EFFECTS OF INTEREST RATE CHANGES ON EQUITY RETURNS AT THE NAIROBI SECURITIES EXCHANGE

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DECLARATION

I hereby declare that this management research project is my original work and has not been presented to any other university.

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This research paper has been submitted for examination with my approval as a university of Nairobi supervisor.

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DEDICATION

I dedicate this work to my family for the continuous support that they have given me throughout the entire process.

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LIST OF ACRONYMS AND ABBREVIATIONS

AIMS:	Alternative Investment Market Segment
ARCH:	Autoregressive Conditional Heteroskedastic
CBR:	Central Bank Rates
EGARCH:	Exponential Generalized Autoregressive Conditional Heteroscedasticity
FIMS/FISMS:	Fixed Income Market Segment
GARCH:	Generalized ARCH
GEMS:	Growth and Enterprise Market Segment
IPO:	Initial Public Offering
IR:	Interest rate
OLS:	Ordinary least square
T bill:	Treasury bill

ABSTRACT

The impact of monetary policy, such as the central bank interest rate changes, on banks' stock market returns has been a main concern for regulatory authorities, academic communities, investors and financial institutions listed in the stock exchange market. The unpredictability in interest changes is widely believed to be an important determinant of the equity returns of firms listed in the stock exchange.The relationship between equity returns and financial risk parameters, such as central bank interest rate changes, can provide financial managers and commercial banks' regulators with additional information, including information on how to improve commercial banks' stock market returns through better management of interest rates changes. The unpredictability in interest changes is widely believed to be an important determinant of the equity returns of firms listed in the stock exchange. Review investigated effects of interest rate changes on equity returns at Nairobi securities exchange. Independent variables were interest rate changes and the dependent variable was the NSE share index. Descriptive research design was utilized. Study used secondary data. The results of (ADF) found that the time series had a unit root. The granger causality test found that there was a causal relationship between interest rate changes and NSE Share Index but there was no causal relationship between NSE Share Index and interest rate changes. Review reached a conclusion that interest rates negatively and significantly affected stock market returns. The study recommended the government of Kenya should formulate policies on inflation, interest rates, money supply and exchange rates to ensure that they do not have adverse effects on stock market returns.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Impact of monetary policy, such as central bank interest rate changes, on banks' stock market returns has been a main concern for regulatory authorities, academic communities, investors and financial institutions listed in the stock exchange market. The failure of most financial institutions have been particularly linked to the adverse impacts of fluctuations in interest rates (Kasman, Vardar, & Tunç, 2011). Korkeamäki (2011) found out that most commercial bank managers view interest rate changes as the second most significant risk factor, after credit risk. In addition, determination of the relation between equity returns and financial risk parameters, such as central bank interest rate changes, can provide financial managers and commercial banks' regulators with additional information, including information on how to improve commercial banks' stock market returns through better management of interest rates changes.

Financial hypothesis exhibits that value esteem is equivalent to the present estimation of expected hazard balanced profits, decided utilizing hazard free loan costs. The hazard acclimation to expected settlements consolidates data about the allure of adjustments in the diverse condition of nature, and the marking down mirrors the time estimation of cash.When we hold constant expected risk-adjusted payoffs, an expansion in loan costs diminishes the value esteem. Many studies have documented this scenario exhibiting a decrease in equity value in the event of changes in interest rates. However, we must be cognizant of the fact that interest rates are affected by economic activities.

A lot of countries in Sub Saharan Africa, still experience high levels of interest rates, even though majority of them have undertaken structural adjustment reforms that leads to the liberalization of interest rates in several countries in the region, including Kenya (Were & Wambua, 2014). Nonetheless, Were and Wambua, (2014), contended that two decades after the money related area in Kenya was changed in the mid-1990s to permit advertise decided loan costs, worries about financing costs changes and their effect on value returns have kept on holding on and pulled in a considerable measure of level headed discussion in both open and arrangement gatherings. In addition,

Tarus, Chekol, and Mutwol, (2012), argued that interest rates were liberalized in Kenya with main objective of improving efficiency in intermediation process by reducing interest risks, which in turn was to improve the listed commercial banks' stock returns. According to the authors, this still seems to be a major challenge within the Kenyan banking sector.

Typically, motivation for this line of research is that equity returns are reflected in accounting data, which are informative about a firm's future cash flows, and that investors do not fully impound this information into stock prices. But since financial statement information is backward-looking, it is beneficial for investors to identify early indicators of equity return changes that are not yet reflected in financial statements by assessing potential changes in critical factors that affect the returns such as changes in the interest rate.

1.1.1 Interest Rates Changes

Interest rates changes is the variability of interest rates over periods that measure up to the length of the distinctive business cycle. Variability of here and now and long haul loan fees is a noteworthy part of the economy. Loan costs alter in response to an assortment of monetary occasions, for example changes in government approach, emergency in neighborhood and worldwide budgetary markets, and modifications in the prospects for long haul financial development and swelling. All things considered, financial activities for instance these shelter be sporadic. There is a more common variability of loan fees connected with the business cycle, the developments and compressions that the economy encounters at last. Like, here and now financing costs increment in extensions and lessening in sadness. Long haul loan costs don't appear to co-change a great deal with the level of monetary yield (Sill, 1996)

Variability of financing costs influences resolutions concerning how to spare and contribute. Financial specialists differ in their slant to grasp unsafe resources for example stocks and bonds. At the point when profits to holding stocks and bonds are exceedingly unpredictable, financial specialists who rely upon these resources for offer for their use experience a similarly expansive chance of having low investing at any given time. Numerous business firms embrace portfolios containing huge quantities of advantages and, in this manner, are keen on measuring the danger of mislaying wholes of cash (Chatterjee and Satyajit, 1995). As dangers in the economy

alter, the anticipated increases and misfortunes from the venture portfolio change.Quantifying this hazard fascinates perceiving how unstable costs of and returns on resources are, notwithstanding how the profits on differing resources modify by and large in the end.

(RSA/RSL) is one technique of quantifying interest rate risk. It is routinely utilized in banks as one of their errands is to loan. For instance as the name suggests, we only watch a proportion of bank resources that develop or reprice inside a year to bank liabilities that develop or reprice inside a year. An adjusted position would come about if measure of repricing resources were precisely counterbalanced by repricing liabilities (proportion =1.0). Proportions under 1.0 demonstrate a bank that is obligation touchy (liabilities reprice speedier than resources), while a proportion more prominent than 1.0 shows that the bank's benefits reprice quicker than liabilities (asset sensitive) (Echo Partners, 2013). Choi, Mueller, and Vedolin (2015) employ Treasury implied volatility (TIV) to measure interest rate uncertainty. Patnaik and Shah (2004) asserts that quantifying of interest rate risk can be carried out by examining assets and liabilities categorized into maturity buckets, and calculating the ‘gap’ between assets and liabilities, in every time bucket.

The unpredictability in interest changes is widely believed to be an important determinant of the equity returns of firms listed in the stock exchange. This is reliable with basic instinct that higher changes in loan cost is related with more prominent possibility of money deficits, bringing about upgraded default likelihood thus bring down expected settlements for bondholders. A substantial amount empirical research has provided evidence that equity returns are negatively affected by changes in the interest rates, however there have been relatively little research to corroborate association between return on equity and the changes in interest rate. The valuation of return on equity involves discounting the expected payoffs of an investment, and interest rates changes affect the discount rates if impact of the normal of loan costs on value is indistinct, all the more so the impact of changes in genuine financing costs. Genuine loan costs speak to the cost of current utilization as far as future utilization. Hence, all else approach, changes in genuine financing costs ought to negatively affect current utilization and a constructive outcome on future utilization. As the

business part supplies utilization merchandise and ventures, one expects changes in genuine loan costs to be contrarily (decidedly) identified with current (future) income.

In the United States of America, scientists have since a long time ago placed an immediate connection between loan fees changes and future value returns .In an endeavor to experimentally look at the connection between financing costs and value restores, a few investigations utilize money related strategy as an intermediary for loan fees. Some found that normal returns are altogether more prominent amid far reaching fiscal periods than confined money related periods. Durham (2003, 2005) declares that the impact of Federal Reserve arrangement has turned out to be irrelevant in the course of recent decades. Bernanke and Kuttner (2005) additionally locate that money related impact on here and now value returns happens because of unforeseen declarations. The conflicting outcomes in past research happen due the utilization of static loan fees.

In Africa, all ventures are presented to a specific level of premium hazard on the grounds that their speculations as well as obligations are touchy to changes in the loan costs. The more intrigue delicate resources and liabilities held by a firm, the more interest rate sensitive the return on equity of the firm (Aziakpono & Wilson, 2015). However, interest rates may not influence the estimation of a company's value as much as the association's estimations of the association's advantages and liabilities because of the balancing impact between loan costs changes touchy resources and liabilities. Additionally, going out on a limb gives a chance to firms whose benefits and liabilities are touchy to loan cost to win a higher value return or increment in advertise esteem (Swanson & Williams, 2014).

1.1.2 Equity Returns

Equity Returns are returns that speculators deliver from buy and offer of stocks in a productive market. Equity returns are the earnings that the shareholders generate out of the security market. Equity returns are the benefits enjoyed by a shareholder when an investment has taken place. Jeyanthi & William, (2010) state that return is the profit received owing to an increase in stock prices. Wurgler, (2010) argue that variations in stock returns are employed to quantify how changes in market expectations of future economic conditions affect banks’ franchise values.

Returns are generally floating and subject to market risks. To build utmost returns, shareholders ought to purchase low and sell high. Coherent shareholders operate on informed resolutions in addition to basic analysis to establish the future movement of stocks. Basic investigation movements to emerge more on the money streams, benefit development of organizations and whatever other declarations that may possibly prompt an addition in the offer cost of a particular stock. The stock exchange is an unpredictable domain with showy moves that can either give investors a positive or negative securities exchange return. There is a solid connection amongst instability and market execution. Instability decays as money markets rises and increments as the share trading system falls. An expansion in unpredictability builds the hazard concerned and decreases the general profits for stock costs, (Easterling, 2011). Normally, unanticipated instability has a more imperative impact on stock returns than foreseen unpredictability (Chiang, 2001).

1.1.3 Relationship between Interest Rate Changes and Equity Returns

Mortgage interest rate change is a major risk in the in Kenya. Changes of interest rates can have adverse effects on earnings from institutions. In the profit viewpoint, concentration of investigation is the Impact of changes in loan fees on gathering or announced income. This is the customary way to deal with financing cost chance evaluation taken by many banks. Variety in income is a vital point of convergence for loan fee chance investigation in light of the fact that diminished profit or out and out misfortunes can debilitate the monetary solidness of an establishment by undermining its capital ampleness and by decreasing business sector certainty. The segment of value restores that has generally gotten the most consideration is net intrigue wage (i.e. the distinction between add up to intrigue salary and aggregate intrigue cost). This concentration reflects both the significance of net premium wage in an organizations general profit and its direct and effortlessly comprehended connect to changes in financing costs (Machiraju, 2008).

Generally, loan fee chance is presentation of a bank's money related condition to unfriendly developments in financing costs. Tolerating this hazard is a typical for firms recorded in the NSE and can be a critical wellspring of productivity and investors esteem creation. However, over the top financing cost hazard can represent a noteworthy risk to value returns and capital base. Changing in loan fees influence gaining of firms by changing their net intrigue wage and the level of other intrigue

affectability pay and working costs. Changes in loan costs additionally impact essential estimation of the bank's preferences, liabilities and unsteady sheet instruments in light of fact that present estimation of future cash streams change when interest rate change.

1.1.4 Nairobi Securities Exchange

In Kenya, stock and share trading stared in 1920's while still under british colony. However there were no rules and regulations governing trading. Exchanging occurred on a 'man of honor's assention.' Standard bonuses were accused of customers being committed to respect their legally binding duties of making great conveyance, and settling applicable expenses. Around then, stock broking was a sideline business led by bookkeepers, salespeople, home specialists and attorneys who met to trade costs over some espresso. Since these organizations were occupied with different regions of specialization, requirement for affiliation did not emerge.

