THE EFFECT OF INTEREST RATES AND INFLATION ON STOCK MARKET RETURNS: A CASE STUDY OF THE NAIROBI SECURITIES EXCHANGE

OTIENO SYLVESTER STEVEN 136654

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Strathmore Institute of Mathematical Sciences Strathmore University Nairobi, Kenya

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Project contains no material previously published or written by another person except where due reference is made in the Research Project itself.

OTIENO SYLVESTER STEVEN

……..... [*Signature*]

……..... [*Date*]

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

Dr SEBASTIAN K KALOVWE

..…….....[*Name of Supervisor*]

……..... [*Signature*]

……28/01/2025…….....[*Date*]

Strathmore Institute of Mathematical Sciences

Strathmore University

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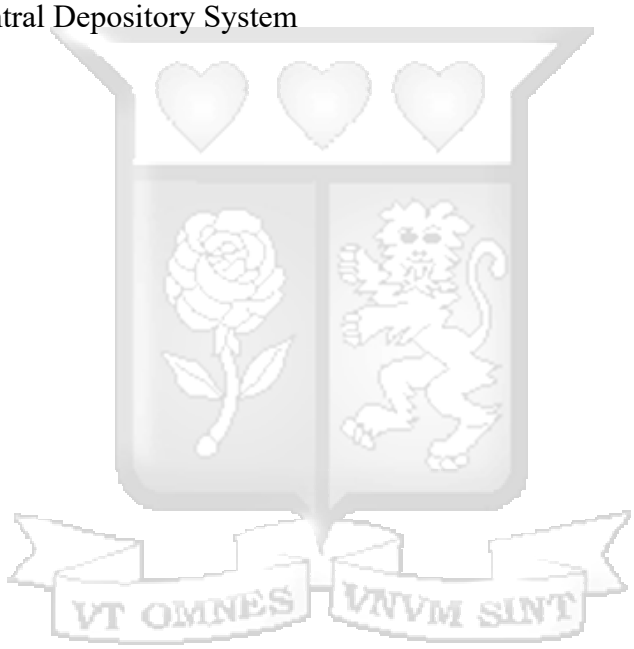
LIST OF ABBREVIATIONS

NSE	Nairobi Securities Exchange
OLS	Ordinary Least Squares
EMH	Efficient Market Hypothesis
GDP	Gross Domestic Product
CBK	Central Bank of Kenya
CPI	Consumer Price Index
ARIMA	Autoregressive Integrated Moving Average
CDS	Central Depository System



ABSTRACT

Stock market provides a platform for enhancing savings and investment which encourages investors with surplus funds to invest in various financial instruments in accordance with the level of risk, liquidity and other key financial factors that might affect their investment. This study focuses on the Kenya's economic environment and on two major macroeconomic variables which include interest rate and inflation. This study aims to achieve three primary objectives: to analyze the impact of inflation on stock market returns, to examine the effect of interest rates, and to assess their combined influence on the performance of NSE-listed firms. Using a quantitative research design, the study utilizes historical data on inflation rates, interest rates, and stock market returns over a specified period. Financial Econometric models, including regression analysis, are employed to determine the relationships and assess the magnitude of these effects. Preliminary findings suggest that inflation and interest rates significantly affect stock market returns, although their impacts vary across different sectors and time periods. Using secondary data from the CBK and NSE, this descriptive time series correlation analysis model's monthly inflation rates and least squares regression analysis of order is estimated to establish the link held betwixt monthly market gains and a host of other critical economic components. In the model, monthly market returns serve as an outcome variable. These returns will be influenced by the monthly rates of inflation, the monthly interest rates, the spot exchange rates at the end of each month, and the liquidity in the market at month's end, all acting as predictor variables. We try to see how these indicators of the economy come together to influence the performance of the market every month using OLS.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Stock markets provide room for portfolio diversification for every individual characterized as investors. The markets are the primary drivers for economic growth which is made possible by pooling investment funds for maximum utilization. The trading of financial assets takes place in the equity markets, providing a platform for business firms to obtain investment funds by selling shares. This enables them to fulfil their investment goals. This study focuses on two variables, which include inflation and interest rates. Inflation and interest rates are particularly influential due to their pervasive impact on the economy. The increase in the general price level of goods and services reflects inflation, leading to a reduction in purchasing power. Interest rates, determined by central banks, reflect the cost of borrowing money and the reward for saving it. Their influence extends across various economic sectors, including the stock market, where they can affect corporate profitability, investor behavior, and overall market performance. The Nairobi Securities Exchange (NSE) stands as a pivotal financial institution, providing a place to buy and sell interests in companies that have gone public.

1.1.1 Inflation

The term inflation indicates an increase in prices of goods and services, which reduces the buying power of currency. Inflation is usually measured by some indicators, one of them being the consumer price index, and has incredibly significant effects on an economy. An excessively crucial influence of inflation can be outlined in relation to consumer behavior, business cost, and investment returns. Some of the impacts are illustrated below.

Historical Volatility: These inflation rates could, however, be volatile in expanding markets, including Kenya, because of variables like agricultural productivity, energy prices, and fluctuations in exchange rates.

Effects on Equities: Inflation impacts equities through its effects on stock market returns. It has an impact on corporate earnings, cost structure, and consumer demand. In the event of high inflation, an increase in interest rates would often follow, thus increasing the cost of borrowing and potentially further margin erosion to the borrower.

1.1.2 Interest Rates

Interest rates set by the central bank are an expensive percentage that accrues while borrowing money. These interest rates are a key financial tool by which monetary policy is used to restrain inflation, manage economic growth, and maintain the stability of the financial system. An example of how interest rates affect the economy include:

Investment and Borrowing: Interest rates change, and these changes create an impact on how the investors invest in companies and consumers, decreasing the stock; growth projections in the enterprises and management of the available resources to the companies. High-interest rates create an influence on declining investments, right lowering the stock markets returns.

1.1.4 Stock Market Returns

Stock market return is the gain or loss made on investments in the stock market. This is influenced by different factors, including corporate performance, investment, and people's feelings, among other things. The stock exchange offers an excellent prospect for growth and development of an economy. Any company may raise capital for its expansion and growth by issuing shares to the public or by way of rights issue of more shares to the existing equity holders of the company. This serves as a very inexpensive way for any business.

It is, therefore, a competitive method for raising additional capital. The market helps pool resources, savings, and directs them into productive activities in the economy, which helps spur growth and development.

1.1.4 Nairobi Securities Exchange

The NSE is the premier stock exchange of Kenya and one of the largest financial markets in Africa. The NSE was incorporated in 1954 to provide an avenue for trading in equities, bonds, and derivatives, thereby allowing corporate organizations to raise capital and various investment opportunities for local and international investors. Market performance is tracked through key indices, which capture the pulse of the economy in general trends and health: the NSE 20 Share Index and the NSE All Share Index.

The NSE is regulated by the CMA, and because of this, it provides a marketplace with integrity to investors. Volumes have been increasing at high frequencies due to the

expanding economies. Some of the recent developments at the exchange include the introduction of derivatives trading, technological advancement of trading platforms, and initiatives toward promoting sustainable finance. Considering the existence of challenges such as economic volatility and political uncertainty, the NSE has huge growth potential, with efforts underway to improve its market infrastructure, attract more listings, and integrate with other bourses in East Africa.

1.1.5 The Link Between Inflation, Interest Rates, and Stock Markets Returns

Interactions among inflation, interest rates, and stock market returns are sometimes complex and multi-level. The influence of inflation and interest rates on stock prices may be both direct and indirect to the extent that the impact is related to investor expectations, corporate earnings, and general market sentiment.

