

**THE EFFECT OF SHARE PRICE VOLATILITY ON STOCK MARKET
PERFORMANCE AT THE NAIROBI SECURITIES EXCHANGE**

BY

MORI MOSES WAFULA

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DECLARATION

I declare that this project is my original work and has not been presented in any other university/ institution for consideration of any certification. This research proposal has been complemented by referenced sources duly acknowledged.

Moses Wafula Mori D61/71686/2016

Signature..... Date

Supervisor

Zipporah Onsomu

Signature..... Date

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DEDICATION

I dedicate this to my family who supported me through the program and Friends for life foundation for offering me the opportunity through MBA program.

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LIST OF ABBREVIATIONS

- APT** - Arbitrage Pricing Theory
- CAPM** - Capital Asset Pricing Model
- EMH** - Efficient Market Hypothesis
- NASI** - NSE All Share Index
- NSE** - Nairobi Securities Exchange
- SPV** - Share Price Volatility

ABSTRACT

Share price volatility is the unavoidable market phenomenon that reflects on fundamentals of finance, information in the market and investor expectations. Share price volatility disturbs the proper operations of the financial system and negatively affects stock market performance. High volatility above a particular mark raises the investment's risk profile hence possibility of losses are paramount. This phenomenon raises concerns over market confidence and the general condition of the economy. This research paper sought to examine the effect of share price volatility on stock market performance at the Nairobi Securities Exchange. This study explored the Efficient Markets Hypothesis and the two pricing theories; APT and CAPM. This research paper adopted a descriptive research design targeting the twenty companies that form the NSE-20 share index at the Kenyan exchange as at the end of 2015. The study used secondary data, which covered a ten-year period: 2006 – 2015. The data collected was analysed using the Karl Pearson correlation and multiple linear regression using the statistical package; SPSS version 23. The study findings indicate that share price volatility and interest rates negatively affect stock market performance while rates of interest and supply of money positively impact the performance of the stock exchange. The study also revealed an insignificant effect on share price volatility and stock market performance but a significant effect on rates of interests, the supply of money and economic growth. The study concluded that share price volatility negatively affects stock market performance such that an increase in share price volatility reduces stock market returns. The study recommended that policy institutions like the Capital Markets Authority of Kenya should develop effective policies on share trading rules to reduce high share volatility.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Share price volatility is a measure of risk in the stock market and involve a change in the prices of shares (Mgbame & Ikhatua, 2013). As such, share price volatility is an unavoidable phenomenon in the market that rests on fundamentals, information and past market experiences (Aurangzeb, 2012). Share price volatility is used to show price trends in the market. Share price volatility affects smooth operations of the financial system creating uncertainties hence affecting stock market performance (Ilaboya & Aggreh, 2013). Beyond certain levels, high volatility may increase the possibility of losses for investors which in turn may raise concerns over the conditions of the market and the entire economy (Pryymachenko, 2003). Also, volatility is a determining factor in bid-ask spread since growing volatility is associated with the wider spread between bidding and asking prices.

This study is based on three finance theories, the EMH (Efficient Market Hypothesis) proposed by Fama (1970), the Arbitrage Pricing Theory, usually referred to as APT, was put forward by Ross (1976) and the Capital Asset Pricing Theory famously known as CAPM proposed by Sharpe (1964). EMH postulates that in a market that is efficient, share prices contain all information available such that no analysis or information can beat the market. It further explains that share prices assume random departure from previous share prices, which is known as Random walk theory. During financial recessions, an inverse relationship exists between the unexpected share returns and unexpected volatility according to APT, where lower returns evoke speculations hence increase volatility. Capital Asset Pricing Theory (CAPM) is a pricing theory that explores the interaction between risk and return. William Sharpe developed the theory in 1964 and further contributions of John Litner in 1965.