In 1951, Francis Drummond an estate Agent built up main expert stock broking firm. He likewise reached to Sir Ernest Vase, Kenya’s first Finance Minister and urged him setting up a stock trade in East Africa. In July 1953 they moved toward London Stock Exchange authorities and London authorities acknowledged to perceive setting up of NSE as an abroad stock trade. In 1954 NSE was constituted as a willful relationship of stockbrokers enlisted under Societies Act.

Since Africans and Asians were not allowed to exchange securities, until after accomplishment of freedom in 1963, matter of dealing in shares was restricted to occupant European people group. At beginning of freedom, securities exchange movement drooped, because of vulnerability about fate of autonomous Kenya. NSE in 1988 made primary privatization, by offering 20% government stake in KCB. This made Kenyan government and associated organizations holding 80% responsibility for bank. Live trading on NSE was implemented On Monday 11 September 2006 .

NSE has developed to be the largest market in East and Central Africa, with its market capitalization rising to nearly Kes.1.176 trillion as at 19th October, 2016 from Kes.112.05 billion in December 2002, equally within the same period, the NSE Stock index has spiraled by over 260% to 4034.07 points (NSE website www.nse.co.ke). Presently’ the NSE has 24 listed members and about 62 trading firms within the four

trading fragments, (CIMS); (AIMS); (FIMS/FISMS) and (GEMS). The AIMS is a substitute technique of investment in capital by little, medium measured and novel organizations that think that its hard to experience the more strict posting requirements of the MIMS. It is adapted towards reacting to changing prerequisites of guarantors and empowers liquidity of organizations with a huge investor base through 'presentation' that is, posting of existing offers for attractiveness and not for raising capital. It likewise gives venture chances to institutional speculators and people who need to differentiate their portfolios (Nairobi Securities Exchange, 2010).

The stock market acts as a fundamental part in the economic growth and development of a country. It executes a wide range of economic and political functions while providing trading, investment, speculation, hedging, and arbitrage opportunities to numerous investors (Munga, 2012). It also offers a substitute and significant podium through which, institutions and the Government can mobilize capital for investment and assess economic growth and stability. NSE is an illustration of an emergent stock market characterized by modest beginnings but which has grown substantially over time.

1.2 Research Problem

Instinctively and numerically, it's sensible to trust that rising loan fees will hurt stock costs. In any case, this has not generally been the situation, especially finished the previous 20 years. An ascent in loan costs, for instance, from 6% to 12% would be unwelcome for values as a rule given the brakes such a bounce would put on monetary development and hazard hunger. As of now, be that as it may, rates are beginning their move from untouched lows in July. Loan fees that discouraged reflect desires for a long stretch of low swelling and pallid development. An enhancing viewpoint should come about in higher loan costs as well as in more grounded corporate profit and more serious hazard taking by speculators—helping bolster proceeded with positive value returns (Kim, Morley & Nelson, 2014).

Vast loan cost vacillations bring extra vulnerability into the economy and make it harder to get ready for what's to come. Moreover times of high financing costs repress shopper and business spending. Interruptions in the money related framework can restrain the capacity of budgetary markets to proficiently channel finances between surplus spending units and shortfall spending units. Any lessening in the stream of

assets decreases customer spending and business venture, which prompts slower financial development. Additionally people may think that its troublesome or costly to get and, in this way, they may need to put off specific buys (Mala and Reddy, 2007). Loan costs can impact the level of corporate returns which thus impact the value that financial specialists will pay for the stock through desires of higher future profits installment. A lessening in financing costs decreases expenses of acquiring and along these lines fills in as a motivating force for extension. This will positively affect future expected returns for the firm. A generous measure of stocks are acquired with obtained cash, thus an expansion in loan fees would make stock exchanges all the more expensive. Financial specialists will require a higher rate of return before contributing. This will decrease request and prompt a value deterioration (Nissim & Penman, 2015).

Henry, (2012), did a study to assess stock returns sensitivity to foreign exchange and interest rate changes. Thuo,(2012), did another study to assess the effects of interest rates volatility on stock returns for firms listed in NSE. Additionally, Were and Wambua, (2014), did another research to establish the factors that drive interest rate spread of commercial banks. Although an extensive literature has widely studied the implications of interest rate changes, little attention has been paid to establish their impact stability and profitability of financial firms listed in the NSE. This research will seek to assess impact of interest rate changes on equity returns and add value pool of research findings. Financial firms listed in the NSE have committed significant amounts of funds in anticipation of good returns. The returns come in form of interest charged on the funds which changes from time to time. Future interests on the existing investments are uncertain.

1.3 General objective

This study sought out to investigate effects of interest rate changes on equity returns at NSE.

1.3.1 Specific Objectives

Review shall be guided by following specific objectives;

i. To determine interest rate changes trends at NSE.
ii. To determine equity returns trends at NSE.
iii. To determine relation between interest rate changes and equity returns at NSE.

1.4 Value of the study

It would be important to Central Bank, as it would be able to find out the level of impact of its monetary policy especially interest rates on the stock market. Fund managers would also benefit from the study because they will be able to better manage and anticipate the impact that interest rates volatility on the portfolio they hold. Better still it would help them make decisions relating to reallocation of assets in their portfolio to mitigate against interest rate volatility risk. Fund managers would profit from the study as they would be capable to better manage and forestall the influence that interest rates instability on the portfolio they embrace. Better still, it would aid them articulate resolutions concerning to reallocation of assets in their portfolio to mitigate against interest rate instability risk. Lastly, academicians would benefit from the results of this research because by and large, the study would contribute to the organization of information on stock market efficiency. Researchers can also employ the study to aid them to do further research on other stock market environments and responses to several occasions.

Further, potential investors would anticipate impact of changes in interest rates on stock returns. Investors and potential investors would get to comprehend if variations in interest rates influence returns on the stock market and to what degree it influences investment in both markets. The Central Bank would be capable to observe the level of influence of its monetary policy exclusively interest rates on the stock market. Prospective investors would be capable to forestall the influence of variations in interest rates on stock returns.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Part shows past literature on investigation. Explicitly, it critically observes the theoretical and empirical studies. The chapter seeks to examine effects of interest rate changes on equity returns at Nairobi securities exchange.

2.2 Theoretical Review

Several theories by different researchers exist that seek to explain link between interest rate modifications and stock returns. However, the three key ones especially for developing countries like Kenya are discussed below.

2.2.1 Random Walk Theory

The theory instituted by the statistician Louis Bachelier in 1900 and subsequently elucidated by economist Burton Malkiel in 1973 (Nalın & Güler, 2015).The theory of random walk proposes that a sequence of stock value variations has no remembrance the previous antiquity of the sequences cannot be employed to forecast the forthcoming in any significant way . In arithmetic expressions, Random walk theory elucidates that successive stock price variations are independent of each other and have the similar possibility dissemination, but that at a particular time, values uphold an upward tendency. Subsequently, there must be no consecutive association between the prices at dissimilar times (Barine, 2014)

The rationale of the random walk idea is if program of information is unrestricted and information is overtly replicated in stock worth, then tomorrow's price alteration will reproduce only tomorrow newscast and will be independent of price variations now. Nevertheless, newscast is by description random, and, therefore, occasioning price variations would be random and unpredictable. As a result, prices wholly duplicate all known information, and even uneducated investors purchasing a differentiated collection at the display of rates given by the market will get a return rate as considerable as that accomplished by the specialists, it would be implausible to outshine the market devoid of supposing extra possibility (Ren & Ren, 2017).

Ren & Ren, (2017) upholds that realistic examination and central examination similarly are mainly time wastage and are yet to be unverified in outshining the

market places. Pursuant to him, a long-term purchase-and grasp policy is the finest and that persons ought to not try to time/beat the markets. Efforts built on practical, central or any other assessment are futile. Antagonist of the philosophy, although, contest that stocks do sustain price tendencies over time – that is to mean, it is probable to surpass the market place by carefully choosing entry and exit points for equity monies. The theory of random walk articulates that successive price variations are independent, i.e., past cannot be employed to envisage future. Long term interest rates follow a mantingale sequence and thus inhibit random walk characteristics while short term rates follow a random walk in an efficient.

Fraz and Hassan, (2016), argued that in likelihood hypothesis, an irregular walk is a stochastic procedure in which the adjustment in the arbitrary variable, for example, intrigue changes is uncorrelated with past changes. Consequently the adjustment in the loan fee can't be estimated. For an irregular stroll, there is no example to the adjustments in the arbitrary variable, as the presence of any example would imply that the progressions can be anticipated. If either the risk-free rate of equity or the risk premium is not constant, then the expected rate of return is changing, and in this sense the rate of equity return can be forecasted somewhat. If the change is slow, however, then the equity returns may nearly follow a random walk. Thus the theory is relevant to this study.

2.2.2 Effective Market Hypothesis

According to Marwala and Hurwitz, (2017), markets are effectual and it is impossible to "beat or forecast the market" since stock fees already incorporate and reflect all relevant and available information. Khan and Khan, (2016), posited that the term efficiency in effectual monetary markets means they don’t sanction stockholders to obtain above normal revenues devoid of accepting intense average peril. Effective market theory is in spirit a deferment of the zero income cheap stability situations from the inexorableness world of standard price philosophy to the vigorous conduct of prices in hypothetical markets under circumstances of indecisiveness (Lee, Tsong & Lee, 2014).

The core incentive for an effective market is the intense struggle between stockholders to revenue from fresh info (Jandik & Mandelker, 2009). Conforming to

the EMH, shares continually do business at their price value on stock exchanges, making it implausible for shareholders to either buy underrated stocks or trade stocks for overstated prices. As such, it should be intricate to outshine whole market through proficient stock assortment or market programming, and that the way a shareholder can perhaps obtain higher earnings is by buying riskier savings (Mishra, 2012). This is also an extremely debatable and regularly ambivalent philosophy. Proponents of this ideal have confidence in it since it is futile to exploration for underrated stocks or attempt to forecast tendencies in the market over ultimate examination or technical examination.

Conversely, opposers argue that several shareholders base their prospects on previous prices, previous remunerations, track proceedings and other indicators since they consider it only makes logic to trust that previous prices affect future prices. Though the academics point to a big group of evidence in support of EMH, shareholders, have gradually trodden the market over longer periods of time, where by description is difficult according to the EMH (Marwala & Hurwitz, 2017). The efficient market hypothesis is linked with initiative of a "random walk," which is an expression employed to illustrate a price sequence where every ensuing price variations signify random departures from prior prices. Thus, this hypothesis is relevant to this study in that it relates to stock price variations and availability of all information and this is inclusive of interest rate.

2.2.3 Signaling Theory

Theory of signaling was developed by Akerlof and Arrow in 1970 and it states that a good company can distinguish itself from a bad company by transferring a dependable indicator about its supremacy to capital markets (Alsos & Ljunggren, 2017). Vismara, (2016), asserted that in an unproductive market, management and investors can employ broadcasting for instance dividend broadcast or interest rate changes announcements to signal important information to the marketplace which is only accepted to them. For instance, shareholders can construe information about a company's future incomes through sign coming from disbursement affirmations, that is, if dividends upsurges, it signals anticipated high revenue and thus stock prices will upsurge (Basoglu & Hess, 2014).

Forti and Schiozer, (2015), exhibits how debit can be employed as costly signs to offer distinction between the bad from the good companies. Under the unequal information between administration and shareholders, signals from companies are vital to achieve monetary wealth. Alsos and Ljunggren, (2017), accepts that directors know the correct circulation of company revenues, but stakeholders do not. Signaling of complex debt by directors then proposes a positive future and high quality companies would use more debt although low quality companies have low debt levels. Pursuant to Rose (1977), interest rate changes announcements signal important information to the marketplace which is only accepted to them.