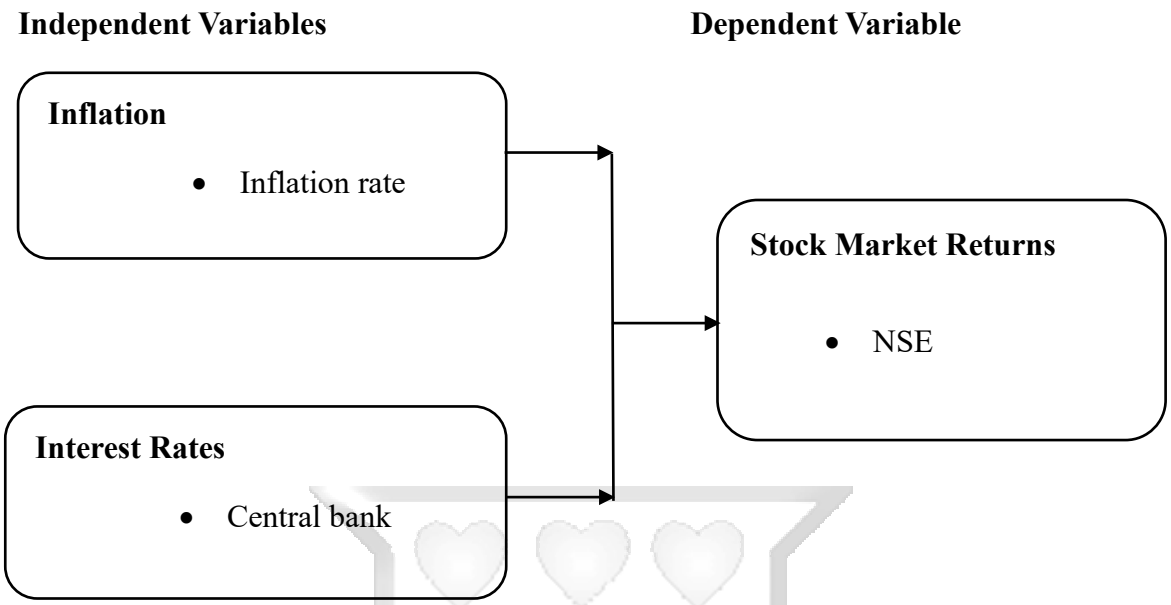
Inflation-Stock Relationship: In the past, there has been a moderate set of evidence in favor of moderate inflation, which is conceived positively related to economic growth and thus may support increasing stock prices, but high inflation is seen conducive to influence called cost push and eroding profit margins, which is acknowledged as a negative influence on stock return.

Interest Rate-Stock Relationship: Higher rates of interest can in general increase the cost of capital, which reduces the corporate profit further and can make the stock prices lower. Lower interest rates can have the opposite effect of inflating borrowing and spending to produce more robust stock valuations.

Joint Effects: Joint Effects of Inflation and Interest Rate on Stock Return Performance are anything but linear. For instance, though rising inflation is invariably accompanied by increasing interest rates, the two can work in tandem to drag stock market returns.
Conversely, low inflation and low interest rates may usher in stock market growth.

Conceptual Framework: A Hypothetical Graphical Representation

Figure 2.1: Conceptual Framework



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The focus of the study is to unravel the alleged complex relationship of inflation,

interest rates, and stock market returns of firms quoted at the Nairobi Securities Exchange. The concept of these major economic variables would be developed to form an understanding of their trends, hence enable more prediction and analysis of their combined effects on stock market performance in leading guidance to investors, policymakers, and economic stakeholders in Kenya.

There have been numerous studies on the economy of Kenya and Nairobi Securities Exchange (NSE). They engage in research that investigates various issues that affect the performance of stock markets regarding equities, such as economy policy, political stability, and sector-specific developments. This paper deals with historical data that the research uses to understand specific trends as well as patterns on the NSE. The availability of more comprehensive and accurate financial and economic data has improved the quality of research in the profession. Furthermore, advances in econometric and statistical analysis tools make it possible to model more intricately the relationships between macroeconomic variables and returns from stock markets.

While there is rampant global and regional interest in the subject, detailed localized studies focusing on these effects, especially those of inflation and interest rates on the Nairobi Security Exchange, are scarce. Most either take broad approaches, covering several markets

across Africa, or they focus on other macroeconomic variables, hence the gap in the nuanced understanding of these two specific factors within the Kenyan context. Only a little research is available on this but less can be identified on how such a scenario has influences on the different sectors of the NSE.

There may be different sensitivities of different industries to both inflation and interest rates, so the sectoral studies will give more specific information at the industry level for the investors and policy makers. Although some insights are revealed in historical analysis, more studies need to consider time dynamics of say, the impact of recent economic shocks such as that posed by the COVID-19 pandemic on the connection between the intended studied variables. This indicates how a relationship may change with time.

Most of the researchers tend to analyze inflation and interest rates in isolation. Some of these research gaps include the integration of these variables with other indicators, like exchange rates, fiscal policy, and world economic conditions, in explaining interlinked effects with stock market returns.

Additionally, there is scarcity in use of more creative methodological techniques capable of capturing intricate, nonlinear linkages between the behavior of the stock market and macroeconomic variables. It is in this respect that new insights and improved predictive performance could be obtained using advanced econometric models and machine learning techniques. The impact of regulatory change on the NSE and its interaction with inflation and interest rates to impact stock returns has not been deeply investigated. Connections stemming from the regulatory environment will be key to building better policies and investment strategies.

1.2 Problem Statement

The stock market represents a vital finance arena and platform for raising capital and investment, against which the general economic performance of a country is mirrored. The NSE principal securities exchange plays a principal role in this country's financial system. The productivity of companies that are NSE-listed is influenced by several factors, with the most important of these factors being the macroeconomic variables.

Inflation has deep effects on the economy through its effect on consumer spending, business costs, and investment returns. For example, since high inflation through history has become synonymous with economic instability and therefore lowering investor confidence that

subsequently decreases the performance of the stock markets, some notable studies show that stock market returns are lower in questionably high inflation environments when the costs and uncertainty increase about the future of financial returns on investment. For instance (Fama, 2024) and (Bodie, 2024) both identified that the performance and the yield on stock markets remains lower as a function of high, questionably high, and extreme inflation rates.

Interest rates are another critical economic variable, within the discretion of the central bank to use as a lever to control monetary policy. Rather, interest rates affect the cost of borrowing, the return on savings, and overall economic activity. In general, rising interest rates result in higher borrowing costs for businesses and consumers, and thus interest rates can work to depress economic growth and stock market returns. Lower interest rates, conversely, might stimulate more economic activity and therefore higher stock valuations (Modigliani & Cohn, 1979); (Bernanke and Kuttner, 2005).

This is more relevant to Kenya in the light of economic structure and vulnerability to the vagaries of external shocks; the prevailing interplay between inflation, interest rates, and the stock markets is, therefore, of relevance. The Central Bank of Kenya has been on a move on its active monetary policy in trying to strike a balance between containment of inflation and allowing for growth, although the effects of these policies on the N.S.E. remain a critical area of study.

Despite the recognized importance of inflation and interest rates and their effect on the stock market performance, local research in relation to the performance of the Nairobi Security Exchange is small. Although international studies provide some knowledge, the displacement in the specific economic situation in Kenya gives it a reason to research further. This gap emanates from the absence of comprehensive studies looking at the direct and combined effects that changes in inflation and changes in interest rates have on stock returns of the currently listed NSE firms.

1.3 Research Gap

Even though there is wide empirical evidence on the connection between economic indicators and market gains in some developed markets, in the context of Kenya, there is limited empirical evidence. The existing studies have also tended to be so general emanating from a point of covering several markets in Africa; others are on general macroeconomic variables such as exchange rates and fiscal policies. There has not been a

comprehensive specific impact of inflation and interest rates on the NSE, creating a vacuum for localized, sector-specific, and temporally relevant research.

However, in these two variables, how they interact and their interactional effects on the stock market returns lack climate. Additionally, there is a scarcity of studies that incorporate recent economic shocks, such as the one caused by the COVID-19 pandemic, into the impact of the inflation-interest rates nexus on Kenya's level of productivity.

1.4 Connecting the Problem Statement and Area of Study

Consequently, it is in pursuit of filling this gap that this study focuses on the Nairobi Securities Exchange. It investigates the manner in which interest rates and inflation affect the stock market performance of companies listed on the NSE and gives specific findings into the peculiar economic circumstances of Kenya. The study will involve the analysis of historical data on the rates of inflation, interest rates, and stock returns, applying advanced econometric models in capturing the complexities of these relationships.

Linking the problem statement to the study area, the research will have magnificent contributions to academic literature and practical applications. For investors, this study will help them understand the ways in which the macroeconomic variables drive stock returns and, in effect, underpin the fact that the investments are worth the expected yield. Policymakers would, in return, benefit from these insights that reflect monetary policy and economic strategies, thereby helping to stabilize the financial markets and foster sustainable growth policies.