The Nairobi Securities Exchange (NSE), being a promising and attractive market in Africa due to the positive looking Kenyan economy, is attracting investors who see growth and possibility for more benefits (Muiruri, 2014). The NSE is classified as both emerging market and frontier market and currently, there are 64 firms listed on the Nairobi Securities Exchange under various segments (Wabwire et al., 2013). NSE has witnessed notable levels of volatility in investor returns in part. In addition, the exchange has been bolstered by enhanced weight increment on MSCI frontier

markets portfolio index rising from 3% to 4.8% which is likely to attract volumes of portfolio and foreign direct investments (Chege et al., 2014). As such, the International Finance Corporation in 2014 ranked the NSE-20 index, as the best performing market after recording its best return of 179% with an all-time high of 5030 points since its establishment (Adjei, 2015).

1.1.1 Share Price Volatility

Investors consider volatility of share price as a measurement of uncertainty in the financial markets (Mgbame & Ikhatua, 2013). Gatuhi (2015) discusses volatility as a measurement of the uncertainty that comes with investing in the stock exchange. It is the frequency of fluctuation in the share prices for a given term (Siopis and Lyroudi, 2007). Thus, a volatile share varies significantly, and it is not possible to predict what the future price will be (Khaled, Chijoke, and Aruoriwo, 2010). An asset price is said to be volatile when its theoretical value is covering a range of numbers indicating that the price can significantly shifts either way in the short-run. (Ramadan, 2013).

Observation of price at known intervals establishes the volatility of financial assets empirically. The observation may be days, weeks or months (Kotze, 2005). Calculation of volatility is done by establishing the standard deviation from a particular return compounded successively over a given period. For instance, the price variance of an asset calculated daily or monthly or year (Paramin, 2013). Parkinson (1980) came up with a calculation, which uses the difference between the top price and the bottom price divided by the average of the same highest price and lowest prices. The proxy according to Parkinson (1980) is superior to just the difference between the top prices and the bottom price (Wodung, 2014). Thus, the Parkinson (1980) formula is mostly used to determine share price volatility.

1.1.2 Stock Market Performance

Stock market performance refers to how stocks fare under their respective markets given the risks and returns of the markets (Wasseja et al., 2015). Usually, the market index is taken as a measure of performance within a specific period in the stock market. The index measures a certain section of the market deemed to represent the entire (Shaharudin, Samad and Bhat, 2009). The index is used to compare returns from various assets for decision-making purposes by both investors and managers (Aurangzeb, 2012). Stock price indices are usually weighted averages of the component price relatives (Clements, Izan, and Lan, 2011). The NSE-20 share index is usually considered as

the proxy representing the overall stock prices in Kenya (Aroni, 2011). The construction of the index does not include dividends, but it is adjusted to cater for firm's actions such as splits and capitalization changes over time. (Chege et al., 2014). Thus, the NSE-20 share index represents 80% of market capitalization and hence a valid basis for market performance measurement.

In Kenya, the All Share Index (NASI) is also used as a measurement of market performance. The introduction of all share index was as a result of numerous criticism on the 20 share index which only listed 20 blue cheap companies. Total market capitalization can also be used to gauge the performance of the market. This involves summing up the entire volume of shares traded in the totality to determine how active the market is.

1.1.3 Share Price Volatility and Stock Market Performance

Volatility is inevitable in the financial markets and traders are aware of this. For example, a study by Kiyamaza and Berument (2003) established that high volatility is likely to result in low trading volumes due to the unwillingness of traders to invest their money. In their paper, Kim and Singal (2000) found that when the market opens, returns increases but volatility does not increase in equal measure. The finding of Shaharudin, Samad and Bhat (2009) revealed that the uncertain market returns are inversely related to the sudden shift in the stability of returns.

According to Osazevbaru (2014), share price volatility can result in a rise in the cost of capital, which in turn the whole economy and how the market performs. This, in turn, has a notable impact on portfolio allocation, asset pricing as well as the market risk measure. Bissoondeal et al. (2014) studied different stock market indexes effects and revealed that investor's tendency to be risk averse is a vital force behind investors' flight to assets deemed safer in times of heightened volatility. However, Clements, Izan, and Lan (2011) employed a stochastic approach to determine market index. They established that inactive stocks do not significantly affect the overall market index. As such, Bent and Morten (2007) revealed that volatility shocks are short-lived and small on share prices.