2.3 Determinant of Equity Returns

The stock market is an important barometer of the economy of the country. A number of theorists have researched on the determinants which affect equity returns including key macroeconomic indicators such as inflation, exchange rates, interest rates and money supply among others.

2.3.1 Inflation

Investors, regulatory bodies and organizations always screen and stress over the level of swelling. Swelling decreases the buying power every unit of cash can purchase. Rising expansion has a tricky impact: input costs are higher, buyers can buy less merchandise, incomes and benefits decrease, and the economy moderates for a period until the point that an unfaltering state is come to. Inspecting authentic returns information amid times of high and low expansion has given some lucidity to financial specialists. Ambrosio, (2013), showed that various investigations have produced a gander at the results of swelling on stock returns. Shockingly, these examinations have conveyed conflicting results when a couple of factors are considered; geology and day and age. Most investigations presume that normal swelling can either decidedly or contrarily affect value returns on stock, dependent upon ability to fence and organization's cash related game plan. This relationship is likewise thought to come from the way that unforeseen expansion contains new data about future costs. Thus, more noteworthy instability of stock developments was connected with higher swelling rates (Aydemir & Demirhan, 2009).

As per Banerjee, and Adhikary, (2015), at the point when there is danger of uplifting development, national bank tries to control this by raising credit expenses. By

growing advance expense, they need to tract examiners to stop their exchange out settled pay instruments, thusly diverting wealth liquidity from the structure. The lower the benefits stream into the market, the lower the enthusiasm for stocks, in this way cut down offer expenses. The want of higher development is what is making the market crazy right at this point. Right when there is weakness, risk premium has a tendency to extend, which prompts higher expected returns from stock exchange (Bernanke and Gertler, 2011). A high expansion rate raises normal cost for essential things and results to a move of advantages from dares to use. Enthusiasm for publicize instruments falls provoking diminishment in volume of stock traded. This will compel money related strategy experts to react to expanded rate of swelling with monetary fixing strategies, which thusly builds the ostensible hazard free rate and consequently brings markdown rate up in the valuation show (Adam & Twenoboa, 2008).

Bernanke and Kuttner, (2013), contemplated connection between stock returns and inflation for rising economy of Greece. He discovered inflation and stock returns were adversely related till 1995, after which relation ended up noticeably inconsequential in Greece economy, they certify adjustment in relation to expanded part of money related changes. Choi, Mueller, and Vedolin, (2017), investigated an arrangement of macroeconomic factors and watched that mechanical creation and in addition changes in hazard premium, the yield bend and the swelling are among the efficient variables that influence resource returns. The relation between inflation and stock market returns in Nigeria was studied by Ologunde, Elumilade and Asaolu, (2016), they found a negative relation exists between Nigerian stock market prices and inflation in addition their results indicated that stock prices are not only affected by inflation but also by prevailing economic activities, interest rates and government deregulation. Fund hypothesis concurs that low and stable expansion upgrade better financial execution by decreasing vulnerability about the future esteem, and accordingly encouraging speedier development Gazioglu, 2013). Nonetheless, expansion in Kenya has dependably digressed from the objective and the endeavors to keep swelling at target level as a general rule have yielded unintended outcomes. Past examinations have demonstrated that genuine stock returns are adversely identified with expected, surprising, and changes in expected expansion. This proof is against the conviction that basic stocks ought to be a decent fence against expansion. Judicious money

related arrangements, more steady worldwide item costs and effectiveness picks up emerging from interest in foundation and administrative change can help keep expansion inside edges Spyrou (2001).

2.3.2 Interest Rate Changes

They are extensively perceived as a noteworthy wellspring of vulnerability for partnerships. As per review confirm by Goodfriend, (2013)., financing cost hazard is seen by U.S. firm directors as second most essential hazard factor, just behind market chance. Budgetary hypothesis expresses that developments in loan fees influence both association's assumptions about future corporate money streams and markdown rate utilized to esteem these money streams and, subsequently, firm estimation. Impact of advance charge changes accessible estimation of associations has gotten a great deal of thought in composing, but a noteworthy piece of observational research has focused on cash related foundations in perspective of particularly financing cost fragile nature of the keeping cash business (Staikouras, 2015).

Traditional speculations characterize financing cost as the cost of investment funds controlled by request and supply of loanable assets. Njenga, (2013), contends that the essential part of loan cost is to help assemble monetary assets and guarantee the effective use of assets in the advancement of financial development and improvement. An ascent in loan fee brings about an expansion of chance cost, singular speculators would like to put resources into non-settled pay securities, for example, bonds (Kurihara, and Nezu, 2016).). This may come about either in benefit or misfortune which is reflected in the association's accounting report. At the point when benefit or loss of a firm is quickly reported, the stock cost of a firm will increment or reduction.

Higher rates make securities all more persuading to examiners diverged from stocks. Securities are generally more secure and a higher rate generally assembles enthusiasm for securities and may hurt enthusiasm for stocks. At the point when rates go up, costs of existing settled rate securities and stock costs both have a tendency to go down. This is particularly valid for stock costs of organizations like utilities that compensation noteworthy profits and are believed to be to some degree like securities in yield and hazard. Higher rates make getting all more expensive. Associations that need to get basic wholes or are subject to skimming rates of interest will pay more to do thusly. This cost tends to hurt benefits for capital, and disproportionately hurt stock

expenses of more committed and more used associations. Higher rates implies more organizations and customers spend all the more adjusting obligation, so the accessibility of money to contribute goes down. Stock costs go down. Higher rates increase cost of cash. This makes monetary masters more fretful with associations with high cash holds like Apple. Examiners will ask for clear, persuading plans to create or else ask for cash be returned by methods for offer buybacks and higher benefits.

Firms regularly look to limit the cost of assets and amplify existing investors' riches. In this manner, bring down loaning rates could initiate firms to utilize more advances from banks and issue less extra offers with a view to lessening the cost of capital while limiting the odds of weakening existing offers. In this way, bring down loaning rates are required to convert into rising securities exchange returns (Kganyago and Gumbo, 2015). Then again, high loaning rates may constrain firms to issue more offers keeping in mind the end goal to raise speculation accounts. This could thus drive down offer costs and prompt a decrease in securities exchange returns. Rising loaning rates could likewise build premium costs and decrease money streams and securities exchange returns.

Most investigations assume that loan fee and securities exchange returns are co-incorporated in the customary shape to such an extent that deviations from long run balance are disintegrated quickly. This does not should be simply the case since co-coordinating residuals may be long memory forms (Caporin, Ronaldo, and Santucci de Magistris, 2011). Levine and Sara, (2011), watched that when the stock costs diminish, it is normal that the abundance of the household financial specialists likewise go down. In addition, it might likewise prompt a lower interest for cash consequently loan cost diminishes. Higher stock costs may thusly prompt a surge in capital outpourings which will prompt devaluation of local cash. Mayasami, Howe and Rahmat, (2014) demonstrated that financing cost had positive effect on stock return.

2.3.3 Exchange Rate

It is the estimation of one money with end goal of change to another. Its developments extraordinarily influenced share trading system return instability inferable from its data substance to the speculators. At the point when there are high

variances in the trade rates, the trade rates development, there would be high developments of market return instability. A few investigations have inferred that there is a solid connection between conversion standard development and securities exchange returns unpredictability, while others have not (Vardar, Aksoy and Emre, 2016). In particular, the data substance of conversion scale development would be conveyed to the security's business. The cash instability has consequences for the stock returns. This is by virtue of toll arranged associations refered to on stock exchange market would be less advantageous and this may hence end up being less appealing to speculators (Muthike and Sakwa, 2012).

Setting up connection between stock costs and trade rates is imperative for a couple of reasons. It has been exhibited that an impacting securities trade emphatically influences add up to ask. If this is adequately huge, expansionary cash related or contractionary fiscal methodologies that goal the credit cost and veritable change scale will be slaughtered. In some cases approach creators advocate more affordable money so as to support the fare segment. They ought to know whether such an approach may discourage money markets. Second, association between two markets may be used to foresee method for swapping scale. This will benefit multinational organizations in managing their presentation to remote contracts and swapping scale hazard balancing out their income. Third, money is all the more frequently being incorporated as a benefit in speculation assets' portfolios.

Exchange rate unpredictability has suggestions on a nation's money section, stock exchange to be exact. Benita and Lauterbach (2014) discovered exchange rate instability have genuine monetary costs that influence value dependability, firm benefit and a nation's security. Setting up connection between stock costs and trade rates is critical for a couple of reasons. Durham, Hertzel and Martin, (2015), demonstrates that a blasting securities exchange positively affects total request. Particularly a lessening in stock costs diminishes abundance of neighborhood speculators and further decreases liquidity in the economy. Liquidity decrease additionally lessens loan costs which thusly prompt capital outpourings and thus causes cash deterioration (Aziakpono, and Wilson, 2015). Hsing (2011) found a positive connection between conversion standard and money markets in Johannesburg Stock Exchange. Cheng' et al.,(2011) led ponder on Taiwan securities exchange and outcomes showed a positive connection between swapping scale and stock return.

Kasman, Vardar and Tunç, (2011) led an investigation on Exchange Rate Fluctuations, Political Risk, and Stock Returns at Mexican securities exchange and outcomes demonstrated there is a positive connection between swapping scale change and stock exchange return.

Swanson and Williams, (2014), study the long-run and short-run associations between stock prices and exchange rate and their proof imply that the exchange rate had a significant positive impact on stock returns. Nissim, and Penman, (2015) investigated connection between stock costs and swapping scale, determining that stock costs have a negative association with conversion standard. Mala and Reddy, (2017), contend that stock costs contrarily connected to long haul loan fee, and positive connection between stock costs and cash supply, mechanical creation, expansion, swapping scale and transient financing cost. They presume that in the Granger causality sense, each macroeconomic variable causes the stock costs over the long haul however not in short-run. Kim, Morley and Nelson, (2014), shows that remote portfolio venture has a positive and critical impact on securities exchange returns while expansion rate has positive however unimportant impact on securities exchange returns in Nigeria.

2.3.4 Money Supply

It is the entire measure of cash available for use or in presence in a nation. There are various standard measures of cash supply, fusing money related base, M1, and M2. Cash supply impacts can either be certain or negative. Since expansion rate is emphatically identified with development rate of cash Fama (1981), an ascent in cash supply could prompt an expansion in markdown rate and along these lines bring down the stock costs. Notwithstanding, this negative impact might be countered by cash development, which would potentially expand money streams and stock costs Mukherjee and Naka (1995).

Eric Sorensen (1982) considered effect of cash on value costs with exceptional thoughtfulness regarding foreseen and unforeseen changes in cash supply. Hamzah (2004) studied on connection between equity advertise execution and cash supply and found a positive reliance between cash supply change and value advancement on Singapore Securities trade. Causality between the cash supply and Equity advertises on developing markets was examined additionally by Brahmasrene, Jiranyakul (2007), particularly in their investigation of the Thai Equity showcase in the vicinity

of 1992 and 2003, where they discovered positive relations between cash supply and value costs. Taskin (2010) managed connection between cash supply and Equity returns on Turkish market. These creators did not affirm any co-reconciliation between these factors.

2.4 Empirical Studies

A research by Staikouras, (2012), sought to understand the association of value returns of money related establishments and estimating of loan fee chance. Review investigated issue of whether monetary go-betweens' regular stock returns fuse a hazard premium for their inborn presentation to surprising changes in financing costs. A two-factor show with market portfolio and adjustments in showcase yields, as exogenously indicated chance factors, is utilized. Model is assessed through an apparently irrelevant relapse estimation system with both cross-condition limitations and inside condition nonlinear imperatives on the parameters. Discoveries show that money related foundations' value returns fuse a hazard premium for their introduction to showcase yields' amazements. The arrival creating capacity of the protection business could be additionally clarified by an extra factor, for example, cash developments.

