stock market index. It was concluded that there was an effect on the stock market index in Nigeria that was brought about by particular macroeconomic variables. The study used annual data for

analysis which may not as effective as monthly data that the current study seeks to use.

Kuwornu (2012) explored the influence of macroeconomic variables on the market returns of stock in Ghana by means of statistics collected on monthly basis from Jan 1992 to Dec 2008. The Johansen multivariate co-integration procedure was employed in the study. The study's' results revealed that no co-integration existed between the exchange rate, inflation, 91-day Treasury bill rate, crude oil prices and the Ghanaian stock returns thus indicating long run equilibrium associations. The results also revealed that inflation rate and Treasury bill rate influence to a large extent the returns of stock in the short run. In addition, the study found out that in the end this returns are largely influenced by crude oil prices, rate of inflation, the rate of Treasury bill and exchange rate. This study measured exchange rates but did not take into account its volatility. The study also dealt with several macro-economic variables unlike the current study seeking to determine the impact of rate of exchange volatility on stock market returns.

Alexeev and Parlapiano (2013) explored the preparedness of the European companies to unanticipated fluctuations in exchange rate and the Euro against the currency of the trade partners of Europe: UK, Japan and the USA. Monthly data of between the periods 1999 to 2011 was used and the underlying macroeconomic fundamentals were also accounted for. The analysis covered 600 firms - constituents of the Euro Stoxx 50 and Euro Stoxx TMI. The study observed the country of origin, international level involvement, firm and industry size associated with the exposure to risks of exchange. The results indicate that the Yen has the maximum effect on of European firms' market value amongst the 20 currency pairs studied. The financial sector was also

noted to be the most influenced. The impact was also noted to be greater for large capitalization firms and non-exporters. This study was conducted in developed countries and therefore its finding cannot be generalized in Kenya which is a developing country.

Ilahi, Ali and Jamil (2015) study focused on the comparative connection that existed between on the Pakistan's macroeconomic variables on stock market yields. The Pakistan Karachi stock exchange 100 index was used as an alternative representing the relationship between stock market yields and exchange rate, rate of interest and rate of inflation. The study also utilized secondary data for time period between January 2007 to December 2012. The multiple linear regressions were adopted in the study for data analysis and there existed a weak connection between the stock returns and the macro economic variables. This study concentrated on exchange rate and not exchange rate volatility. In addition, the context was different and therefore the findings cannot be generalized in the local context.

2.5.2 Local Studies

Mang'oli (2013) studied the relationship that the profitability of airlines in Kenya had with their foreign exchange risk management. The study sampled the 26 out of 46 airlines operating in Kenya. This study used secondary and primary data was used in the study. The study found out that a positive effect existed between Kenya's airlines profit and the management of foreign exchange. The study also found out that all the airlines sampled had a risk management and a foreign risk management policy headed by a Risk Manager. The results indicated that airlines often used forwards, futures, money market contracts, options and swaps for hedging in the order of merit. It was also noted from the study that the airlines using contractual money are fully hedged,

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forwards and futures are partially hedged swaps and options. It also found out that most respondents indicated that the percentage of exchange rate exposure the company was hedging was over 80%. Finally, the study found out that all airlines sampled measured the success of foreign exchange rate risk management policy monthly. This study focused on foreign exchange risk management and not exchange rate volatility which the current study seeks to investigate.

Ouma and Muriu (2014) study was interested in establishing the influence of the macroeconomic variables on stock returns for the period 2003 to 2013 in Kenya. Monthly data for the period was used and it was collected from secondary sources. The study applied the Capital Asset Pricing Model (CAPM)and the Arbitrage Pricing Theory (APT) theories to provide a framework for their study. To test for validity of the model, Ordinary Least Square (OLS) technique was applied. The study seeks to understand how stock returns are influenced by the macro-economic variables. The study's outcome confirmed that there was a significant impact on the stock market yields in Kenya attributed to the money supply, exchange rate and inflation rate. The exchange rate was however noted to adversely impact the stock market earnings for the period of the study. This study was conducted using exchange rates as the independent variable affecting stock returns. However, volatility of exchange rates was not taken into account.