1.1.4 Nairobi Securities Exchange

How well the NSE performs is depended on policy, institutional framework and the politics of the day. Markets are affected by several factors, primary factor being the general performance of the

economy in a country. (Nyasha and Odhiambo, 2014). The stock market index returns of the NSE 20 share index is based on capital gains or losses of the 20 blue chip companies and valuation is based on the full market capitalization. In 2012, the NSE 20 share index exhibited 28% growth with market capitalization also growing by 46.5% to 1.27 trillion shillings. (Adjei, 2015). Thus, the exchange is a better marketplace to gauge the interaction between returns and price volatility in the emerging markets (Olweny and Omondi, 2011).

Aroni (2011) notes that in the last half of 2011, the NSE 20 share index hit the roof at 4495 points and a bottom of 3733 points with a considerable drop in market capitalization from Kshs. 1192.28 Billion to Kshs. 1049.56 Billion. However, Adjei (2015) argues that share price volatility occurs naturally because of market participants exhibiting irrational behavior. Thus, excessive share volatility may inhibit the proper functioning of markets and negatively affect the performance of the stock market (Gatuhi, 2015). A study by Kirui, Wawire and Onono (2014) on volatility and market returns at the NSE revealed that a market with high volatility results in lesser confidence among investors who avoid investing in that market. The result may be a shutdown of the securities market which may have a harmful a bad effect on the economy.

1.2 Research Problem

The level of share price volatility may lead to an unpredictable outcome. For instance, high volatility of a share is related to greater risk. Risk averse liquid investors are likely to avoid the market due to unpredictable nature of the expected returns. This may negatively impact the performance of the market and may adversely affect the economy in general. Trading volumes will also be affected drastically if investors avoid an asset deemed to be highly volatile. Shares whose prices grow steadily and tends to be less volatile is likely to attract long-term investors which mean low trading volumes and a more dormant stock market.

Kenya recorded the highest volatility in 2000 with NSE posting a 21.1% instability in its history (Kalui, 2004). In 2008 through 2010, the NSE20 share index posted a variance of 5444 points on the higher side and 2800 points in the lower end (Aroni, 2011). In 2011, the Kenya shilling depreciated, immensely affecting the financial markets. The dollar reached an all-time high of 107 against the US dollar. Thus, the day to day up and down shift in asset prices seen at the NSE has dragged with it ills that have resulted in a turbulent market for investors as prices dipped low (Kirui

et al., 2014). The changing trend of share prices has always been of much interest of the capital markets authority in Kenya given their adverse effect on the market stability (Aroni, 2011). Hence, the need to examine the effect of volatility of prices on the performance of the Kenyan stock market.

There are studies done in the past that have looked into these concepts, volatility of share price and the financial market performance, in Kenya and across the globe. For example, a study by Chaibi and Gomes (2013) established that there exists a significant transmission of shocks in volatility between oil prices. Osazee and Nosakhare (2014) also found that past market information affected the volatility of stock prices in Nigeria. Closer home, Omuchesi and Bosire (2014) revealed that introduction of the automated trading system did not affect volatility at the NSE. Barasa (2014) study revealed that the performance of the stock market was impacted by the supply of money and GDP per capita. Gworo (2012) found that market capitalization and volatility of prices at the NSE had a weak correlation. However, a significant number of these studies have not explored the particular variables under this study. Thus, this paper tries the answer: What effect does volatility of share price have on market performance at the NSE?

1.3 Research Objective

To establish whether volatility of share prices has an impact on stock market performance at the Kenyan Stock market; the NSE.

1.4 Value of the Study

The research study seeks to assess the effect of volatility of share prices on the performance of the Kenyan financial market. Therefore, the findings will be valuable to investors who want to understand, accurately predict, and measure price volatility and also to forecast price movements in the marketplace. Besides, the findings will help to identify the relationship that exists between share price volatility and stock market performance in Kenya. Thus, it will help investors to formulate strategies that minimize risks associated with financial markets.