A local study by Vena, (2014), sought to determine impact of expansion on share trading system returns of NSE. Review was especially centered around impacts of expansion on different securities exchange execution pointers, as far as market action and liquidity. An experimental examination was guided using month to month data on picked key market pointers from NSE from 1998-2013 and correlational layout system for estimation associated using a backslide model to test effects of extension on securities trade returns.This apparently abnormal state of impact of expansion uncovered that ventures can flourish well in the share trading system paying little heed to the rate of swelling. The R squared measurement measuring capacity of relapse to anticipate reliant variable esteems inside specimen showed that lone critical segment of the share trading system movement can be clarified by expansion variable.

Joseph and Vezos (2016) watched the effect of loan costs and outside trade rates changes on US bank's stock returns. Examination used an EGARCH model to represent ARCH impacts in day by day returns rather than standard OLS estimation systems with result that ARCH presence impacts would have influenced estimation

proficiency. Review added to existing information in the territory by demonstrating that ARCH impacts affected measures of affectability.

Ratanapakorn and Sharma (2007) looked into relation among US stock value record and six macroeconomic factors, modern creation, cash supply, treasury charge and government security rate, swelling and Japanese Yen/US Dollar swapping scale over the period 1975-1999. They analyzed that the stock costs contrarily identified with long haul loan fee and emphatically identified with cash supply, mechanical creation, swelling, swapping scale and short run financing cost. Gazioglu (2008) examined impacts of capital inflows and outpourings to genuine trade rates and genuine securities exchange returns.

Okpara (2010) explored impact of financial approach on the Nigerian securities exchange returns. He established that, monetary policy is a considerable determinant of long-run stock market returns in Nigeria. Specially, high Treasury bill rate decreases stock market returns and consequently, indicates a proof of monetary policy efforts to slow down economy. While present and one period slack loan fee use a positive and huge impact on money markets returns. The slacked mistake revision term is negatively signed, suggesting that around 32 percent of deviation from long-run balance between stock returns and the Treasury bill rate cum interest rate is corrected periodically.

Lane and Shambaugh, (2014), did a research that focused on financial exchange rates and international currency exposures. Goal of the paper was to understand currency movements international financial implications. The paper reached a conclusion from assessing an extensive variety of sources to manufacture an expansive scale dataset of universal money positions, built fiscally weighted conversion standard records, and ascertained net remote cash exposures. Our examination demonstrates that exchange weighted conversion scale files are an insufficient guide in understanding the riches impacts of cash developments. Also, we locate that many creating nations have truly had a negative net position in outside monetary standards, to such an extent that deteriorations of the local cash have produced negative riches impacts. In any case, we have discovered that a large number of these nations have moved toward a less uncovered money position in the course of the most recent decade, generally through changes in their net outside resource position and an expansion in the offer of remote

liabilities that are in household cash classes, (for example, portfolio value). What's more, numerous nations (particularly the propelled economies) have expanded gross worldwide positions so much that, even with generally adjusted net positions, regardless they may encounter considerable riches stuns from cash developments.

Jiranyakul, (2015), did a study to establish the Linkages between Thai stock and foreign exchange markets under floating regime. The purpose of was to straightforwardly look at the connection between two-sided conversion scale and securities exchange list in a bivariate system amid the time of the coasting swapping scale administration in Thailand. Three estimation techniques are utilized to catch the association amongst stock and remote trade markets: limits testing for cointegration, non-causality test, and the two-advance approach with a bivariate GARCH model and Granger causality test. Moreover, the non-causality test falls flat the symptomatic test for multivariate typicality in the residuals of the assessed show. It is discovered there exists positive unidirectional causality running from securities exchange come back to conversion scale return. The conversion standard hazard makes stock return fall not surprisingly. Also, there are bidirectional causal relations between securities exchange hazard and conversion scale chance, yet in various bearings.

Locally, Ochieng and Oriwo (2012) researched the connection between macroeconomic factors on NSE All offer record (NASI) and further discovered if fluctuations in macroeconomic factors could be utilized to conceive future NASI. Three key macroeconomic factors were analyzed and they incorporate loaning financing cost, inflation rate and 91 day Treasury charge (T charge) rate. Discoveries in examination demonstrate that 91 – day T-charge rate has a negative association with NASI while swelling has a powerless positive association with NASI. Despite all the above studies, little is known about the market reaction to interest changes on equity returns at the NSE. This is the knowledge gap which this study will seek to bridge by analyzing equity returns to interest rate changes with a focus to companies listed at the NSE. Review will address following research query, what is the outcome of interest rates changes on the equity returns of company stocks listed at the NSE?

Koskei, (2012), examined impact of exchange rate hazard on stock returns in Kenya's recorded money related establishments. Review embraced a board information relapse utilizing the Ordinary Least Squares strategy where data included time arrangement

and cross-sectional information. The exchange rate may create uncertainty in the market as the value of assets is eroded due to depreciation, thereby resulting to a fall in stock returns. Review decided that stability of exchange rate is important in instilling confidence in economy. The panel results indicated that the estimated coefficient capturing the effect of exchange rate risk on stock returns are significant at one percent level of significance.

2.5 Conceptual Framework

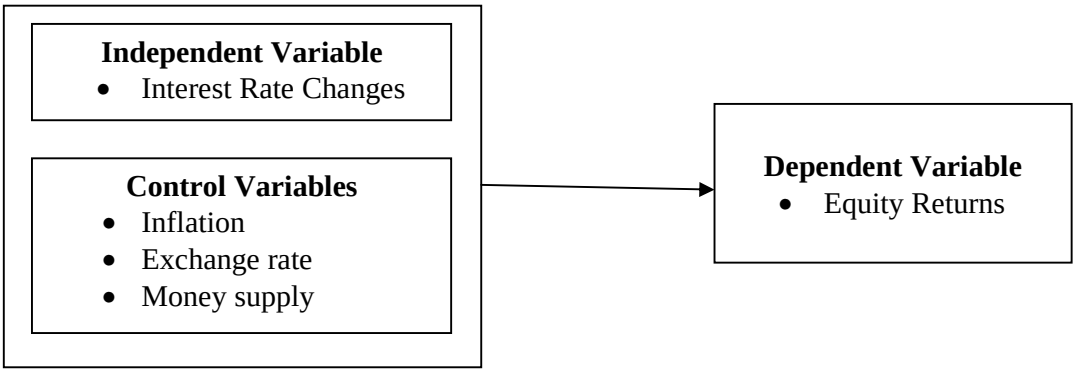


Figure 2.1: Conceptual Framework

A rise in interest rate results in an increase of opportunity cost, singular financial specialists would like to put resources into non-settled wage securities, for example, bonds. This may come about either in benefit or misfortune which is reflected in the association's monetary record. At the point when benefit or loss of a firm is promptly declared, stock cost of a firm will increment or diminishing. A high expansion rate raises typical cost for basic items and results to a move of assets from speculations to utilization. This will constrain money related arrangement experts to react to expanded rate of expansion with monetary fixing strategies, which thusly builds the ostensible hazard free rate and consequently brings rebate rate up in valuation show.

At point when there are high vacillations in the trade rates, trade rates development, there would be high developments of market return unpredictability. A few examinations have reasoned that there is a solid connection between conversion standard development and securities exchange returns unpredictability, while others have not.

2.6 Summary of the literature Review

Table 2.1: Summary of Literature Review

Author of the study	Focus of the study	Methodology	Findings	Knowledge Gaps	Focus of Current Study
Staikouras (2015)	Value returns of budgetary establishments and estimating of loan cost hazard.	A two-factor display with market portfolio and adjustments in advertise yields, as exogenously determined hazard factors, is utilized.	Discoveries demonstrate that budgetary foundations' equity returns fuse a hazard premium for their presentation to advertise yields' shocks. Arrival creating capacity of protection business could be additionally clarified by an extra factor, for example, cash developments	There was a need to explore whether arrangement of money related middle people are efficiently influenced by loan costs and whether holders of these portfolios are Made up for this extra hazard	Effects of interest rate changes on equity returns at the Nairobi securities exchange
Koskei(2017)	Impact of conversion scale chance on stock returns in Kenya's recorded money related establishments.	Review received a board information relapse utilizing Ordinary Least Squares strategy where information included time course of action and cross-sectional data that was pooled into a load up educational list and assessed using load up data backslide	Study established uncertainties in the flow of exchange rates result in flighty conduct of stock returns in Kenya's economy. Investigation additionally found that swapping scale dangers do affect stock returns. Exchange rate may make vulnerability in market as the value of assets is eroded due to depreciation, thereby resulting to a fall in stock returns.	Little body of knowledge on how inflows can also cause domestic currency appreciation if they are significant enough and thereby causing a mismatch in assets and liabilities of financial institutions.	Impacts of financing cost changes on value returns at NSE
Vena (2014).	The effect of inflation on the	Correlational design method of	The study found that the stock market returns were positively	Insufficient policy that reduce market volatility to	Effects of interest rate

	stock market returns of the NSE	estimation Empirical investigation	correlated to inflation rate. Further, it discovered apparently abnormal state of inflation impact uncovered that ventures can flourish well in money markets paying little heed to inflation rate	make stock exchange market more efficient	changes on equity returns at the Nairobi securities exchange
Ochieng and Oriwo (2012)	Connection between macroeconomic factors on (NASI) and further found out if vacillations in macroeconomic factors could be utilized to visualize future NASI	Autoregressive distributed lag (ARDL) bound test approach	91 – day T charge rate has a negative association with NASI while inflation has a powerless positive association with NASI	little is known about the market reaction to interest changes on equity returns at the NSE Could have used other methods such as Engel and Granger (1987) two-step procedure	Effects of interest rate changes on equity returns at the Nairobi securities exchange
Aduda, Masila and Onsongo (2012)	Determinants of advancement in NSE	Secondary information for period 2005-2009 was utilized to demonstrate elements affecting NSE improvement	securities exchange improvement is influenced by stock exchange liquidity, institutional quality, pay per capita, local funds and bank advancement while macroeconomic steadiness and private capital streams were found to have no association with securities exchange improvement	Review concentrated on macroeconomic factors and also institutional factors as NSE development determinants Study could likewise be led to incorporate EA nations to analyze distinctive elements influencing securities exchange development in EAC nations	Effects of interest rate changes on equity returns at the Nairobi securities exchange

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

Part shows review research methods which were applied in review. It represents overall research methodology which includes the type of data to be gathered and its origin, the way the collected data was analyzed and interpreted, and how it helped in answering the study research questions .The chapter begins by presenting the research design followed by the population and sampling. The chapter further outlines the data collection tools and procedures and analysis techniques, including models of diagnostic tests to be utilized.

3.2 Research Design

To survey and comprehend changes in interest rate impacts on equity returns at Nairobi securities exchange, and therefore to determine if there are any tendencies or arrangements suitable for trading, the study adopted a descriptive design using the event study methodology. Niedderer and Reilly (2011), contends that occurrence research is an experiential investigation method that can observe the impact of a specific occasion on a company's stock price. A descriptive study establishes associations between variables. A descriptive design was selected because the study aimed to determine relation between one thing an independent variable (Interest rate changes) and another dependent variable (equity returns). The study used yearly time series data for a period of 5 years from 2011 to 2016.

3.3 Population of the Study

Populace target was 66 company stocks listed at the NSE as at September 2017.

3.4 Sampling Design

Sampling plan depicts sampling outline, unit, strategies and estimate for review (Cooper and Schindler, 2003). The study was conducted through a census since all members of the population were part of the study. Census was most appropriate for the study since the population is small.