1.5. General Objective

Main research objective is to establish the relationship between inflation rates and stock market returns of firms listed at the NSE.

1.6 Specific Objectives

- To determine the impact of interest rates on the stock market performance of companies that are NSE-listed.
- To establish the interaction of interest rates and inflation in affecting the returns of companies listed on the NSE stock exchange market.

1.7 Research questions on the study

1. What is the relationship between inflation rates and returns on stock market of firms listed at the Nairobi Securities Exchange (NSE)?
2. How do interest rates affect the stock market returns for firms listed at the NSE?
3. What is the combined impact of interest rates and inflation on stock market returns firms listed at the NSE?
4. How sector-specific characteristics of firms listed with NSE moderate the relationship between inflation, interest rate, and stock market returns.

1.8 Significance of the Research

The study contributes to the field of research in diverse ways, for example:

It aids in the betterment of corporate planning and performance in the NSE listed firms.

1.8.1 Corporate Strategy:

NSE-listed firms can use the results to develop an understanding about the impact of changes in macro-economic conditions on their stock performance. Understanding these can be utilized in making corporate strategies, particularly applicable in financial planning, capital investment, and risk management. Input sector specific helps the company to develop adaptive strategies to devise ways to ride out inflation and interest rate fluctuations and thus may perform better overall for the benefit of the shareholders.

1.8.2 Serves as guidance to policymakers and the government:

The study provides valuable insights for the policymakers, particularly the Central Bank of Kenya and financial regulators. Understanding the cumulative way in which inflation and interest rates affect the stock market can provide key inputs to the design of monetary policies toward a stable financial system and long-term sustainable economic growth. In the face of these findings, the policymakers could alter the balancing acts between the control of inflation and the taming of interest rates to the least damaging extents on both the stock market and the economy.

1.8.3 Offer Guidance to investors:

Investors are regularly confused at the time of changing interest rates or rising inflation rates. This paper makes more evident how economic situations as such regularly affect the

returns in the stock market, leading to more certainty and, hence, helping investors make a more certain prediction of the market's reaction. This study indicates the accordance of the differential influence of inflation and rates of interest on the various sectors under the NSE. This information is invaluable in strategic asset allocation, for it gives the investors the opportunity to overweigh or underweight on certain sectors depending on expected macroeconomic conditions.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The literature review encompasses past research on the relationship between the macroeconomic variables, with a special focus on inflation and interest rates, and stock market returns. Based on these past studies and their findings, the review attempts to elaborate on a comprehensive understanding of the theoretical and empirical basis of this research.

2.2 Theoretical Review

The theoretical review for this study on the impact of inflation and interest rates on stock market returns from firms listed at the Nairobi Securities Exchange is based on a few important economic and financial theories.

In finance, one of the central calls to interest has been in analyzing the relationship between macroeconomic general factors and stock market returns, including inflation and interest rates. The foundational theories guiding such inquiry include:

2.2.1 The Efficient Market Hypothesis (EMH)

The EMH represents one of the most accepted and eminent financial theories, purporting that financial markets are informationally efficient, and competition among many profit-maximizing and price-sensitive investors causes prices to adjust rapidly to the arrival of new information, so no investor can expect the information or market pattern (Fama, n.d.). The EMH, as explained by (Naseer, 2015), "is one which security prices adjust rapidly to the arrival of new information. The Efficient Market Hypothesis (EMH) suggests that security prices that prevail at any time in the market should be an unbiased reflection of all currently available information and return earned is consistent with their perceived risk."

If markets are truly efficient, regimes of changes in inflation and interest rates must be impounded perfectly fast into stock prices, thereby eliminating predictable patterns. However, real-world deviations often reveal that markets do not respond perfectly to the latest information, thereby availing opportunities for this study on how these macro-economic variables affect stock returns in the NSE.

(Naseer, 2015) maintains that EMH is based on the random walk model, according to which information comes into the market in a random and unpredictable manner, and price changes are thus expected to be random and independent. It is suggested that the above-average return is associated with average risk.

Moreover, there are different forms of Efficient Market Hypothesis. In a landmark paper (Naseer, 2015), the author explains the three forms of EMH as follows, "The random walk hypothesis, which states that security prices move arbitrarily and completely independent of each other, is consistent with weak-form EMH. The latter says that the prices of a security reflect all the available information in the market relating to the security; this includes past price data. Thus, technical analysis—that is, trend analysis, by which experts correctly forecast future price changes from the chart of historical price movements of stocks—does not enable anyone to defeat the market by earning extra-ordinary profits. As pricing reacted promptly to the market and public information, this includes releases of dividends and earnings announcements, as well as political or economic events, in the spirit of semi-strong form Efficient Market Hypothesis. Hence, generation of abnormal returns through fundamental analysis is not conceivable. Strong form EMH The strong form efficiency of market hypothesis posits that prices represent knowledge representing both public and private, hence no investor has."

It concludes that efficient markets, according to the EMH, exist in a continuum and that the potential to earn abnormal returns decreases with increasing consideration of information. Such a theoretical framework determines the perception about the behavior of markets and orients investment strategies toward more realistic and sustainable concepts. **2.2.2 The Fisher Effect**

It is called the Fisher Effect, after the economist Irving Fisher, and it states that nominal interest rates move point-for-point with expected inflation. (*Fisher, I*, 1930) and (Cooray, n.d.) Hence, because of this phenomenon, any increase in expected inflation would raise the nominal interest rate by the exact same amount so that the real interest rate remains constant.

It is based on the fact that the nominal rate of interest is an aggregation of the real rate of interest and the expected rate of inflation. Mathematically, the expression is given as:

$$\boldsymbol{i = r + \pi^e}$$ ……Equation 2.1

where:

$\boldsymbol{i}$ is the nominal rate of interest,

$\boldsymbol{r}$ is the real rate of interest, $\boldsymbol{\pi^e}$ is the expected rate of inflation.

Elements of the Fisher Effect:

- Nominal interest rate: This is the interest rate on its own, unadjusted for inflation. It is a rate of money growth through time without regard to any loss in real purchasing power through inflation.
- Real Interest Rate: An interest rate that is corrected for inflation to express the actual cost of credit and the real rate of return to a saver. It tells the rate at which purchasing power of money grows with time.
- Expect Inflation Rate: It is the rate at which consumers expect price rises in the future. The reason it is an important factor is that it affects the real and nominal interest rates.

Theoretical Implications:

- Independence of the Real Interest Rate: The Fisher effect simply states that the real interest rate is independent of monetary policy and depends on the real factors of productivity and time preference for consumption in an economy.
- Nominal Interest Rate Change: According to the Fisher Effect, inflation will affect the nominal interest rate directly in any change in the expected inflation rate, assuming the real rate of interest remains the same. For instance, a 1% appreciation in expected inflation would require a 1% appreciation in the nominal rate.
- The Fisher Effect can be used in an economic and financial scenario to analyze several effects, such as:
- Monetary Policy: Central banks design monetary policies with respect to the Fisher effect to be able to regulate and manage inflation and control interest rates.
- Investment Decisions: Investors would discern the nominal return and real return of the investment through the Fisher effect. Hence enabling better investment decision making.

2.3 Factors that influence stock market returns.

The stock market is dynamic and, thus, offers a huge challenge to investors and fund managers to determine the price of the stock for high returns as observed by Malhotra & Tandon, 2013. They find that investment in shares offers advantages of liquidity and potential superior performance compared with the market, but an efficient model for predicting share prices remains elusive. The share price changes are determined by intrinsic factors besides extrinsic factors.

2.3.1 Market Liquidity and Stability

When there is little market liquidity, landlords may have to push down share prices because they are short of cash to buy the shares back, mainly if supply is increasing continuously. Financial crisis sensitive is period stock markets become, and prices experience volatility. The subscription period and announcements of the right issues are the usual periods that bring down stock prices.

Stock markets may also be governed by regulations that avoid the possibilities of insider trading, which may also be a cause of price volatility. Insider trading refers to a situation where people within a given company trade the company stocks using privileged information about the company's direction. When insiders buy or sell their own shares, the public is likely to feel that they possess vital information about the company thus driving the market behavior in certain ways (*Sunde, 2009*)

2.3.2 Investor Sentiments

Investor perceptions are therefore reflected as movements of share prices. For example, bull market would yield to rising share prices and vice versa for bear markets. Seasonal effects, in the same vein, indicate that share prices are likely to fall during festive seasons in a calendar year as some investors sell off shares to avoid capital loss in those seasons.