Furukha (2014) studied the association between the rate of foreign exchange volatility and the worth of multinational firms listed at Nairobi Securities Exchange. An audit on the multinational firms listed in the NSE's foreign exchange trading activities reveal the main drivers leading to a rise in the number of activities during the period of study were identified as shortening of the tenor of currency swaps, "reverse carry"

deals, the use of Electronic Brokerage System (EBS) for foreign exchange trading and the preference by Kenyans to hold their wealth inform of foreign currency. The study findings showed that there was high volatility in foreign exchange rate within the first quarters. The volatility reduced, almost evened out between the second and third quarter of the year before increasing in the beginning of the third quarter. This study focused on value of listed multinational firms while the current study will concentrate on stock market returns of listed firms.

Wanjiku (2014) established the impact of selected macroeconomic variables (inflation rate, interest rates and exchange rate of dollar versus Kenya shillings) on the Pension Funds returns in Kenya. The study had 36 data points of observations and quarterly data for the period that ranged from 2005 to 2013 was analyzed. The study established that pension funds' industry return for the period were highly subjective to the selected macro-economic variables. There exists a negative association between interest rates, exchange rates and inflation while the GDP positively influences industry returns. The study did not take into account the volatility influence on stock market returns and this is the gap the current study seeks to fill.

Kirui, Wawire and Onono (2014) assessed the linkage between Treasury bill rate, gross domestic product, inflation, stock market return and exchange rate in the NSE. The co-integration relationship between stock returns and the macroeconomic variables as tested using the Engle-Granger two-step and the volatility persistence and leverage effects were tested using the autoregressive conditional heteroscedacity model at the NSE. The outcomes of the study revealed that inflation, the Treasury bill rate and gross domestic product had insignificant associations. The exchange rate had a noteworthy influence on stock returns. This study investigated the impact of several

macro-economic variables while the current study seeks to explore on the effect of exchange rate volatility on stock market returns.

Mugambi and Okech (2016) studied the effects of macroeconomic variables on the stock returns on banks in the Nairobi Securities Exchange listing. The study employed secondary data from the CBK from 2000 to 2015. The study used correlation analysis, Unit Root test and the linear regression model to establish the relationship. The study findings revealed that interest rate, inflation, and exchange rate influence bank stock return significantly, while the impact of bank stock returns on GDP was insignificant. This study did not take into account volatility in its analysis. The current study will study exchange rate volatility using standard deviation of the exchange rate between KSH and USD.

2.6 Conceptual Framework

According to Kirui, Wawire and Perez (2014), variations in rate of exchange do affect the relative prices hence the competitiveness of foreign and local producers. Local goods are made expensive by a noteworthy rise of the local currency relative to foreign goods causing a demand shift from domestic to foreign goods. In circumstances where the country is export-oriented and there is currency appreciation, it is anticipated that there will be a decrease in the competitiveness of her exports, this therefore would have impact that is negative on the domestic stock market. According to Kuwornu (2012), the rise of currency in a country lowers the imported goods cost, which mostly form a large percentage of the inputs of production for emerging market countries. Consequently, when the local currency depreciates against foreign currencies, product prices in export will decrease, subsequently, the country's capacity of export will increase, and supposing that this product demand is elastic.

The conceptual framework gives a portrayal of how the factors identified are related to each other. The factors characterized here are stock market returns and volatility in foreign rate of exchange. The independent variable is the exchange rate volatility it is measured as the difference in the monthly average of the KES-USD exchange rate taken in natural logarithmic form. The control variables are inflation rates volatility as measured by average monthly change in CPI and volatility of interest rate as measured by the average monthly change in Treasury bill rate. Stock market return is the dependent variable which the study seeks to explain and it will be measured by the monthly average change of the NSE 20 Share Index in natural logarithmic form.