3.5 Data Collection Method

Secondary data was utilized. Data was obtained from KNBS, NSE and CBK databases of high quality. Review utilized time arrangement information from NSE

All Share Index. Primary go for this was to accomplish a more far reaching scope and a superior possibility of getting more exact outcomes. This was in accordance with Dubravka and Petra (2010) who watched that share trading system record had the biggest factual importance in clarifying stock returns. The datasets included descriptions and records of interest rate changes events. The descriptions and data relating to interest rate changes (Central Bank Rate), inflation rate and exchange rate is drawn and collected from the CBK website as it is readily available. The analyses was conducted over the 2010- 2015 period.

3.6 Diagnostic Tests

Early research on time fluctuating interest change separated intrigue change gauges from resource return information before determining a parametric time arrangement demonstrate for instability, such techniques verifiably accept that intrigue change is consistent over some interim of time. It is however both coherently conflicting and measurably wasteful to utilize intrigue change measures that depend on the suspicion of consistent intrigue change over some period when the subsequent arrangement travels through time. To deal with this, current models indicate a parametric model for unpredictability first and after that utilization the model to remove instability gauges from the information on returns. A fundamental perception about resource return information is that expansive returns of either sign have a tendency to be trailed by more vast returns of either sign. As it were, the instability of benefit returns seems, by all accounts, to be serially related (Campbell, 1997).

3.7 Data Analysis

Data collected was stored in an appropriate format that permits statistical analysis. Co-relational analysis of stock prices and interest rates and stock volumes and interest rates was done as well as statistical manipulation. The measures of the variables important to the research problem will be built in the checklist. All the data collected was entered into the statistical package and data cleaned for missing values and data entry errors. Data analysis will be done by employing IBM SPSS 22.0 and Microsoft Excel. The quantitative data was analyzed and an interpretation of the statistical outputs done and discussed in the presentation of results and findings. The descriptive statistical analysis method was used to identify the trend of central bank interest rates changes and return on equity of firms listed in the NSE.

3.7.1 Analytical Models

To break down the connection between study variables examination utilized expanded dickey fuller model, the granger causality test lastly relapse investigation

3.7.2 Augmented Dickey Fuller Model

(ADF) test shall be connected to rough unit root. ADF tests as a rule confirm stationary arrangement where; if the ADF insights outperform basic esteem, the invalid theory of unit root in the arrangement is rejected.

3.7.3 Granger Causality Test

It was utilized to decide connection between (at least two) factors keeping in mind end goal to watch course of causality. Granger causality test is connected to test causal connection between intrigue changes and value returns of organizations recorded at NSE.

3.7.4 Regression Analysis

It was utilized to establish connection between autonomous and ward variable. Regression equation is below

$$Y= \beta_0+ \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \varepsilon$$

Y = Equity Returns, (measured by stock market Index (quarterly)

X_1 = Inflation (Measured as a change in the consumer price index (CPI))

X_2= Interest rates changes (Interest rates difference from previous year)

X_3= Foreign Exchange (CBK Indicative Exchange Rates)

$X_{4=}$ Equity (Measured as value of shares issued by a company)

β = Constants

ε = Error term

3.7.5 Test of Significance

Review employed the t and F-test to decide factual essentialness. F-test is to be utilized to test the general centrality of the model, i.e. the decency of fit while the t – test is utilized to test relapse coefficients centrality at 5% level noteworthiness

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

Part outlines analysis and presentation review discoveries. Chapter contains the descriptive statistics, the graphical analysis of the considered variables and correlations.

4.2 Descriptive Statistics

It comprises of minimum and maximum values, mean, s.d and graphical analysis of findings.

4.2.1 Summary Descriptive Statistics

Table 4.2: Summary Descriptive Statistics

Variables	Min	Max	Mean	Std. Dev	Kurtosis	Skewness
NSESHAREINDEX	3232	5500	4504.4	702.76	-1.213	.313
INTERESTRATE	13.69	20.34	17.18	1.64	.480	.575
EXCHANGERATE	83.54	103.89	91.84	7.46	-1.525	.315
INFLATION_CPI	131.36	176.93	151	14.98	-1.134	-.428

Source: Author (2017)

The findings indicates that the mean value of the stock market index was 4504.4 whereas the average consumer price index was 151. The average interest rates was 17.18. The findings also show that the average value of the average value of exchange rates was 91.84.

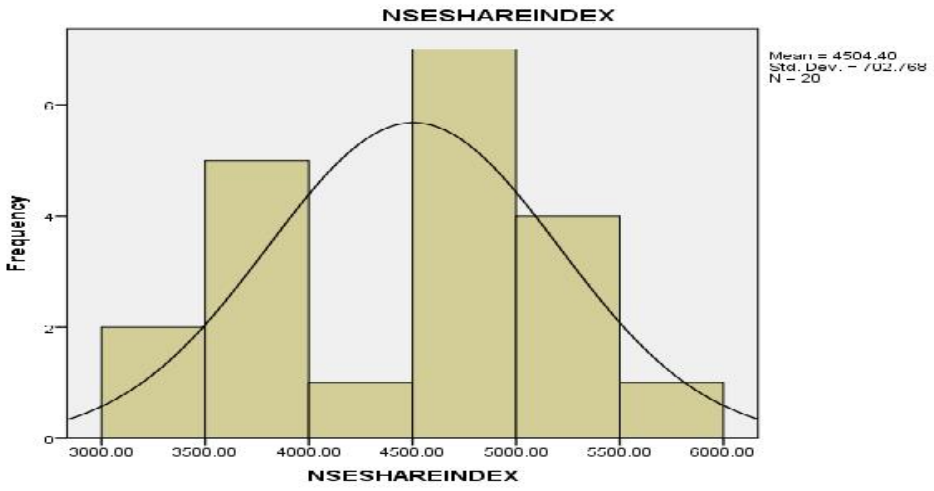


Figure 4.2: Normality Graph for NSE Share Index

Source: Author (2017)

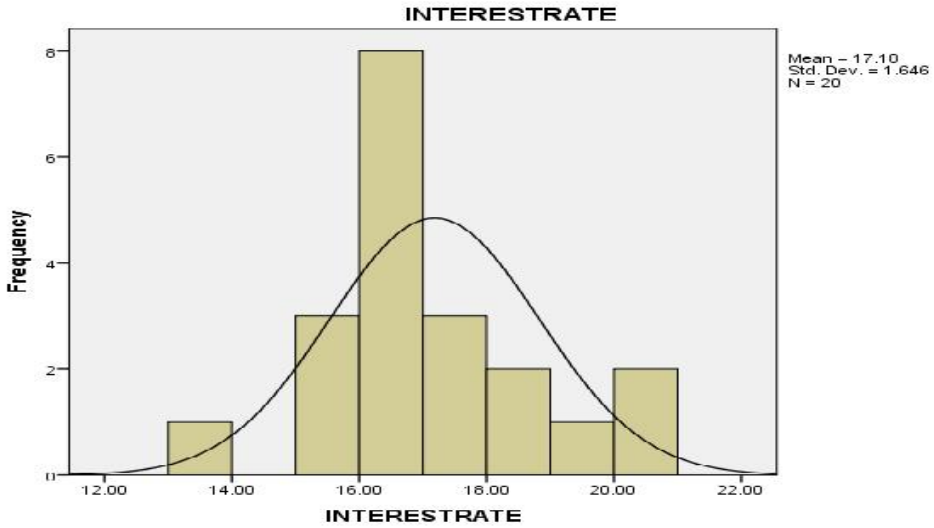


Figure 4.3: Normality Graph Interest Rate

Source: Author (2017)

The values of Kurtosis consists of both negative and positive values for the variables under study. The variables that yielded a value closer to zero can be assumed to have had a normal distribution of responses, while those that had kurtosis values less than zero are said to have a distribution that has more data concentrated on the tails of the distribution and the responses have a flatter peak. The variables that yielded values greater than zero can be interpreted to mean that the curve of the responses was peaked and more data was concentrated on the peaks.

The results further reveal that NSE Share Index, Exchange rate and interest rate were moderately skewed to right. Bulk of the data is at the right if we drew a graph of normality and their peak is toward the right and the left tails are longer. In addition, inflation were moderately skewed to the left. The bulk of the data is at the left and if we drew a graph of normality and the peak will toward the left and the right tail is longer. The skewness and kurtosis can be graphically examined from the figures 4.1 through 4.4.

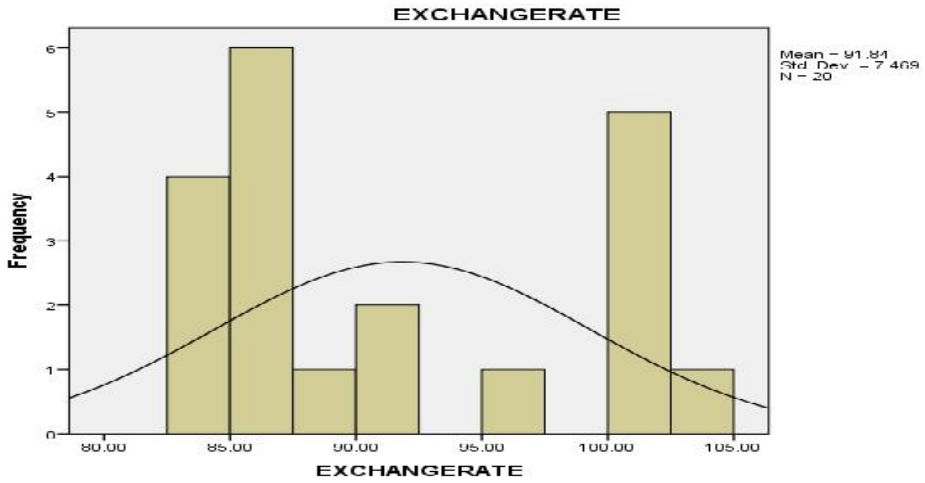


Figure 4.4: Normality Graph Exchange Rate

Source: Author (2017)

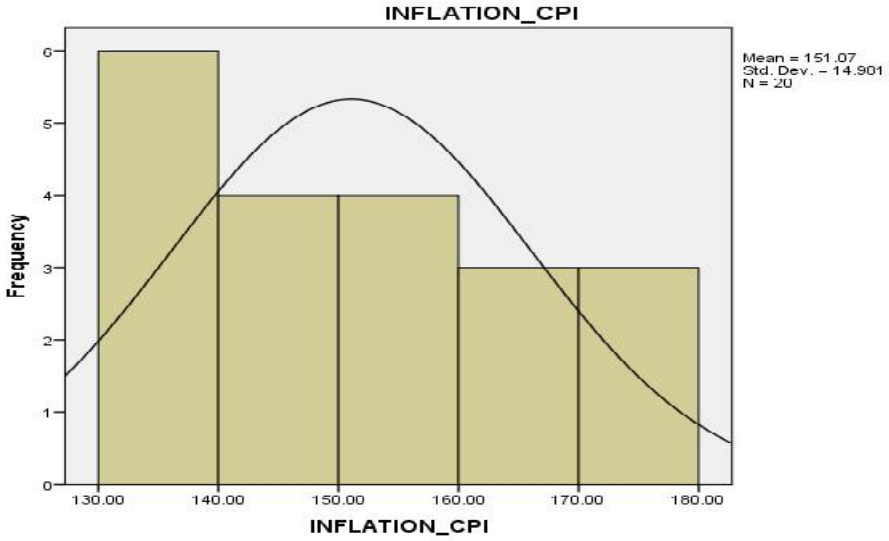


Figure 4.5: Normality Graph Inflation

Source: Author (2017)

4.2.2 Graphical Analysis

This part presents the graphical analysis of the study variables and comprises the graphs for NSE share index, inflation, interest rates, and exchange rates. The graphical analysis compares variables data over time to identify any consistent results or trends. This analysis explains how historical data can be used to analyze trends and improve or mitigate the effect of the variables.

4.2.2.1 NSE Share Index

The study sought to determine trend that the NSE Share Index had taken over the last 5 years. Quarterly figures of the NSE Share Index were obtained since for the period of 2012 to 2016 and graphed to reveal identify any consistent results or trends.