Further, share prices are influenced by the degree of confidence that investors have in the wider economy and also in economic policies. For example, a number of happenings – policy reversals, social unrest, and the land reform program – which influenced certain regions from 1997 to 2001 damaged the stock market. This was mainly because such activities and events sent confusing signals about the direction of the economy (Shauna, 2003). The presence of such uncertainties can indeed affect global markets, as was indicated by the tremendous slide in volumes traded in the major world stock markets in the aftermath of the September 11, 2001, attacks on the USA.

2.4 Empirical Literature Review

Numerous studies have addressed the relationships between interest rates, inflation, and stock market returns. The relationships were studied both in relation to Kenya and on an international scale. This section summarizes the findings of these investigations. **2.4.1 Research in Africa**

(Jefferis & Okeahalam, 2000), investigated the impact of macro-economic variables on stock markets in South Africa, -run relationship between the prices of stock with that of exchange rates and interest rates. Also, in South Africa, the stock prices were negatively correlated with interest rates. Zimbabwe, and Botswana. From their findings, it was realized that both in South Africa and Zimbabwe, there exists a longrun positive relationship between stock prices and real GDP as well as between the stock prices and real exchange rate. However, in Botswana, the research proved that existed a short

(Henry Mok, 1993), used the Granger causality test in conjunction with the ARIMA methodology to find causal relationships between Hong Kong stock prices, exchange rates, and daily interest rates between 1986 and 1991. The findings demonstrated the independence of the price indices and the Hong Kong Interbank Offered Rate. Mok discovered that the exchange rate and stock price series were also independent when the investigation was expanded to include their relationship.

2.4.2 Studies in the United States and Latin America

Chen and Jin 2004 conducted multivariate research with a set of economic variables in a comparison of twenty NYSE portfolios. The authors used the conditional mean encompassing test to specify a robust model against heteroscedasticity. Variables included in their model were the monthly growth rate of industrial production, changes in predicted and unexpected inflation, and the term structure of interest rates. The excess rate of return lag was the dependent variable. Based on these results, the authors concluded that conditional excess returns are affected by changes in the term structure, seasonal dummy, delayed market returns, lagged projected inflation and lagged unexpected premium for default.

(Abugri, 2008) tried to make an estimate of the contribution made by selected macroeconomic indicators, such as interest rates, money supply, exchange rates, and industrial production, in capturing the market returns for four countries in Latin America. The findings demonstrate that, despite notable differences in the relevance and magnitude of domestic macroeconomic variables, global forces consistently account for returns in all markets.

2.4.3Research in Emerging Markets and Other Regions

(Yuan et al., 2013), examined the relationship of the macroeconomic variables influencing the returns on stock market in the BRIC nations: Brazil, Russia, India, and China. He found

no evidence of the prevailing and previous market return and macroeconomic variables, which shows an indication of weak efficiency in the market. Besides, he could not find out any notable relation relating to the exchange rates, oil prices, with the stock market indices for the under-consideration nations.

(Kyereboah-Coleman & Agyire-Tettey, 2008) examined the effects of broad economic components on the Ghana Stock Exchange by employing quarterly data from 1991 to 2005 in an empirical research study. They found that the performance of the stock market is negatively impacted by market lending rates, often known as deposit money banks. Once more, they noted that the stock market's performance will be adversely affected by inflation, which has a lag.

(Bai, Y., and Green, C.J., 2008) investigated the factors that affected cross-sectional stock return fluctuations in thirteen developing stock markets between 1984 and 2004. Using random effects regression, they were able to determine that changes in the exchange rate had a detrimental influence on stock returns, with a 1-unit increase translating into a 52.8% loss. Conversely, inflation had a favourable impact on stock returns; a one-unit increase translated into a 1.8% increase.

(Koubi, 2008) investigated the factors influencing stock returns and financial development in a sample of 49 nations between 1980 and 1999. Through this research, he discovered that high transaction costs and ambiguous laws weaken stock market stability. Moreover, the findings showed that openness and capital control did not destabilize stock returns, but exchange rate volatility and overall economic instability did.

(Jiranyakul, 2009) evaluated the lead-lag correlations between macroeconomic variables and the Thai stock market index using quarterly data from 1993 to 2007.

Using multivariate time series regression analysis, unit roots tests, co-integration tests, and vector error correction techniques, he discovered evidence of a long-haul connection between the stock market index and broad economic elements (real GDP, money supply, and nominal effective exchange rate). The 1997 financial crisis had no appreciable effect on stock values.

2.4.4 Studies in Germany and Pakistan

(Artmann et al., 2012) examined the factors that influence German stock market returns using a sample of 955 German stocks from 1963 to 2006. The Carhart four factor model, the alternative three-factor model, and the Fama and French three-factor model were the instruments employed for the model's estimation and testing. Based on their findings, they

concluded that there was a strong positive correlation between the average return and variables including momentum, earnings-to-price, and book to-market equity.

(Siddiqui, 2009), using unbalanced panel data, it was possible to observe the elements that explain stock returns in Pakistani insurance companies from 1996 to 2008. The study used panel data fixed and random effects regression to perform Engle-Granger causality tests. Both in the short and long term, it was discovered that uncertainty had a positive statistically significant impact on returns.

2.4.5 In the United States and Namibia

(Folkinshteyn et al., 2015) conducted multivariate regression analysis to identify the factors that contributed to stock returns during the 1987 and 2008 major US stock market crashes. According to their research, stocks with higher betas, more market capitalization, and greater return volatility lost more value during the 1987 and 2008 significant US stock market crashes. In the 2008 catastrophe, the market-to-book ratio had a crucial role in predicting stock returns, although in 1987 it was not as important as it was in 2008.

(Eita, 2011) conducted multivariate regression research to determine the characteristics influencing stock returns during the significant US stock market crashes in 1987 and 2008. Their findings indicate that during the major US stock market crashes of 1987 and 2008, stocks with larger betas, bigger market capitalization, and greater return volatility lost more value. Although it was not as significant in 1987 as it was in 2008, the market-to-book ratio played a significant part in forecasting stock returns during the financial crisis of 2008.

2.4.6 Local Evidence

The second study on the relation of stock prices with different financial components in Kenya, was conducted by Nyamute in 1998. In the study, he realized that the results obtained a positive relationship between stock price and exchange rate. However, the reliability of the results may be compromised by his analysis on non-stationary series.

(Sifunjo and Mwasaru, 2012), explored to determine the causal association between the foreign exchange rate and NSE stock prices using monthly data from November 1993 to May 1999. They used an error correction model in addition to the Johansen cointegration approach in the investigation. The results showed that stock prices are caused by the nominal exchange rate, or shillings per dollar, Granger. They also demonstrated a one-way causal relationship between stock prices and exchange rates, suggesting that fluctuations in currency rates are important factors influencing stock prices in Kenya.

(Waweru, 2012) estimated the determinants of stock price volatility on the NSE. From his results, he obtained coefficients of -34.818 for interest rates, -119.475 for the exchange rate, and 32.204 for inflation. That means increasing the inflation rate increases the stock price, while increasing interest rates or exchange rates will reduce the price of stock.

A study by (Kimani & Mutuku, 2013), examined how the performance of the Nairobi stock market was affected by the CDS, inflation, real GDP, terms of trade, and net effective exchange rate, among other macroeconomic factors. They conducted the unit root test using the Augmented Dickey-Fuller test procedure, employing quarterly data from the Nairobi Stock Exchange and the Central Bank of Kenya for the months of December 1998 to June 2010. They discovered that the variables were integrated of order one, I (1). As a result, more than four cointegrating associations were demonstrated using the Johansen-Juselius cointegration test. According to an error correction model, quarterly corrections for 27% of equilibrium deviations were made. Their cointegrating model demonstrated that the CDS had a considerable and beneficial influence on stock market performance, while there was a negative association between inflation and stock market performance.

2.5 Knowledge Gap

Though the roles of inflation and interest rates in determining stock market performance are very well recognized, there exists a huge void in local research with respect to the Nairobi Securities Exchange. Hence, this research is important because, though existing international studies give valuable insights, the unique economic landscape of Kenya warrants a more focused investigation. Existing local studies have been characterized by examining the influence of single macroeconomic variables in isolation; for example, the combined impact of interest rate and inflation on stock returns of firms listed on the NSE has not been considered. Some of these gaps include:

2.5.1 Limited timeframes and data:

Past studies reviewed indicate that they have always focused on some specific time period, which may not capture general economic trends influencing the NSE over a longer time period. A larger dataset will make it easier to see how the macroeconomic variables and stock market performance are related over the long run.