Figure 2.1: Conceptual Model

Independent variables
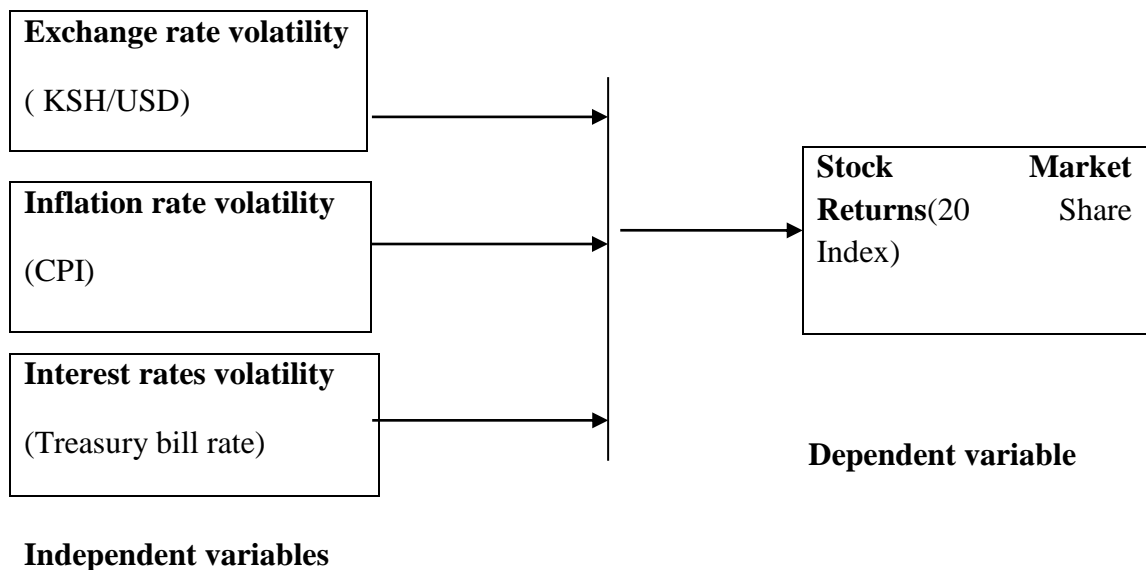
Source: Researcher (2017)

2.7 Summary of the Literature Review

Various theoretical frameworks have attempted to explain the concept of foreign exchange rate volatility. Three theories have been discussed in this theoretical review.

The theories are namely: efficient market hypothesis, the purchasing power parity theory and the international fisher effect theory. Some of the key determinants of stock market returns have also been discussed in this section. Several empirical studies have been conducted both internationally and locally on exchange rates volatility and stock market returns. The findings of these studies have also been discussed in this chapter.

Many studies have been carried out on the area of study but there is lack of consensus on the effect of exchange rate volatility on stock market returns. Some studies have found the effect to be significant (Kuwornu, 2012; Ouma and Muriu, 2014) while still others have found an insignificant effect (Pal and Mittal, 2011; Ilahi, Ali and Jamil, 2015). In addition, most local studies on exchange rate volatility have not been linked to firm stock market return. Tumwebaze (2011) explored the impact of foreign exchange volatility on export companies' profitability. Mang'oli (2013) studied the relationship that the profitability of airlines in Kenya had with their foreign exchange risk management. Furukha (2014) studied the association between the rate of foreign exchange volatility and the worth of multinational firms listed at Nairobi Securities Exchange. The current study will seek to identify how exchange rates volatility influence stock market returns at the NSE. It will attempt to give an explanation to the research question, what is the effect of exchange rate volatility on stock market returns at the NSE?

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes research methods applied to objectively establish the influence of exchange rates volatility on returns for stock market. It also shows the population of study, research design, a test of reliability and validity, collection of data and criteria of analysis.

3.2 Research Design

Research design is defined as cornerstone of those processes, which are used for establishing the relationship between dependent variables and independent variables by a researcher (Khan, 2008). Descriptive cross sectional design was adopted for the study. A descriptive study involves a description of all the elements of the population. It allows estimates of a part of a population that has these attributes. Descriptive approach is appropriate since the researcher seeks to examine the link between exchange rate volatility and stock market returns. Cross-sectional study methods are done once and they represent summary at a given timeframe (Cooper & Schindler, 2008).

3.3 Target population

Population is defined as all interest observations in a collection like of people or events in their entirety as described by a researcher (Burns& Burns, 2008). The population of the study comprised of all the 66 firms listed at the NSE from 1st July 2007to 30thJune 2017(See appendix I).