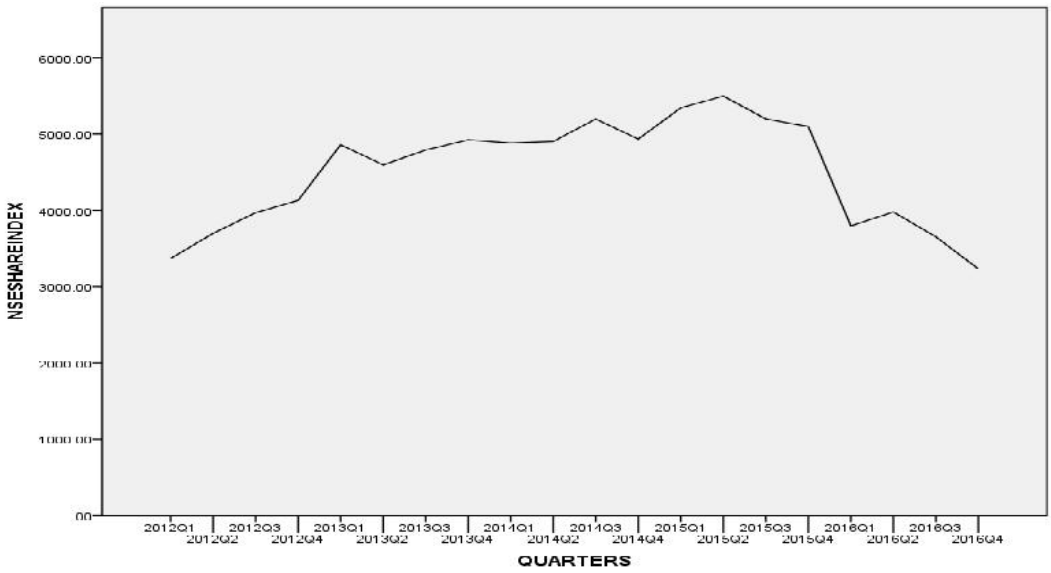


Figure 4.6: Trend of NSE Share Index

Source: Author (2017)

As illustrated in figure 4.5, a fairly normal distribution was recorded in the performance of NSE across for period the first quarter in2012 to the last quarter of 2016, as indicated by the percentage change in All Share Index. The sharpest decline was particularly noted in the last quarter of 2016 at all-time low level of 3232. The highest peak at 5500 was in the second quarter of 2015. Notable declines were also recorded in second quarter of 2015. The graph also shows that the index has been on a declining trend has further on average been noted from last quarter of 2015 to the last quarter of 2016 falling from 5100 to 3232 respectively.

4.2.2.2 Interest Rate Changes

The study sought to determine trend that the interest rate changes had taken over the last 5 years. Quarterly figures of the interest rate changes were obtained since the period of 2012 to 2016 and graphed any consistent results or trends.

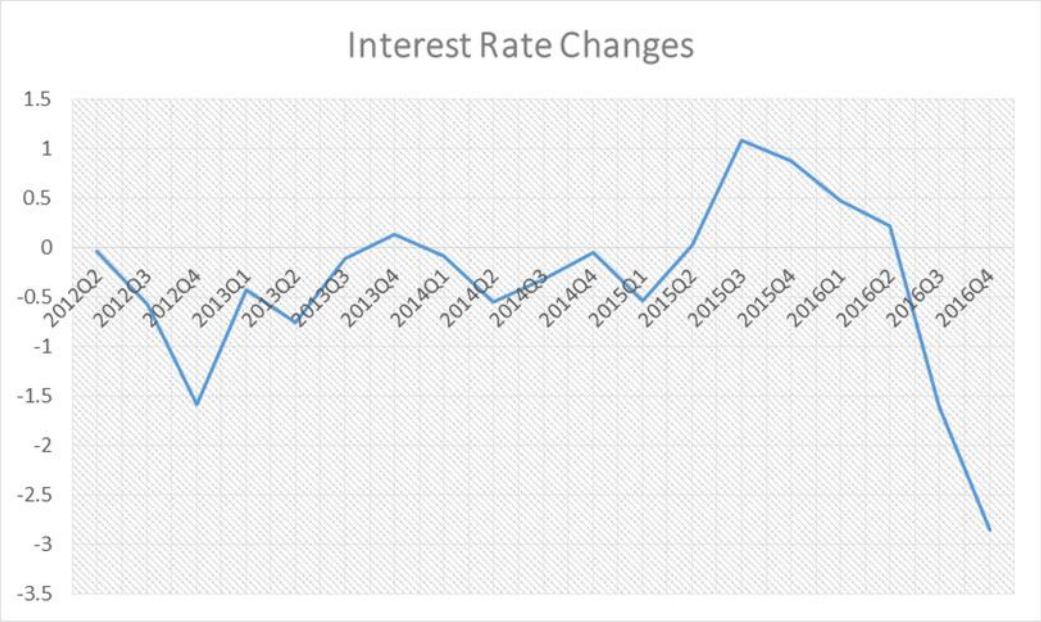


Figure 4.7: Trend of Interest Rate Changes

Source: Author (2017)

The graphical in figure 4.6, represents a relatively normal distribution in the distribution of the interest rate changes for period between first quarter in2012 to last quarter of 2016, as indicated by the changes in rate of interest. The sharpest decline was particularly noted in last quarter of 2016 when the interest rate was at all-time low level of 13.69%. The highest peak of the changes was in the first quarter of 2012 when the rate was 20.34 %. Noteworthy declines were also recorded in second quarter of 2015. The graph also shows that there has been on a declining trend which was noted from last quarter of 2015 to the last quarter of 2016 falling from by almost 2.85 percentage points.

4.2.2.3 Exchange Rate

The study sought to determine trend that the Exchange Rate had taken over the last 5 years. Quarterly figures of the Exchange Rate were obtained since the period of 2012 to 2016 and graphed to reveal identify any consistent results or trends.

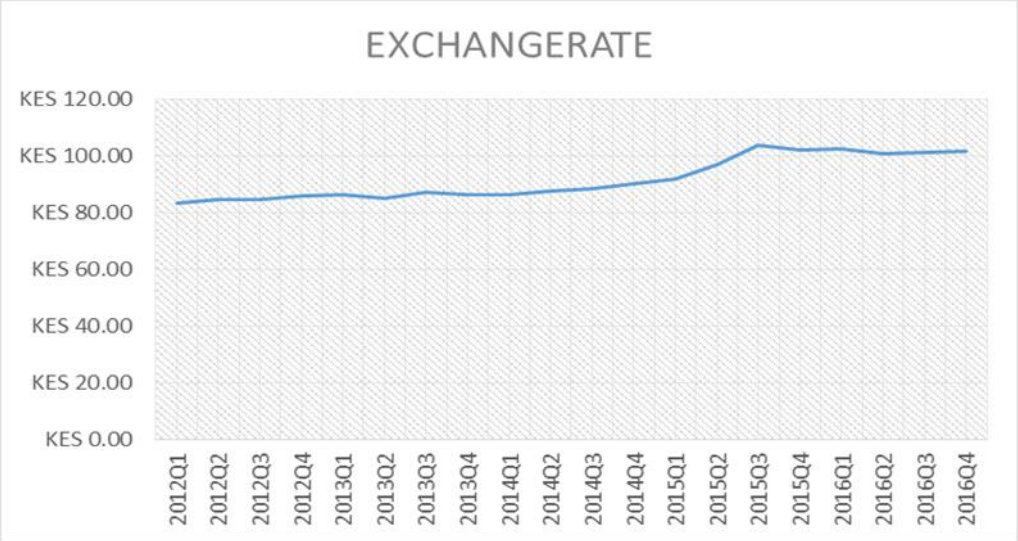


Figure 4.8: Trend of Exchange Rate (against the $)

Source: Author (2017)

As illustrated in the figure 4.7, Exchange rate trend was different from those of interest and NSE Share Index. The graph was assuming an increasing trend throughout the quarters with small instances where it slightly dropped. The sharpest decline was particularly noted in the first quarter of 2012 at all-time low level of 83.54. The highest peak at 103.89 was in the third quarter of 2015. Noteworthy declines were also recorded in second quarter of 2015. The graph also shows that there have been on a declining trend has further on average been noted from last quarter of 2015 to the last quarter of 2016 falling from 100.84 to 101.85respectively.

4.2.2.4 Inflation

The study sought to determine trend that the inflation had taken over the last 5 years. Quarterly figures of the inflation were obtained since the period of 2012 to 2016 and graphed to reveal identify any consistent results or trends.

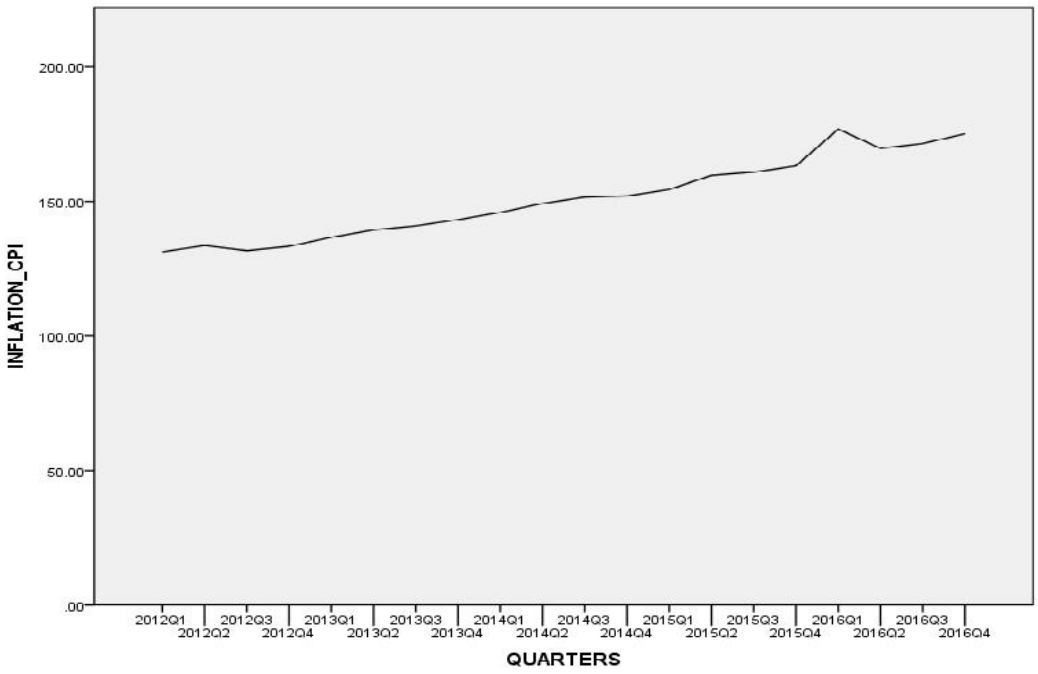


Figure 4.9: Trend of Inflation

Source: Author (2017)

The figure 4.8 illustrates that inflation assumed an upward trend just like the exchange rate. The graph was assuming an increasing trend throughout the quarters with small instances where it slightly dropped. The sharpest decline was particularly noted in the third quarter of 2012 at all-time low level of 131.36. The highest peak at 103.89 was in the first quarter of 2016. Noteworthy declines were also recorded in last quarter of 2015. The graph also shows that the inflation has been on an increasing trend from first quarter of 2016 to the last quarter of 2016 increasing from 169.76 to 175.18 respectively.

4.3 Diagnostics Tests

4.3.1 Normality Tests

Normality tests are done to decide if specimen information has been drawn from an ordinarily dispersed populace. Normality assessment can be done by using a graphical or numerical procedure. The typicality was tried utilizing the Shapiro-Wilk test which additionally has energy to recognize takeoff from ordinariness due to either skewness or kurtosis or both. On the off chance that measurement ranges from zero to one and

figures higher than 0.05 show the information is typical Shapiro-Wilk test evaluates whether information is ordinarily circulated against speculation that:

H_0: Sample follows a Normal distribution.