2.5.2 Combined Effect of Macroeconomic Variables:

The majority of the research focuses on how certain macroeconomic factors, such as interest rates or inflation, affect stock values. Analysis of the combined effect of these variables to forecast stock returns has been the subject of very few research.

2.5.3 Contribution of this study to the Gap:

As such, the current research will fill this void by attempting a more complete analysis of the interactive effects of interest rates and inflation on the returns of firms that are NSE-listed. Specifically, using more robust econometric estimation procedures like the Johansen cointegration procedure and error correction models, this study delivers more credible results about the dynamic relationships linking these macroeconomic variables with performance of the stock market.

2.6 Conceptual Framework Summary of the Literature Review

The conceptual framework for this study is based on theoretical and existing empirical literature showing the relationships between macroeconomic variables and stock market performance, with a special focus on the impact of inflation and interest rates on stock returns among firms listed at the Nairobi Securities Exchange. Theoretically, it follows that higher inflation tends to result in poor stock market performance due to decreased confidence among investors and increased economic instability. Likewise, an increase in interest rates is bound to dampen stock market performance by making it more expensive to borrow, thus cramping economic activity.

The interaction of both variables is important in establishing the overall effect of these two factors on stock market performance. While past studies have often done this in bits, current research seeks to fill that gap by analyzing their simultaneous effects on the NSE. This study will use strong econometric techniques to enunciate how these macroeconomic variables, at any given time, dynamically relate with stock market performance in Kenya, thereby offering a serious insight into how the tango of inflation, interest rates, and stock returns plays out.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The approaches that will be utilized to determine how interest rates and inflation affect stock market returns at the Kenyan stock exchange are described in depth in this chapter.

3.2 Research Design

The dependent variable in this study is the monthly market returns; the independent variables are the monthly inflation, interest, spot exchange, and market liquidity rates. A descriptive time series correlational design is used to assess the relationship between the dependent and independent variables. According to (Webb, Campbell, Schwartz, and Sechrest, 1966), time series investigations are descriptive by nature. This descriptive character is especially important when the variables being studied span a long time. The time series design is the only type of research design that continuously documents changes in the study's variables over the course of the investigation.

3.3 Data Collection

The monthly closing share price index, market liquidity, interest and inflation rates, and currency rates are the variables. Monthly observations of the variables mentioned above are included in the dataset. The usage of secondary time series data has been accepted by the research. The Nairobi Securities Exchange provides the information for the Nairobi Securities Exchange Index. Data on interest rates, inflation rates, and exchange rates will be provided by the Kenya National Bureau of Statistics and the CBK, accordingly.

3.4 Data Analysis

The analysis requires that the collected data be entered into SPSS, version 21.0, cleaned for any missing data and inconsistencies for analysis purposes. This study shall use both descriptive statistics as well as inferential statistics to establish the effects of inflation and interest rates on market returns.

3.4.1 Mathematical Model

The market returns were derived from the end of month share indices as:

$$Market\ Return \quad t = (Index \_\_\_\_\_ Index \quad t- \ Index \ t-1 \ t-1)$$

……Equation 3.1

The monthly interest rates, inflation rates, volatility of the currency rate, and liquidity are then regressed against the returns. To ascertain the linear relationship between the dependent and independent variables, this analysis employs a panel regression technique. The regression model is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$ ……. Equation 3.2

Where:

β_0 = Constant variable

X3 = Exchange rate volatility

X2 = Inflation, measured by consumer price index

X1 = Interest Rates, measured by nominal interest rate

e = error term, or variable that encompasses all the variables that influence the dependent variable but were either not included in the model due to their unknown nature or their difficulty to quantify.

Y = Return on stock, measured by the standard deviation or variance.

3.4.2 Test of Significance

In this study, T-tests will be used to evaluate the significance of the association between stock returns and the determinant factors. The goal of this study is to determine if changes in the independent factors—interest rates, inflation rates, market liquidity, and exchange rate volatility—have a meaningful impact on changes in the variables that determine stock returns.

3.5 Adequacy of Analytical Techniques

The methodology describes the analytical techniques in sufficient detail. In this study, a descriptive time series design will be applied to establish the relationship between monthly market returns and other independent variables. This will include inflation rates, interest

rates, exchange rates, and market liquidity. Secondary time series data will be sourced from reliable institutions; therefore, the dataset will be dependable. Data entry, cleaning, and preparation will be done in SPSS version 21.0 for analysis. Descriptive statistics and inferential statistics methods will be used to assess the effects of the independent variables on market returns. The specific analytical model used for this study is a regression model, where market return is regressed against the independent variables. The model is explained along with the formula for computing the market return as well as the regression equation that would establish a relationship between variables.

3.6 Reasons for Techniques to Address Study Objectives

The chosen analysis techniques are commensurate with the study's objectives and hypothesis testing. The descriptive time series design is more suitable for data capture and analysis over a lengthy period, hence giving a richer understanding of the dynamic relationships among variables characterizing inflation, interest rates, and stock market returns. Such an approach will be important in identifying patterns and trends over time. In this way, SPSS will help in managing and processing data, while descriptive and inferential statistics will be useful in building a framework where it can be assessed whether the independent variables impact market returns or not. Indeed, the regression model allows one to evaluate hypotheses relating to the effects of interest rates, inflation, exchange rate volatility, and market liquidity on stock returns. This model makes explicit a methodology for quantifying the relationships and specifying the significance of each variable, aligning well with the objectives of the study: to explore and understand these financial dynamics.

CHAPTER 4: RESULTS AND ANALYSIS

4.1 Introduction

This chapter provides the analysis output and findings from the research study as per its objectives. The introductory part of this chapter covers a general overview of the data to be used in analysis. This section then narrows down to the presentation of the results from the study, facilitated through tables and figures that support the explanation of results. The last section summarizes findings and provides an interpretation of the results of this study.

The purpose of this research was to study the effect of inflation and interest rates on stock market performance at the Nairobi Securities Exchange. Precisely, this study aimed at investigating the causal relationship between the variables under study, where the dependent variable was stock market returns, and the independent variables were interest rates, inflation rates, spot exchange rates, and market liquidity.

The data for this study were sourced from the Nairobi Securities Exchange, Central Bank of Kenya, and Kenya National Bureau of Statistics. The collected secondary data were analyzed using the Statistical Package for Social Sciences, SPSS, with the statistical methods as outlined in Chapter Three. The results of the statistical tests, which are presented in this chapter, answer the research questions set out in Chapter One.

4.2 Data Overview

The following techniques were included to summarize and make the dataset into more presentable and understandable form where patterns and trends can be gauged from it: range, total, average, and standard deviations.

Table 4.1

Variables	N	Minimum	Maximum	Average	Standard Deviation
Stock Market Returns	72	25145	34608	121952	6512.3
Inflation Rates	72	3.73	9.59	6.084583	1.544802
Interest Rates	72	6.2	15.7	8.146403	2.158118
Spot Exchange Rates	72	100.9	156.46	113.2458	14.51255
Overall N	72				

Table 4.1 presents a descriptive statistics summary for four important variables: Stock Market Returns, Inflation Rates, Interest Rates, and Spot Exchange Rates. All the series contain 72 observations. This variable of stock market return varies between minimum and

maximum values of 25145 and 34608, hence having an average of 121952 and standard deviation of 6512.3, which indicates further that returns are greatly dispersed. The Inflation Rates have an average of 6.08458 with a low volatility of 1.544802, showing a small dispersion around the mean. Interest Rates have a mean of 8.14640 with a standard deviation of 2.158118, showing moderate dispersion. The Spot Exchange Rates have a mean of 113.245 with a standard deviation of 14.51255, indicating a moderate variation in the exchange rates.

Trend of interest rates, inflation rates and spot exchange rates over the years is.

Presented in figure 4.1, 4.2 and 4.3 below.