3.4 Data Collection

The data was exclusively collected from a secondary source. It is always a regulatory requirement for firms listed at the NSE to report their values annually to the Capital Markets Authority. Monthly data for ten years (July 2007 to June 2017) was collected and analyzed. The data distribution decided was on monthly to guarantee an acceptable quantity of observations. As the study was to focus on the NSE 20 share index, the research included all the companies that have been used to determine the index for the period between July 2007 and June 2017. Data for the independent variables; exchange rate figures and the CBK lending rate was obtained from the CBK while inflation data was gathered from the Kenya National Bureau of Statistics. Data for the independent variable; stock returns referenced by the NSE 20 share index was acquired from the NSE. The study analyzed the NSE 20 share index as it related to the quoted companies that are considered blue chip and have superior profitability and dividend indicated in the stock return.

3.5 Diagnostic Tests

Linearity show that two variables X and Y are related by a mathematical equation Y=bX where c is a constant number. The linearity test was obtained through the scatterplot testing or F-statistic in ANOVA. Stationarity test is a process where the statistical properties such as mean, variance and autocorrelation structure do not change with time. Stationarity was obtained from the run sequence plot. Normality is a test for the assumption that the residual of the response variable are normally distributed around the mean. This was determined by Shapiro-walk test or Kolmogorov-Smirnov test. Autocorrelation is the measurement of the similarity between a certain time series and a lagged value of the same time series over successive time intervals. It was tested using Durbin-Watson statistic (Khan, 2008).

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Multicollinearity is said to occur when there is a nearly exact or exact linear relation among two or more of the independent variables. This was tested by the determinant of the correlation matrices, which varies from zero to one. Orthogonal independent variable is an indication that the determinant is one while it is zero if there is a complete linear dependence between them and as it approaches to zero then the multicollinearity becomes more intense. Variance Inflation Factors (VIF) and tolerance levels were also carried out to show the degree of multicollinearity (Burns & Burns, 2008).

3.6 Data Analysis

The collected data was classified, sorted, coded and then tabulated for easy analysis. The descriptive and the inferential statistics was used in analyzing the collected data. SPSS computer package version 21 was used in the analysis since it's more user-friendly. The data was inputted into the SPSS and examined using descriptive, correlation and regression analyses. In descriptive statistics, the study used mean, standard deviation and scatter plot. In inferential statistics, the study used multivariate regression analysis in determining the correlation between the dependent variable (Stock market returns) and independent variables: Rate of exchange volatility, interest ratevolatility and inflation rate volatility.

3.6.1 Analytical Model

Using the collected data, the researcher conducted a regression analysis to establish the extent of the relationship between exchange rate and stock market returns. The study applied the following regression model:

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

Where: Y = stock market returns as measured by the average monthly change in the

NSE 20 share index in natural logarithmic form MP = lnMPt – ln MPt-1

α =y intercept of the regression equation.

β_1, β_2 and $\beta_{3,}$=are the slope of the regression

X_1 = the exchange rate volatility measured as the difference in the monthly average of the KES-USD taken in natural logarithmic form FX = lnFXt – ln FXt-1

X_2 = Inflation rate volatility as measured by the average monthly change in CPI

X_3= Interest rate volatility as measured by the monthly average change in Treasury bill rate

ε =error term

3.6.2 Tests of Significance

To test the statistical significance the F- test and the t – test was used at 95% confidence level. The F statistic was utilized to establish a statistical significance of regression equation while the t statistic was used to test statistical significance of study coefficients.

CHAPTER FOUR

DATA ANALYSIS RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents analysis and findings of the study as set out in the research objective and methodology. These study findings are presented on the effect of exchange rate volatility on stock market returns volatility at the Nairobi Securities Exchange. This chapter looked at the data to be analyzed, the regression analysis, and interpretation. The specific variables discussed in this chapter include: exchange rate movement and market returns volatility for the study period 2007 to 2016.

4.2 Variables of the Study

4.2.1 Exchange Rate Movement

The study computed exchange rate movement for the study period for the main foreign currency which is United States Dollar (USD) against the Kenya Shilling. The study computed these from the prevailing mean average rates collected from the Central bank of Kenya for the period 2007 and 2016

4.2.2 Interest rate volatility

The study collected panel data on interest rates computed against the 91 day Treasury bill.

4.2.3 Stock Market Returns Volatility

The study collected data on the stock market return volatility between 2007 and 2016. The monthly NSE share index was sourced from the NSE also monthly TB rates were obtained from the CBK.