H_a: Sample does not follow a Normal distribution.

When the p-value is greater than the alpha value, then one fails to reject null hypothesis. Shows results of the Shapiro-Wilk normality test.

Table 4.3: Test for Normality

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
NSESHAREINDEX	.209	20	.022	.915	20	.078
INTERESTRATE	.146	20	.200*	.951	20	.378
EXCHANGERATE	.223	20	.010	.819	20	.002
INFLATION_CPI	.099	20	.200*	.936	20	.199

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

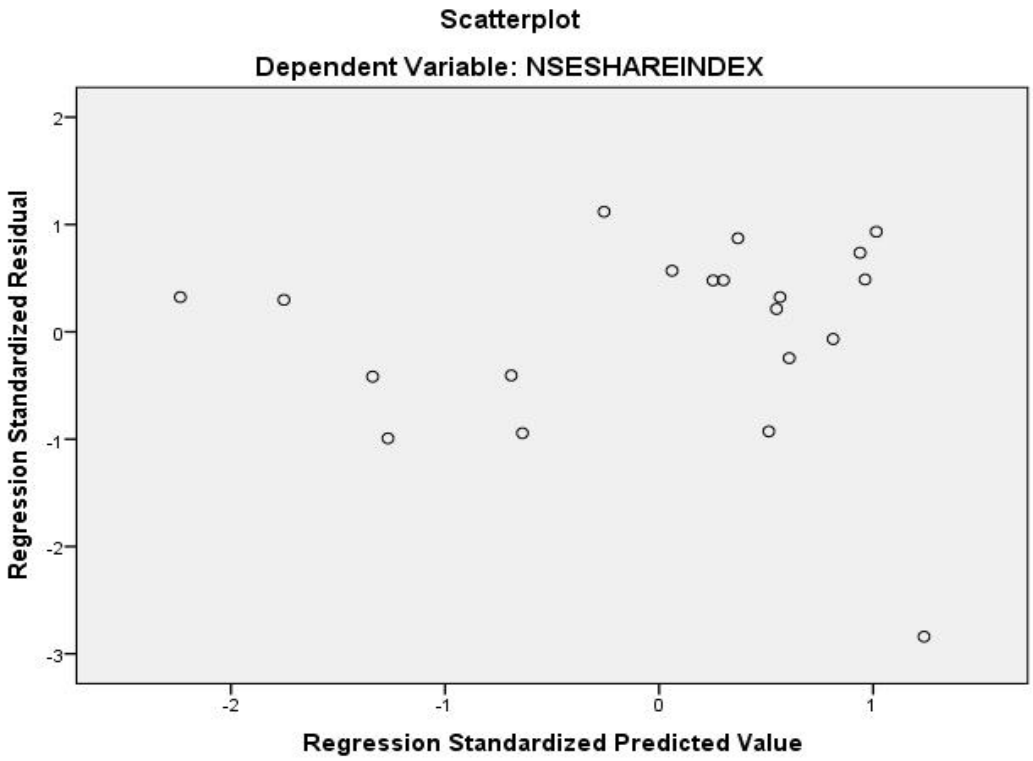
Findings reveal that all the variables are normally distributed since they a static with a value higher than 0.05. This implies that the assumption of normality is satisfied.

4.3.2 Multicollinearity Test

In statistics, multicollinearity refers to the predictors that are correlated with other predictors in the model. Severe multicollinearity can cause problems because it increases the fluctuation of coefficient gauges which makes assessments exceptionally touchy to minor changes in model. The more your VIF increases, the less reliable your regression results are going to be. In general, a VIF above 10 indicates high correlation and is cause for concern. Regression coefficient table indicate that the VIF of the 3 independent variable are within acceptable margins. Interest rate changes has a VIF of 1.685, exchange rate (against the $) has a VIF of 8.483 and Inflation rate has a VIF of 10.292. This implies that the assumption of no mutlicolinearity is satisfied.

4.3.3 Homogeneity Test

Homogeneity tests are used to describe the statistical properties of a particular data set. The test is done to check whether all the items in the population have same characteristics. In this study, homoscedasticity was tested by use of graphs. The figure below is a the resulting scatter plot generated;



From the graph, there is an indication of homoscedasticity. Scatter plots are a useful way to look at the variance of a data and are, typically, our first step in assessing homogeneity. In the figure, it appears that the dots are spread out fairly evenly across the line; this is what is meant by homogeneity of variance. Hence the assumption for homogeneity of variance is satisfied.

4.4 Inferential Statistics

This section contains the correlations, the ADF Test, ganger causality test and regression analysis. Under inferential statistics, both correlation and multiple regression analyses were performed. Whereas the former was utilized in assessing nature and association direction, among study variables, latter was used to assess exchange rate, inflation and interest fluctuation effect on returns of stocks measured by the overall performance of the stocks.

4.4.1 Correlations Analysis

It established nature and the strength of relation between variable of research. In this section, the study also assessed the nature and direction of the association, among the study variables

Table 4.4: Correlations

Variables		Correlations			
		NSESHAREINDEX	INTERESTRATE	EXCHANGERATE	INFLATION_CPI
NSESHAREINDEX	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	20			
INTERESTRATE	Pearson Correlation	-.410	1		
	Sig. (2-tailed)	.013			
	N	20	20		
EXCHANGERATE	Pearson Correlation	-.333	-.421	1	
	Sig. (2-tailed)	.023	.035		
	N	20	20	20	
INFLATION_CPI	Pearson Correlation	-.58	-.567**	.930**	1
	Sig. (2-tailed)	.009	.009	.000	
	N	20	20	20	20

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

Source: Author (2017)

Table above depicts significant and negative correlation between NSE Share Index and inflation at 0.05 interval (r = -0.58; Sig. = 0.009). A weak and negative correlation was however observed between exchange rate and both NSE Share Index (r = -0.333; Sig. = 0.023) and interest rate (-0.41; Sig. = 0.013).

4.4.2 Augmented Dickey-Fuller (ADF) Unit Root Test

It was employed to check stationery of time series data. Results are below

Table 4.5: Augmented Dickey-Fuller (ADF) Unit Root Test

Null hypothesis: the time series has a unit root

Augmented Dickey-Fuller test statistic	**NSE Share Index**	**Interest Rates Changes**
t-statistic	-3.37122	-6.67233
Prob.*	0.007013	0.0000701

Source: Author (2017)

Discoveries above shows that the P values of stock index (an indicators of the returns on stock) and interest rates changes were 0.0070 and 0.0000701, which are less than the significance value 0.05.

4.4.3 Granger Causality Test

It was applied to test causal relation between interest rates and NSE Share Index of firms listed at NSE. Table below illustrates the results obtained;

Table 4.6: Granger Causality Test

Null hypothesis	F-statistic	Prob.	Casual inference
Interest rate change does not granger cause NSE Share Index	19.373	0.0001	Causality
NSE Share Index does not granger cause Interest Rates	0.0038528	0.9508	No causality

Source: Author (2017)

The results on table 4.6 indicates causal relation between interest rates change and NSE Share Index since the P-value (0.0001<0.05). On the other hand, outcomes showed no causal relation between NSE Share Index and between interest rates change since the p-value (0.9508>0.05).

4.4.4 Regression Analysis

It established relation between independent, control and dependent variable. Regression analyses were performed with the assumption that: there is a normal distribution among variables; there is a linear association amongst needy and autonomous factors for estimation accuracy. Regression analyses produced both the coefficients of determination and (ANOVA). ANOVA indicated significant mean difference exists amongst needy and autonomous factors. Table 4.6 below shows the regression results;

Table 4.7: Model Summary

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.578[a]	.334	.209	625.02894	.594

a. Predictors: (Constant), INFLATION_CPI, INTERESTRATE, EXCHANGERATE

b. Dependent Variable: NSESHAREINDEX

Source: Author (2017)

Findings show independent variables had a qualified influence on dependent variable as shown by an Adjusted R Square =0.209. The output indicates that the strength of association between the variables is relatively low (Adjusted R Square = 0.209). The four independent variables (INFLATION_CPI, INTERESTRATE, and EXCHANGE RATE) that were collectively studied, explain only 20.9% of NSE share index variation as represented by Adjusted R Square.

Table 4.8: ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3133194.049	3	1044398.016	2.673	.082[b]
	Residual	6250578.751	16	390661.172		
	Total	9383772.800	19			

a. Dependent Variable: NSESHAREINDEX

b. Predictors: (Constant), INFLATION_CPI, INTERESTRATE, EXCHANGERATE

Source: Author (2017)

In view of the results in table 4.8 above significance value is 0.002 (which is greater than > 0.05) indicates overall model is not statistically significant in predicting interest rate changes affect NSE Share Index. A P-value > 0.05, shows that overall model was a not good fit.

A regression coefficient is a key yield of relapse examination. It is translated as the extent of the difference in the needy variable that is unsurprising from the free factor. The results are below;

Table 4.9: Regression Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	12168.747	3169.891		3.839	.001		
	INTERESTRATE	-318.590	113.062	-.746	-2.818	.012	.593	1.685
	EXCHANGERATE	55.968	55.914	.595	1.001	.332	.118	8.483
	INFLATION_CPI	-48.525	30.707	-1.034	-1.580	.134	.097	10.292

a. Dependent Variable: NSESHAREINDEX

Source: Author (2017)

The regression function extracted using the unstandardized betas is below

($\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_1 X_2 \varepsilon}$):

$$Y= 12168.747- 318.590X_1+55.968\ X_2-48.525\ X_3$$

According to the regression function, holding all factors constant at zero, the coefficient for NSE Share Index will be 14.431. To test the fit of the model the t values were used. Only interest rate changes was found to have a significant influence on the NSE share Index (β =-318.59, P-value (0.12<0.05)). Inflation, (β =-48.525, P-value (0.134>0.05), and Exchange rate (β =55.968, P-value (0.332<0.05) were determined not to significantly influence the NSE share Index.

4.4 Interpretation of Findings

From findings, we can deduce that the mean value of the stock market index was 4504.4 whereas the average consumer price index (inflation) was 151. The average interest rates was found to be 17.18% over the period of study. The findings also show that the average value of exchange rates was 91.84. The findings show that NSE Share Index, Exchange rate and interest rate were moderately skewed to rightly. Bulk of the data is at the right if we drew a graph of normality and their peak is toward the right and the left tails are longer.

A fairly normal distribution was recorded in the performance of the NSE share Index across for the period of December 2012 to August 2016. Interest rate changes experienced a declining trend from December 2015 to August 2016 falling from 17.45% to 13.69% respectively; and over the same period, the inflation has seen an average quarterly increase from first quarter of 2015 to the last quarter of 2016 increasing from 169.76 to 175.18 respectively. The findings further reveal that there have been a declining trend on the exchange rate from last quarter of 2015 to the last quarter of 2016 falling from 100.84 to 101.85 respectively.

The findings from the correlation analysis established the nature and the strength of the relationship that existed among the NSE Share Index, Inflation, Exchange rate and interest changes. Notably, the inflation and exchange rate have a positive and strong association.

An increase in exchange will strongly influence a positive increase in inflation. The findings also show weak and negative correlation between exchange rate and NSE Share Index. This implies that if the exchange rates continue to rise then the NSE Share Index will continue to drop. In addition, the results show that there was a significant and negative correlation between NSE Share Index and inflation. These results are in concurrence with those of Ambrosio, (2013), many studies have delivered clashing outcomes when a few components are considered; geology and day and age regarding the effect of inflation on stock returns.