Figure 4.1 Interest rate movement (2018 to 2023)

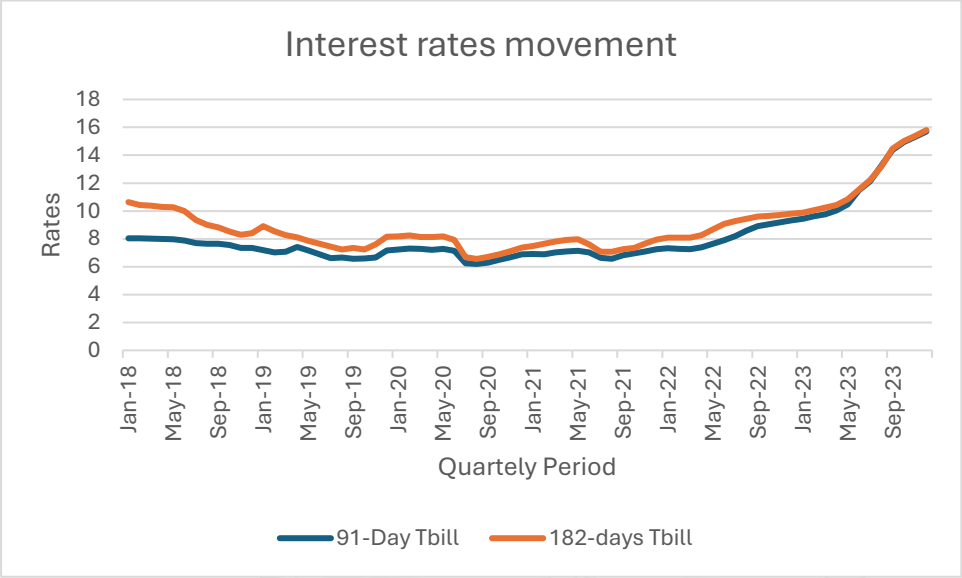

Figure 4.1 presents the path of the interest rates for both the 91-day and the 182-day Treasury Bills from the year 2018 through 2023. Both time series have a general upward trend. The 182-day T-bill is also always just a little higher in rate than the 91-day T-bill. Though both lines vary, it appears that the 182-day T-bill has a larger range of values, implying a greater standard deviation than that of the 91-day T-bill. This suggests that the 182-day T-bill rate is more volatile than the 91-day T-bill rate over this period. The positive slope of both lines indicates a positive trend in interest rates over the observed timeframe.

Figure 4.2 Inflation Rate movement (2018 to 2023)

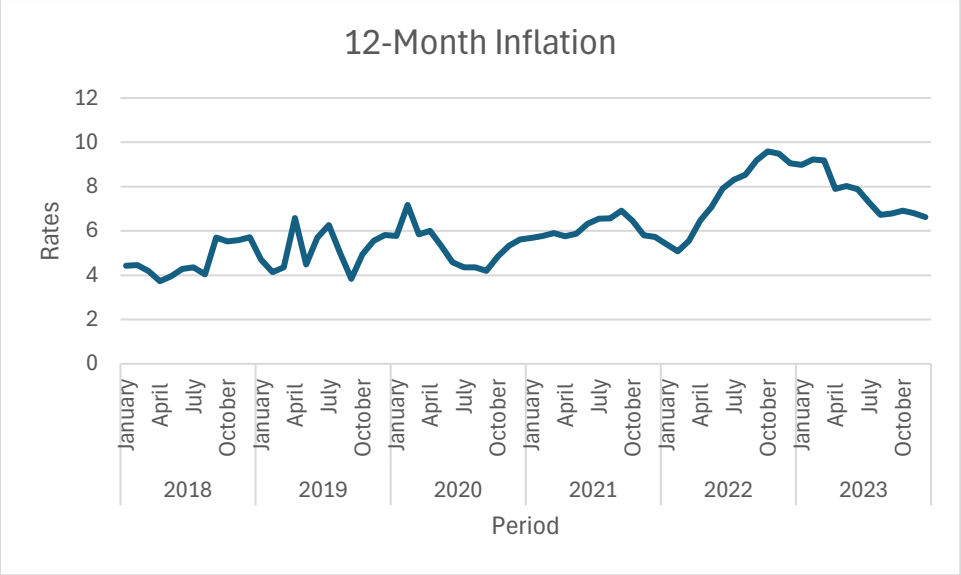

Figure 4.2 shows the trend of the 12-month inflation levels between 2018 and 2023: It is a time series graph that generally has ups and downs from year to year. Notice the steep incline toward the end of 2021 up into 2022, peaking around the middle of 2022, reflecting somewhat high inflation during this period due perhaps to problems in supply and increased demand for goods. After that peak, the inflation rate seems to have started to fall, perhaps reflecting some dampening of inflationary pressures.

Figure 4.3 Spot Exchange Rate movement (2018 to 2023)

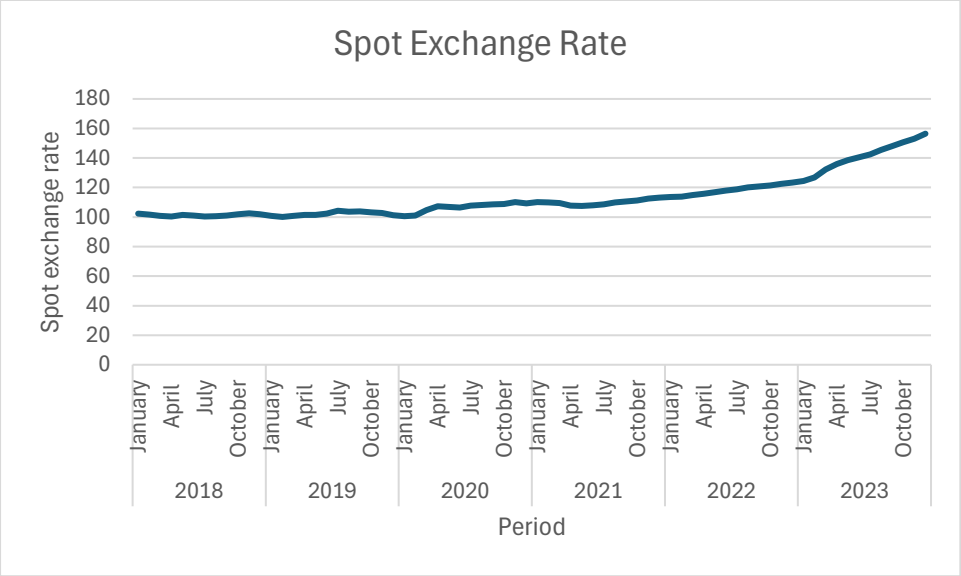

Figure 4.3 shows the upward spot exchange rate trend from 2018 to 2023. This upward trend reflects the appreciation of the foreign currency against the domestic currency. Such

appreciation hurts the stock market returns due to increased import costs for domestic companies, reduced export competitiveness, deterred foreign investment, and even contributes to inflationary pressures.

Table 4.2: Determinants of Stock Market Returns

Dependant Variable: Stock Market Returns

Model	Variables	B	Std .error
	(constant)	525044.21	63912.225
	Interest rates	-7668.336	4770.103
	Inflation rates	9502.678	6315.711
	spot exchange rates	-3831.015	1065.775

Table 4.3

Variables	Beta	t	sign.
(constant)	8.215083	8.215083	8.91E-12
Interest rates	-1.607583	-1.607583	1.13E-01
Inflation rates	1.504609	1.504609	1.37E-01
spot exchange rates	-3.594582	-3.594582	6.10E-04

Table 4.4

		df
Residual std.error	46360	68
Multiple R squared	0.5146	
Adjusted R squared	0.4932	
F statistic	24.03	
p value	1.208	
R squared	0.71734894	

Table 4.5

Model Coeffecients	Original Scale Coefficients	Regression Coefficients	t-statistic	p-value
Constant	525044.21		8.215	<0.001
Inflation Rates	-7668.336	-1.608	-1.608	0.1126
Interest Rates	9502.678	1.505	1.505	0.1371
Spot Exchange Rates	-3831.015	-3.595	-3.595	0.0006

Source: Empirical Model Results

Regression results are presented above for the relation between Stock Market Returns to three of the most important of its determinants: Inflation Rates, Interest Rates, and Spot Exchange Rates. The F-statistic comes out to 24.03, which with $p < 0.001$ implies the statistical insignificance of this overall model. Consequently, this could be a pretty good fit for the prediction of Stock Market Returns.