4.3 Descriptive Statistics

This study carried our descriptive statistics' for the main variables of the study. The table below presents the findings

Table 4.1 Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
inflation	120	3.93	17.07	990.40	8.2533	3.89898
Interest rates	120	1.60	21.65	1011.14	8.4262	3.52366
Exchange rates	120	61.899	105.275	10081.880	84.01567	11.099886
nse20 share index	120	2474.75	5774.27	509425.68	4245.2140	776.62978
Valid N (list wise)	120					

Source: research findings

According to the results in table 4.1 above the average performance of the stock market was 4245.2140 with a standard deviation of 776.62978. The average volatility of the dollar to the Kenya shilling was 84.01567 with a standard deviation of 11.099886 while average inflation stood at 8.2533with a standard deviation of 3.89898.The country's interest rates therefore stood at an average 8.4262 with a standard deviation of 3.52366

4.4 Test of Normality

This study carried out attest on monthly Mean returns, Standard deviation, Skewness, Kurtosis, so as to establish if the panel data was normally distributed. The table below illustrates the findings

Table 4.2 Test of Normality

Descriptive Statistics

	N	Mean	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error
inflation	120	.35593	1.038	.221	-.270	.438
Interest rates	120	.32166	1.216	.221	3.380	.438
Exchange rates	120	1.013276	.007	.221	-.641	.438
nse20	120	70.89627	-.167	.221	-1.121	.438
Valid N (listwise)	120					

Source: research findings

The results in table 4.2 above illustrate that inflation has a skew of 1.038, interest rates 1.216, exchange rates 0.007 while the NSE20 index is negative 0.167. The coefficient of kurtosis for inflation has -0.270, interest rates 3.380, exchange rates-0.641007 while the NSE20 index is negative 1.121. All values except kurtosis for interest rates lie within the standard normal distribution range of -1.96- PLUS 1.96 thereby implying that the data was normally distributed except for exchange rates.

4.5 Test of linearity

This study carried out attest of linearity to show the relationship

Figure 4.1 linearity

**Normal P-P Plot of Regression Standardized
Residual**

Dependent Variable: nse20
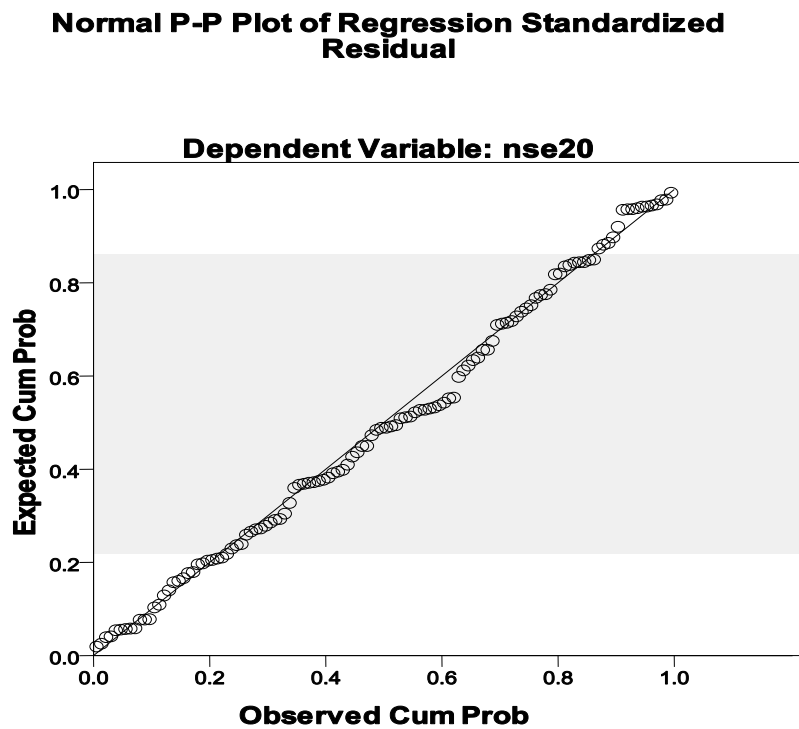
Source: research findings

According to figure 4,1 above the scatter plot illustrates that the data is closely clustered along the vertical line implying that there is a close linear relationship between the independent and dependent variables.