Regression analysis established relation between independent variable, control and dependent variable. The findings show that the independent variables (Inflation , Interest rate, Exchange rate) significantly influenced the dependent variable as shown by an R=0.578. The output indicates that the strength of association between the variables is moderately high (R= 0.334). The independent variable collectively studied, explained only 33.4% of the of equity returns in stock market as measured by the NSE Share Index. Results reveal that the overall model is not statistically significance in predicting interest rate changes impact the equity returns in stock market since P-value0.82> 0.05, shows that the overall model was a not good fit. Findings are in agreement with those of Swanson and Williams, (2014).

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

Part shows research findings, provides conclusions and recommendations, presents study limitations and suggests areas, which require further research.

5.2 Summary of Research Findings

Review examined changes in Interest rate impact on performance of equity returns at NSE. NSE share index is a market-capitalization weighted index for the Nairobi Securities Exchange was used to represent the entire NSE population. The study methodology was used to measure the magnitude of interest rates changes on NSE share index. The study was motivated by the need to establish how exchange rate, interest rate and inflation as aspects of the economy affect the value of the NSE share index. Historical data on interest rates and NSE Share Index was obtained from the CBK weekly bulletin and NSE daily reports respectively for the period.

Research objective was determining interest rate changes impact on stock market returns at NSE. Independent variable for this study was interest rate changes while dependent variable was stock market returns measured using NSE share index. Inflation and exchange rates were other independent variables hypothesized to influence stock market returns measured using NSE share index. A fairly normal distribution was recorded in the performance of NSE share Index and Interest changes for the period of December 2012 to August 2016.

The correlation findings revealed negative correlation between inflation, interest changes, exchange rates and stock market returns. Granger causality test discovered causal relation between interest rate changes and NSE Share Index but there was no causal relation between NSE Share Index and interest rate changes. Regression results found significant negative relation between interest rate changes and NSE Share Index and a non-significant positive relationship between exchange rates and NSE Share Index. The findings also found an insignificant negative relationship between inflation and NSE Share Index.

5.3 Conclusions

The study found concludes that exchange rate, interest rate risk, and inflation, influenced NSE share index of companies listed in NSE. The study settles that the coefficient for exchange rate was 55.968, meaning that exchange rate positively affected the NSE share index of firms listed in NSE. Review also concluded that the coefficient for interest rate changes was -318.590, meaning that interest rate changes negatively and significantly influenced the NSE share index of firms listed in NSE.

Findings also revealed that interest rates significantly and negatively influences NSE Share Index and consequently the stock market returns. Review discoveries established that inflation insignificantly and negatively influenced NSE Share Index and consequently the stock market returns. This leads to the conclusion that inflation negatively affects stock market returns hence an inverse relation between inflation and stock market returns at NSE.

Review further found a positive and insignificant relation between exchange rates and NSE Share Index and consequently the stock market returns. Conclusion that an increase in exchange rates negatively affects stock market returns hence an inverse relation between exchange rates and stock market returns at NSE. In addition, review concluded that model developed was not sufficient to explain the how independent the variables affect dependent variable.

From the trend analysis, the researcher concluded that interest rate changes have an effect on performance of NSE share index. Interest rate cuts were followed by rise in the NSE share index in most of the occasions while interest rates rise were followed by a decline in the NSE share index. However there were certain situations where interest cuts were followed by decline of the NSE share index and also there were instances when Interest rate rises were followed by rise of the NSE share index.

5.4 Recommendations

The study concluded that inflation positively affects stock market returns. Based on this conclusion the study recommends that government of Kenya should formulate policies on inflation to ensure that the rise of inflation does not affect stock market returns. Strategies to facilitate a favorable interest rate changes risks management at the NSE companies should be adopted by management for a good return on the

stocks. As the findings illustrated, NSE share index among companies listed in NSE is highly dependent on the interest rate changes.

The study concluded that interest rates negatively affect NSE Share Index. As per this conclusion, review recommends CBK should formulate prudential guidelines to ensure the rise and fall of interest rates does not have adverse effect on the NSE Share Index and consequently the stock market returns. Review concluded that an increase in exchange rates negatively affects NSE Share Index. As per this conclusion, review recommends CBK should ensure that formulate policy mechanisms to ensure fluctuation in exchange rates have a minimal negative impact NSE Share Index and consequently the stock market returns.

The study also recommends that local academicians and researchers need to progressively study impact of fluctuating interest rates on the stock return in order to add on to the limited literature in the area. This will ensure that there will be adequate local literature that can be used to relate to local situation. Foreign studies may not be reliable to explain the case of the effect of microeconomic variables in Kenya.

5.5 Limitations of the Study

Various impediments were inevitable in course of the study, albeit minimal and with no significant effects to the quality of the study. The key drawback of the research was that the panel data used was for a period of five years and data from the years 20 quarterly results. A study with a longer period would have highlighted a longer term picture of the influence of exchange rate fluctuation, interest changes and inflation on performance of NSE Share Index. The R Squared values also revealed that the variables under consideration only explain less than 33.4% of the variations in NSE Share Index; other important factors were thus not captured.

The other limitations of this study is with regard to data availability, the data was tedious to collect and compute as it was in its very raw form. Due to lack of standardization of financial statements from various companies listed in NSE, data computation was made even harder. In addition, time and resources allocated to this study could not allow the study to be conducted as deeply as possible in terms of other predictor variables for stock volatility of firms listed in NSE.

Review eyed on NSE share index of all the listed companies at the NSE. These companies are categorized into Agricultural, Banking, Commercial, Energy, manufacturing, among other categories. The researcher acknowledges that due to the differences in the business models of these companies, effect of interest rates on performance of their stocks may vary from one category to another. If this study was focused on companies in the same sector alone, perhaps the results could be differ.

5.6 Suggestions for Further Research

Study suggests that time factor the study used can be enhanced by expanding the same study to cover a longer period. A study should be done that focuses on the same topic, but uses different time series data covering a longer stretch of time. This is so as to address the assumption that a longer time period is expected to provide better long standing findings reflecting the length of experience by NSE as opposed to the five year period used in the present study.

This study used the regression model and the granger causality test to establish effect of changes in interest rate on NSE Share Index and consequently stock market returns. Thus, this study suggest an examination of relation between interest rate changes and stock returns using other econometric models like the model (TGARCH), Johansen Cointegration Technique and (GARCH) to capture effects of interest rate changes persistence.

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APPPENDICES

Appendix I: Data Collection Sheets

Inflation

S. No.	LISTED COMPANY	Inflation					
		FY10	FY11	FY12	FY13	FY14	FY15
1							
2							
3							
4							
5							
6							
7							

Interest Rate

S. No.	LISTED COMPANY		Interest Rate					
		FY10	FY11	FY12	FY13	FY14	FY15	FY16
1								
2								
3								
4								
5								
6								
7								

Interest Rate Change

S. No.	LISTED COMPANY	Interest Rate Change					
		FY11	FY12	FY13	FY14	FY15	FY16
1							
2							
3							
4							
5							
6							
7							

Exchange Rate

S. No.	LISTED COMPANY	Exchange Rate					
		FY11	FY12	FY13	FY14	FY15	FY16
1							
2							
3							
4							
5							
6							
7							

Equity

S. No.	LISTED COMPANY	Equity					
		FY11	FY12	FY13	FY14	FY15	FY16
1							
2							
3							
4							
5							
6							
7							

Return on Equity

S. No.	LISTED COMPANY	Return on Equity					
		FY11	FY12	FY13	FY14	FY15	FY16
1							
2							
3							
4							
5							
6							
7							

Appendix II: Listed Companies at the Nairobi Security Exchange

AGRICULTURE

1 Eaagads Ltd

2 Kapchorua Teas Co. Ltd

3 Kakuzi

4 Limuru Tea Co.

5 Rea Vipingo Plantations Ltd

6 Sasini Ltd

7 Williamson Teas Kenya Ltd

AUTOMOBILES AND ACCESSORIES

1 Car and General (K) Ltd

2 Sameer Africa Ltd

3 Marshalls (E.A.) Ltd

BANKING

1 Barclays Bank Ltd

2 CFC Stanbic Holdings Ltd

3 I&M Holdings Ltd

4 Diamond Trust Bank Kenya Ltd

5 HF Group Ltd

6 KCB Group Ltd

7 National Bank of Kenya Ltd

8 NIC Bank Ltd

9 Standard Chartered Bank Ltd

10 Equity Group Holdings

11 The Co-operative Bank of Kenya Ltd

COMMERCIAL AND SERVICES

1 Express Ltd

2 Kenya Airways Ltd

3 Nation Media Group

4 Standard Groups Ltd

5 TPS Eastern Africa (Serena) Ltd

6 Scan group Ltd

7 Uchumi Supermarket Ltd

8 Hutchings Biemer Ltd

9 Longhorn Publishers Ltd

10 Atlas Development and Support Services

11 Deacons (East Africa) Plc

12 Nairobi Business Ventures Ltd

CONSTRUCTION AND ALLIED

1 Athi River Mining

2 Bamburi Cement Ltd

3 Crown Berger Ltd

4 E.A.Cables Ltd

5 E.A.Portland Cement Ltd

ENERGY AND PETROLEUM

1 KenolKobil Ltd

2 Total Kenya Ltd

3 KenGen Ltd

4 Kenya Power & Lighting Co Ltd

5 Umeme Ltd

INSURANCE

1 Jubilee Holdings Ltd

2 Pan Africa Insurance Holdings Ltd

3 Kenya Re-Insurance Corporation Ltd

4 Liberty Kenya Holdings Ltd

5 Britam Holdings Ltd

6 CIC Insurance Group Ltd

INVESTMENTS

1 Olympia Capital Holdings ltd

2 Centum Investment Co Ltd

3 Trans-Century Ltd

4 Home Afrika Ltd

5 Kurwitu Ventures

INVESTMENTS SERVICES

1 Nairobi Securities Exchange Ltd

MANUFACTURING AND ALLIED

1 B.O.C Kenya Ltd

2 British American Tobacco Kenya Ltd

3 Carbacid Investments Ltd

4 East African Breweries Ltd

5 Mumias Sugar Co. Ltd

6 Unga Group Ltd

7 Eveready East Africa Ltd

8 Kenya Orchards Ltd

9 A.Baumann CO Ltd

10 Flame Tree Group Holdings Ltd

TELECOMMUNICATION AND TECHNOLOGY

1 Safaricom Ltd

REAL ESTATE INVESTMENT TRUST

1 Stanlib Fahari I-REIT

EXCHANGE TRADED FUND

1 New Gold Issuer (RP) Ltd

Appendix III: DATA

QUARTERS	NSESHAREINDEX	Interest Rate	▲Interest Rate	EXCHANGERATE	INFLATION
2012Q1	3370	20.34		KES 83.54	131.36
2012Q2	3700	20.3	-0.04	KES 84.76	133.63
2012Q3	3970	19.73	-0.57	KES 84.61	131.78
2012Q4	4133	18.15	-1.58	KES 85.71	133.35
2013Q1	4861	17.73	-0.42	KES 86.50	136.72
2013Q2	4598	16.97	-0.76	KES 84.98	139.46
2013Q3	4793	16.86	-0.11	KES 87.17	140.99
2013Q4	4927	16.99	0.13	KES 86.15	143.25
2014Q1	4885	16.91	-0.08	KES 86.33	145.99
2014Q2	4906	16.36	-0.55	KES 87.43	149.27
2014Q3	5199	16.04	-0.32	KES 88.49	151.62
2014Q4	4936	15.99	-0.05	KES 90.04	152.09
2015Q1	5346	15.46	-0.53	KES 91.81	154.48
2015Q2	5500	15.48	0.02	KES 97.01	159.71
2015Q3	5200	16.57	1.09	KES 103.89	160.93
2015Q4	5100	17.45	0.88	KES 102.08	163.27
2016Q1	3798	17.93	0.48	KES 102.29	176.93
2016Q2	3979	18.15	0.22	KES 100.84	169.76
2016Q3	3655	16.54	-1.61	KES 101.32	171.56
2016Q4	3232	13.69	-2.85	KES 101.85	175.18