But the value of R squared is 0.5146, which means the model explains about 51.46% of the variance in Stock Market Returns, which is rather reasonable given the underlying variables. The more conservative estimate using the adjusted R-squared is 0.4932, which considers the number of predictors in this model.

Results indicate that Inflation Rates ($\beta = -7668.336$, $t = -1.608$, $p = 0.1126$) are inversely related to Stock Market Returns. It postulates that with increased inflation rates, stock market returns are bound to be lowered.

Interest Rates are found to be positively related to Stock Market Returns ($\beta = 9502.678$, $t = 1.505$, $p = 0.1371$), but this relationship is not significant at the 0.05 level.

In fact, Spot Exchange Rates are significantly and negatively related to Stock Market Returns ($\beta = -3831.015$, $t = -3.595$, $p < 0.001$), suggesting that appreciation of the domestic currency hurts stock market performance.

From the model implications, though all three variables may affect Stock Market Returns, based on the present analysis, the Spot Exchange Rate is the most consistent and highly significant negative influencer.

Final regression equation.

$$\boldsymbol{Stock\ Return = 525044.27668.36X_1 + 9502.678X_2 - 3831.015X_3 + \varepsilon}$$

X1 = Inflation rate

X2 = Interest rate

X3 = Spot exchange rate

4.3Results Interpretation

Multiple regression analysis postulates that 51.46% variations in Kenya market return are determined through the interest rates varying, inflation rate, spot exchange rate as well as in market liquidity levels. A good interest rate as proved by this research is directly correlated with high market returns; in this analysis, while on one hand, inflation rate-exchange rate with market return tends to take up a negative dimension. It is also observed

that the market returns, as reflected by the stock market index, have been improving over the years, though these changes have been relatively stable with minor fluctuations.

The study also observes that growth in market returns, expressed as the percentage change in Kenya, has not remained consistent but has instead experienced some variability over time. Notably, in the case of Kenya, the exchange rate has enormous changes; the peak is in 2023 with an exchange rate of 156.46 against USD currency. A drastic change in either way results in wide swings in share prices, consequently influencing market return. Moreover, in the year 2022, it reached a peak of 9.59% against high interests and exchange rates prevailing at the time.

These results, therefore, were as hypothesized by Fisher (2019), equities are considered to hedge against inflation. It is on such occasions; the investors can move from financial assets to real assets due to a hike in expectations over inflation. The study affirms the negative relationship between inflation and market returns, a factor that supports the conclusions of other research in Kenya and Africa, including the works of (Fama, 2024), (Gachuhi, n.d.) and (Muriuki, n.d.) among others.

CHAPTER 5: DISCUSSIONS AND CONCLUSIONS

5.1 Introduction

The conclusions from the findings done in Chapter Four are summarized and useful recommendations brought out. This chapter is organized under the following sections: Summary of Findings, Conclusions, Recommendations, Limitations of the Study, and Suggestions for Future Research.

5.2 Summary and Conclusion

The purpose of the study is to outline the effect of key economic variables: inflation rates, interest rates, and spot exchange rates on stock market returns at the NSE during the period 2018 to 2023. The foundation of this research was in the gaps identified in earlier studies on the relationship between inflation, interest rates, and stock returns in Kenya. The results of this are that the model explains about 51.46% in stock market returns, which means the selected variables should be reasonably fitted to predict market performance. However, when considering the number of predictors, the more conservative measure, an adjusted R-squared of 0.4932 indicates a poorer fit. The inflation rates were inversely related with the returns of the stock market, indicating that a high level of inflation depresses the performance of the market. Interest rates were positively but insignificantly related to stock returns, therefore, although higher interest rates could encourage the returns at the market, this effect is not strong enough.

It was seen that the spot exchange rates are strongly negatively related with market returns, which implies that the appreciation of domestic currency has a negative impact on the performance of the stock market. Therefore, the study identifies that though inflation, interest rates, and exchange rates are the influential variables on stock returns, the spot exchange rate is the most significant variable that explains variations in market performance.

Conclusions from the analysis are that stock market returns at the NSE generally increased over the study period, though there were fluctuations around the NSE 20 Share Index. While inflation rates, interest rates, and spot exchange rates increased over time, their impact on the market returns was not directly proportional to such trends. According to the regression results, inflation rates were inversely related to stock returns; that is, higher inflation tends to decrease market performance, though at a relationship not statistically

significant at a conventional level of 0.05: $\beta = -7668.336$, $t = -1.608$, and $p = 0.1126$. On the other hand, interest rates had a positive relationship: $\beta = 9502.678$, $t = 1.505$, $p = 0.1371$. High interest rates may support the market return, but it is not strong enough to be statistically significant. On the other hand, spot exchange rate is strongly and significantly negatively related to market return with $\beta = -3831.015$, $t = -3.595$ and $p < 0.001$ implying that appreciation of domestic currency against major foreign currencies dent the performance of the stock market. Overall, though inflation and interest rates have some bearings, it is the spot exchange rate that emerged as most consistent and significant in influencing market performance in Kenya.

5.3 Policy Recommendations

Several policy recommendations useful in improving stock market performance in Kenya are made from the findings of this study. First, given the negative relationship between inflation rates and market returns, it is vital for policymakers to concentrate on inflation control. High inflation depletes investors' purchasing power, thus lowering market returns. Therefore, the Central Bank of Kenya should guarantee that inflation remains at stable and manageable levels as a prudent means of ensuring investor confidence and promoting economic growth. Second, though the interest rates were positively related to the stock returns, it was insignificant. Lowering the interest rates could still support market performance by making borrowing and investment more attractive.

The government should consider keeping interest rates at low enough levels to trigger private investment without heating up the economy. Finally, the study showed that changes in the exchange rates significantly affect the return of stock markets, where an appreciated home currency tends to weaken the performance of the market. Hence, the authorities should try to stabilize the exchange rate and lower volatility in the foreign exchange market, as stability in exchange rates contributes to a more favourable environment for investors and better stock market performance.

5.4 Limitations of the Study

The present study carries certain limitations. First, the analysis is based on a linear regression model in examining the trends of stock market returns to changes in the independent variables: inflation rates, interest rates, and spot exchange rates. Such a model uses a linear relationship, which might fall short in representing the complexity of these interactions. In some cases, the relationships among the variables may be better modelled

nonlinearly or by using more sophisticated econometric methods. This study used secondary data.

While the sources are highly reputable, it was not possible to verify their accuracy fully. The fact that the data were secondary in nature presents this limitation, wherein findings are based on the authenticity and accuracy of data provided. Third, the findings of this study pertain to the Kenyan context within the period 2018 to 2023. The findings might not be generalizable outside the country or outside this period; besides, the study did not investigate whether the relationships observed hold outside this period. Finally, the study does not address the possibility of reverse causality, where stock market returns could also affect inflation, interest rates, and exchange rates. These dynamic relationships will be further extended in the investigation in future studies.

5.6 Recommendations for Future Research

In the view of expanding this research further, one potentially interesting avenue could be panel data analysis of various African stock exchanges or emerging markets to compare how inflation, interest rates, and exchange rates affect market returns. If extended to a multi-country scope, researchers can control for country-specific factors and get an overall view of how these variables influence market returns in different economic environments. Panel data methods, such as Fixed Effects or Random Effects models, would therefore enable the analysis of both time-series and cross-sectional data to obtain richer insights into the dynamics of stock market returns in response to macroeconomic variables. This might also allow for the identification of regional trends and variations that could provide more context-specific recommendations to policymakers.

REFERENCES

Abugri, B. A. (2008). Empirical relationship between macroeconomic volatility and stock returns: Evidence from Latin American markets. *International Review of Financial Analysis*, *17*(2), 396–410. https://doi.org/10.1016/j.irfa.2006.09.002

Artmann, S., Finter, P., & Kempf, A. (2012). Determinants of Expected Stock Returns: Large Sample Evidence from the German Market. *Journal of Business Finance & Accounting*, *39*(5–6), 758–784. https://doi.org/10.1111/j.1468-5957.2012.02286.x Bodie, Z. (2024). *Common Stocks as a Hedge Against Inflation*.

Cooray, A. (n.d.). *The Fisher Effect: A Review of The Literature*.

Determinants_of_cross_sectional_stock_return variation in emerging markets.pdf. (n.d.).

Eita, J. H. (n.d.). *Determinants of Stock Market Prices in Namibia*.