4.6 Multicollenearity Test

After the normality of the data in the regression model are met, the next step is to determine if there is similarity between the independent variables as this will have a partial effect on the decisions made on the basis of the relationship between the independent and depend variables. The table below illustrates the findings

Table 4.3 Collinearity Statistics

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	inflation	.753	1.328
	Interest rates	.655	1.528
	Exchange rates	.799	1.251

a. Dependent Variable: nse20

Source: research findings

According to table 4.5 the collinearity diagnostics results were as follows inflation had a tolerance of 0.753 and a VIF (variance inflation factor) of 1.328, interest rates had a tolerance of 0.655 and a VIF (variance inflation factor) of 1.528 while exchange rates had a tolerance of 0.799 and a VIF (variance inflation factor) of 1.251. The rule of thumb is that a value between 1-10 implies there is no collinearity. There is therefore no collinearity in this study.

4.7 Correlation analysis

Correlation test was conducted between market returns (NSE20) interest rate volatility, exchange rates and inflation. Correlation test can be seen as the first indication of existence of any interdependency between the time series. Table 4.4 shows the correlation coefficients between variables

Table 4.4 Correlation analysis

Correlations

		inflation	Exchange rates	Interest rates	nse20
inflation	Pearson Correlation	1	-.073	.431	-.658
	Sig. (1-tailed)		.215	.000	.000
	N	120	120	120	120
Exchange rates	Pearson Correlation	-.073	1	.368	-.306
	Sig. (1-tailed)	.215		.000	.000
	N	120	120	120	120
Interest rates	Pearson Correlation	.431	.368	1	-.251
	Sig. (1-tailed)	.000	.000		.003
	N	120	120	120	120
nse20	Pearson Correlation	-.658	-.306	-.251	1
	Sig. (1-tailed)	.000	.000	.003	
	N	120	120	120	120

Source: research findings

According to table 4.4 above NSE20 had a negative correlation with inflation -0.658 imply that market returns and inflation. From the derived statistics, it was observed that when inflation rate increase by 1%, market return decreases by 65.8%. Raise in exchange rates triggers a corresponding decrease in market returns by 30.6% as well as a one percent unit increase in interest rates triggering a decrease in market returns by 25.1%.

4.8 Regression Model

The regression model was estimated to assess whether there exist a relationship between exchange rate movement and stock market returns volatility at the Nairobi Securities Exchange, the researcher conducted a regression analysis. Using Statistical package for social Sciences (SPSS) version 21.0, the researcher used the regression analysis to determine the extent to which changes in the exchange rate movement are associated with changes in the stock market returns volatility. The findings are well illustrated in the table 4.5 below:

Table 4.5 model summary

Model Summary

Model	R	R Square	Adj R Square	Std. Error	R2 Change	F Change	df1	df2	Sig. F Change
						Change Statistics			
1	.778[a]	.606	.595	494.01810	.606	5.937E1	3	116	.000

a. Predictors: (Constant), Exchange rates, inflation, interest rates

Source: research findings

According to the model summary there is a statistically positive correlation between the independent and dependent variables R=0.778.According to the analysis R2 the coefficient of determination is R2= 0.606. Coefficient of determination explains the extent to which changes in the dependent variable (stock market returns volatility) can be explained by the change in the independent variable. From the regression results above, it was established that exchange rate movements affected stock market returns volatility up to 66.6% as represented by the R2. This indicates that exchange rate movement has a very high impact on the stock market returns volatility. This therefore means that there are other factors not studied in this research which

contributes 33.4% of the impact of the changes noted in the stock market returns volatility.

4.9 Analysis of Variance

Table 4.6 ANOVA

ANOVAᵇ

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.347E7	3	1.449E7	59.365	.000ᵃ
	Residual	2.831E7	116	244053.885		
	Total	7.178E7	119			

a. Predictors: (Constant), Exchange rates, inflation, interest rates

b. Dependent Variable: nse20

Source: research findings

According to the results of ANOVA above, the F= 59.365 implying that 59% of the variation in explanatory power has been done by the model while 41% of variations in stock market returns is due to other factors. The model provides a p-value of 0.000 since p >than 0.5% at 95% confidence, this finding concludes that there is a significant relationship between exchange rate volatility and stock market returns.

Table 4.7 Beta coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7796.466	377.368		20.660	.000
	Interest rates	58.792	15.886	.267	3.701	.000
	inflation	-160.674	13.387	-.807	-12.002	.000
	Exchange rates	-32.381	4.564	-.463	-7.096	.000

a. Dependent Variable: nse20

Source: research findings

Using the model $Y= \beta 0X1 + \beta IXI + \beta 2X2 + \beta 3X3 + E$ in the above regression, it becomes:

Y= 7796.466 +58.886+-160.674+-32.381 E

Therefore, it may therefore be interpreted that exchange rate movement has a positive relationship with stock market returns volatility. At 95% level of confidence, exchange rate movement affects market returns volatility

4.10 Summary and Interpretation of Findings

Preliminary investigation into the nature of the data revealed that the market return data is characterized by average monthly return (in natural log) of 4245.214 and a comparatively high standard deviation of monthly returns of 776.62978 one would expect high conditional stock market returns volatility.

From the results, the coefficient for inflation is high. This implies that inflation is good at explaining the stock returns. The relationship between stock returns and

inflation is negative. This suggest that increase in inflation rate reduces the market return and vise versa.

 The R-squared statistic measuring the success of the regression in predicting the values of the dependent variable within the sample indicate that only 66.6% of what is happening in the stock market return can be explained by inflation variable. A common finding in time series regressions is that the residuals are correlated with their own lagged values. This serial correlation violates the standard assumption of regression theory that disturbances are not correlated with other disturbances.

The model provides a p-value of 0.000 since p >than 0.5% at 95% confidence, this finding concludes that there is a significant relationship between exchange rate volatility and stock market returns.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the key elements of the study, discussion of major key and interpretation of the results. The chapter further presents the conclusions drawn from the research findings as well as recommendations for improvement and suggestions for further research. The outline of this chapter is as follows: summary of findings, conclusions, limitations, recommendations and areas for further research.

5.2 Summary of Findings

The objective of the project was to investigate impact of exchange rate volatility and inflation on the stock market returns at NSE. The findings of the study seem to suggest that stock market returns may not provide an effective hedge against inflation. This is explained by the weak negative relationship between inflation and stock market returns. This is against the Fisher (1930) hypothesis.

The study shows, the actual practice is in line with the expectation on negative correlation.

Ideally, the rise in the general level of prices is anticipated to reduce the expected cash inflows from investments; hence investors who own some asset are exposed to potential reduction of the real value of the stock due to inflation. The tendency would be to shy away from stock investments as inflation surges.

From the research findings presented in chapter four above, the exchange rate movements fluctuated widely reflecting the changes in the value of the local currency against the foreign currency. The exchange rate has a great impact on the participation of foreign investors in the local stock market because the ultimate return to them may

be eaten away by the exchange rates fluctuations. A stable currency ensures that the market vibrancy is maintained as the investors continue with their trading. High stock market returns volatility suggests high risks as investors can not estimate precisely how their investment is likely to be at any given point in time.

From the findings, a high exchange rate movement and inflation was accompanied by a high stock market return volatility. This indicates that at times when the exchange rate movement is high, the foreign investors are reluctant to participate in the local market hence the result of high stock market return volatility reflecting the greater risks they stand to assume at this time. In addition, low exchange rate movement is accompanied by a low volatility in the stock market returns.

Further, from the regression analysis summary model, the study established that exchange rate movement has a high impact on the market return volatility in Kenya. This was indicated by the high value of the R2.

5.3 Policy Recommendations

From the summary and conclusions above, this study recommends the following.

First that the policy makers need to factor the effects of exchange rate movement on the performance of the stock exchange. This is because their policies may affect the performance despite their good intention to correct the deteriorating situations in the economy. The monetary Committee department at the Central bank of Kenya needs to maintain a stable foreign currency exchange if the activities at the Stock exchange are to be promoted. This is because huge exchange rate movements distort the trends of performance at the stock market leaving investors guessing the next cause of action because they may not be able to estimate with certainty the future state of the economy.

The study further recommends that the Security's management develop a foreign currency denominated equities so as to reduce the effects of exchange rate movement on the returns of the foreign investors. This would motivate foreign investors to invest more hence boost the vibrancy of the market.