Fama, E. F. (n.d.). *Efficient Capital Markets: A Review of Theory and Empirical Work*.

Fama, E. F. (2024). *Stock Returns, Real Activity, Inflation, and Money*.

Fisher_0219.pdf. (n.d.).

Folkinshteyn, D., Meric, G., & Meric, I. (2015). *Investor reaction in stock market crashes and post-crash market reversals. 9*(5).

Henry, M. (n.d.). Causality of Interest rate, exchange rate and stock prices at market Open and close in Hong Kong. *1993*. https://link.springer.com.ezproxy.library.strathmore.edu/article/10.1007/BF01734274

Jefferis, K. R., & Okeahalam, C. C. (2000). The impact of economic fundamentals on stock markets in southern Africa. *Development Southern Africa*, *17*(1),

23–51. https://doi.org/10.1080/03768350050003398

Jiranyakul, K. (2009). *Economic Forces and the Thai Stock Market, 1993-2007*. *4*(2).

Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a Definition of Mixed Methods Research. *Journal of Mixed Methods Research*, *1*(2), 112–133. https://doi.org/10.1177/1558689806298224

Kimani, D. K., & Mutuku, C. M. (2013). *Inflation Dynamics on The Overall Stock Market Performance: 2.*

Kuttner, K. N. (n.d.). *Monetary Policy and Asset Price Volatility:*

Kyereboah-Coleman, A., & Agyire-Tettey, K. F. (2008). Impact of macroeconomic indicators on stock market performance: The case of the Ghana Stock Exchange. *The Journal of Risk Finance*, *9*(4), 365–378. https://doi.org/10.1108/15265940810895025

Modigliani, F., & Cohn, R. A. (1979). Inflation, Rational Valuation, and the Market. *Financial Analysts Journal*, *35*(2), 24–44. https://doi.org/10.2469/faj.v35.n2.24

Mwangangi, K. A. (n.d.). *Economic Performance Indicators and Stock Returns at The Nairobi Securities Exchange.*

Naseer, M. (2015). *The Efficient Market Hypothesis: A Critical Review of Literature*. *4*.

Siddiqui, M. A. (2009). *Modelling Uncerainty and Investment as Determinants of Returns from Pakistani Insurance Companies*. *09*(09).

Sunde. A review of the determinants of share prices.pdf. (n.d.).

The_Causal_Relationship_between_Exchange_Rates_and_return prices in kenya.pdf. (n.d.).

Waweru, N. N. (n.d.). *Analysis Of the Determinants of Stock Price Volatility at Nairobi Securities Exchange*.

Yuan, T., Gupta, R., & Roca, E. (2013). Linkages between the ADR Market and the Respective Macroeconomic Fundamentals – Cases for Brazil, Russia, India, and China (the BRICs). *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2312190

APPENDICES

Appendix 1: NSE Share Index 2018 to 2023

Jan-18	165323
Feb-18	203486
Mar-18	303258
Apr-18	150259
May-18	165552
Jun-18	157613
Jul-18	113613
Aug-18	129219
Sep-18	187498
Oct-18	130216
Nov-18	141069
Dec-18	84144
Jan-19	152650
Feb-19	139773
Mar-19	168901
Apr-19	150078
May-19	185033
Jun-19	136498
Jul-19	154985

Aug-19	84271
Sep-19	126446
Oct-19	346048
Nov-19	235073
Dec-19	156057
Jan-20	170909
Feb-20	144222
Mar-20	245672
Apr-20	202765
May-20	231623
Jun-20	138988
Jul-20	157110
Aug-20	137953
Sep-20	137775
Oct-20	76035
Nov-20	189046
Dec-20	139191
Jan-21	137078
Feb-21	110749
Mar-21	110195
Apr-21	82364
May-21	152852
Jun-21	222078
Jul-21	63684
Aug-21	93765
Sep-21	93670
Oct-21	80254
Nov-21	128305
Dec-21	110476
Jan-22	83234

Feb-22	90272
Mar-22	105129
Apr-22	42511
May-22	98289
Jun-22	71294
Jul-22	116171
Aug-22	39385
Sep-22	128033
Oct-22	50493
Nov-22	47810
Dec-22	54946
Jan-23	54452
Feb-23	47466
Mar-23	68192
Apr-23	48543
May-23	32894
Jun-23	42922
Jul-23	56830
Aug-23	49926
Sep-23	34912
Oct-23	30144
Nov-23	37714
Dec-23	25145

Source: NSE

Appendix 2: Inflation rate (2018 to 2023)

2018	January	4.43
	February	4.46
	March	4.18
	April	3.73
	May	3.95

	June	4.28
	July	4.35
	August	4.04
	September	5.7
	October	5.53
	November	5.58
	December	5.71
2019	January	4.7
	February	4.14
	March	4.35
	April	6.58
	May	4.49
	June	5.7
	July	6.27
	August	5
	September	3.83
	October	4.95
	November	5.56
	December	5.82
2020	January	5.78
	February	7.17
	March	5.84
	April	6.01
	May	5.33
	June	4.59
	July	4.36
	August	4.36
	September	4.2
	October	4.84
	November	5.33
	December	5.62
2021	January	5.69

	February	5.78
	March	5.9
	April	5.76
	May	5.87
	June	6.32
	July	6.55
	August	6.57
	September	6.91
	October	6.45
	November	5.8
	December	5.73
2022	January	5.39
	February	5.08
	March	5.56
	April	6.47
	May	7.08
	June	7.91
	July	8.32
	August	8.53
	September	9.18
	October	9.59
	November	9.48
	December	9.06
2023	January	8.98
	February	9.23
	March	9.19
	April	7.9
	May	8.03
	June	7.88
	July	7.28
	August	6.73
	September	6.78

	October	6.92
	November	6.8
	December	6.63

Source: CBK

Appendix 3: Interest rates (2018 to 2023)

Period	**91-Day T-bill**	**182-days T-bill**
Jan-18	8.04	10.64
Feb-18	8.03	10.42
Mar-18	8.02	10.39
Apr-18	8	10.3
May-18	7.96	10.26
Jun-18	7.87	9.99
Jul-18	7.69	9.35
Aug-18	7.64	9
Sep-18	7.64	8.82
Oct-18	7.56	8.51
Nov-18	7.36	8.3
Dec-18	7.34	8.4
Jan-19	7.19	8.92
Feb-19	7.02	8.55
Mar-19	7.08	8.28
Apr-19	7.41	8.11
May-19	7.17	7.85
Jun-19	6.9	7.64
Jul-19	6.62	7.45
Aug-19	6.65	7.24
Sep-19	6.56	7.34
Oct-19	6.6	7.24
Nov-19	6.65	7.61

Dec-19	7.17	8.16
Jan-20	7.23	8.17
Feb-20	7.31	8.25
Mar-20	7.29	8.14
Apr-20	7.21	8.14
May-20	7.27	8.18
Jun-20	7.14	7.93
Jul-20	6.24	6.69
Aug-20	6.2	6.56
Sep-20	6.29	6.7
Oct-20	6.49	6.89
Nov-20	6.69	7.11
Dec-20	6.9	7.38
Jan-21	6.92	7.48
Feb-21	6.9	7.64
Mar-21	7.03	7.82
Apr-21	7.1	7.92
May-21	7.15	7.98
Jun-21	7.03	7.6
Jul-21	6.64	7.07
Aug-21	6.57	7.07
Sep-21	6.83	7.25
Oct-21	6.951	7.361
Nov-21	7.1	7.66
Dec-21	7.26	7.949
Jan-22	7.32	8.08
Feb-22	7.28	8.09
Mar-22	7.25	8.08
Apr-22	7.39	8.27

May-22	7.65	8.69
Jun-22	7.9	9.07
Jul-22	8.21	9.29
Aug-22	8.58	9.45
Sep-22	8.92	9.6
Oct-22	9.06	9.65
Nov-22	9.19	9.71
Dec-22	9.33	9.8
Jan-23	9.44	9.88
Feb-23	9.62	10.06
Mar-23	9.76	10.25
Apr-23	10.04	10.42
May-23	10.47	10.83
Jun-23	11.49	11.54
Jul-23	12.12	12.23
Aug-23	13.25	13.19
Sep-23	14.38	14.46
Oct-23	14.96	15.03
Nov-23	15.32	15.39
Dec-23	15.7	15.8