5.4 Limitations of the Study

This study faced different challenges and limitations. The main limitations of this study were that the data used was secondary data generated for other purposes. Therefore it may not be as accurate as possible. In addition the period under study faced several challenges including the 2007/2008 post election violence which disrupted normal business in Kenya thus reducing investor confidence in the Security's exchange.

In addition, the inflation level has also been high in Kenya leading to the revision of goods making up the basket used to calculate the inflation index. This depreciated the purchasing power of many Kenyans thus leading to reduced activity at the NSE.

5.5 Suggestions for Further Studies

This study concentrated on the relationship between exchange rate movement and stock market returns volatility at the Nairobi Securities Exchange. This study therefore recommends that another study be carried out to determine the influence of macroeconomic variables on the performance of the NSE. This is because over the past few years, there have been many challenges facing the economy of Kenya leading to the Government of Kenya taking measures it had not applied for a long time. For example, following the increased inflation, the Government of Kenya raised it benchmark lending rates (Central Bank Rate) in order to reduce the money in circulation and thus reduce the levels of inflation.

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APPENDICES

Appendix I: Firms Listed in the Nairobi Securities Exchange

Company's Name	Sector	Symbol
A Baumann & Co	Financials	BAUM
ARM Cement	Industrials	ARM
Atlas African Industries (GEMS)	Industrials	AAI
B O C Kenya	Basic Materials	BOC
Bamburi Cement	Industrials	BAMB
Barclays Bank of Kenya	Financials	BBK
BAT Kenya	Consumer Goods	BATK
British-American Investments Co(Kenya)	Financials	BRIT
Car & General (K)	Consumer Services	CG
Carbacid Investments	Basic Materials	CARB
Centum Investment Co	Financials	ICDC
CFC Stanbic Kenya	Financials	CFC
CIC Insurance Group	Financials	CIC
Co-operative Bank of Kenya	Financials	COOP
Crown Paints Kenya	Basic Materials	BERG
Deacons East Africa	Consumer Services	DCON
Diamond Trust Bank Kenya	Financials	DTK
Eaagads	Consumer Goods	EGAD
East African Breweries	Consumer Goods	EABL
East African Cables	Industrials	CABL
East African Portland Cement	Industrials	EAPC
Equity Group	Financials	EQTY
Eveready East Africa	Consumer Goods	EVRD

Flame Tree Group Holdings (GEMS)	Basic Materials	FTGH
Home Afrika (GEMS)	Financials	HAFR
Housing Finance Co Kenya	Financials	HFCK
I&M Holdings	Financials	IM
Jubilee Holdings	Financials	JUB
Kakuzi	Consumer Goods	KUKZ
Kapchorua Tea Company	Consumer Goods	KAPC
KCB Group	Financials	KCB
KenGen Company	Utilities	KEGN
KenolKobil	Oil & Gas	KENO
Kenya Airways	Consumer Services	KQ
Kenya Orchards	Consumer Goods	ORCH
Kenya Power & Lighting Co	Utilities	KPLC
Kenya Re	Financials	KNRE
Kurwitu Ventures (GEMS)	Financials	KURV
Liberty Kenya Holdings	Financials	CFCI
Limuru Tea Co	Consumer Goods	LIMT
Longhorn Publishers	Consumer Services	LKL
Marshalls East Africa	Consumer Services	MASH
Mumias Sugar Co	Consumer Goods	MSC
Nairobi Business Ventures	Consumer Services	NBV
Nairobi Securities Exchange	Financials	NSE
Nation Media Group	Consumer Services	NMG
National Bank of Kenya	Financials	NBK
NIC Bank	Financials	NICB
Olympia Capital Holdings	Industrials	OCH

Safaricom	Telecommunications	SCOM
Sameer Africa	Consumer Goods	FIRE
Sanlam Kenya	Financials	PAFR
Sasini	Consumer Goods	SASN
Scangroup	Consumer Services	SCAN
Standard Chartered Bank Kenya	Financials	SCBK
Standard Group	Consumer Services	SGL
StanlibFahari I-REIT	Financials	FAHR
Total Kenya	Oil & Gas	TOTL
TPS Eastern Africa	Consumer Services	TPSE
Trans-Century	Industrials	TCL
Uchumi Supermarkets	Consumer Services	UCHM
Umeme	Utilities	UMME
Unga Group	Consumer Goods	UNGA
Williamson Tea Kenya	Consumer Goods	WTK

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