The findings of the study will determine whether share price volatility influences performance of the stock market in Kenya. Therefore, the study will be of significant help to policy makers, like the government of Kenya, in understanding the relationship between price volatility and market

performance. The findings will assist in developing strategies for future economic development and effective allocation of resources.

Finally, this research paper will lay the foundation for further scholarly pursuits along this discipline. Therefore, future scholars and researcher will relate to the study findings as their reference source making the study a basis for further research. The study results will also add facts on to the existing knowledge on share price volatility and stock market performance.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section shows the available studies and research findings in relation to study topic: share price volatility and stock market performance by various scholars. The section shows the theoretical literature review, the determinants of stock market performance, the empirical literature review and finally a summary of the literature review.

2.2. Theoretical Review

Three finance Theories: Efficient Market Hypothesis proposed by Fama (1970), the Asset Pricing Theory developed by Ross (1976) and the Capital Asset Pricing Model as presented by Sharpe (1965); will be adopted to underpin the effect of share price volatility on stock market performance.

2.2.1 Efficient Market Hypothesis

Fama (1965, 1970) developed the Efficient Market Hypothesis which rests on the premise that prices of stocks include all information available such as company announcements in no investment strategy utilized can result in abnormal profits. The Efficient Markets Hypothesis (EMH), presupposes that current information is immediately included in prices of shares such that no extra profits can be made using the information (Fama, 1970). EMH postulates that a market that is efficient is both internally and externally efficient; thus, the price assets at any point include all information on the asset, expected future cash flows and the uncertainty involved in investing in that security (Mgbame & Ikhatua, 2013).

The market efficiency is in three forms which are the weak form of efficiency, the semi-strong form of efficiency and the strong form of efficient market. Weak form of market efficiency has prevailing prices of securities include every past information available including a historical sequence of prices, market return, market capitalizations and information from the market (Ilaboya & Aggreh, 2013). The semi-strong form of efficiency argues that current prices of stock include all the existing informational content of historical prices and the publicly available information about corporations (Malkiel, 2005). The semi-strong form of EMH covers the weak form and the available of day to day data enabled tests, which presents evidence of public information affecting prices of stocks in limited time. The strong form postulates that security prices include the available

information and even private information. No group of participants has monopolistic access to the relevant information; hence, no one makes above average profits (Wabwire et al., 2013).

EMH applies rationality to asset pricing in the markets. Prices of all securities include all available information since in an efficient financial market, Opportunities for abnormal profits are eliminated (Praptiningsih, 2011). The logic of EMH premise is that information flows fluently and immediately get included in the current share prices such that tomorrow's price changes are only affected by information that emerges tomorrow (Malkiel, 2005). From an investor's point of view, stock market participants cannot use the information they have to generate abnormal profits (Praptiningsih, 2011). Besides, the efficient market hypothesis holds, the information changes affect share prices. Thus, as stock price volatility keeps changing as new information flows into the market hence may negatively impact the performance of the market as news keep arriving and the ensuing response of traders.

2.2.2 Arbitrage Pricing Theory

Due to limitations of earlier asset pricing theories, the Arbitrage Pricing Theory Ross (1976) was introduced. This asset pricing theory establishes the theoretical framework to relate stock returns with several variables, which can affect the source of income volatility (Shrestha & Subedi, 2014). Arbitrage Pricing Theory's ability to include multiple factors in the model has made it influential in the pricing of assets. APTs multi-factor model has investor believe that the probabilistic nature of returns is well captured in the structure of the factors in the model (Mutuku & Kirwa, 2015). The Arbitrage Pricing Theory employs macroeconomic or fundamental factors in the pricing of financial assets. These factors are weighed by factor loading which is the beta coefficient sensitivities (Otweyo, 2014).

The APT rests on the premise that in an efficient financial market, arbitrage process should be possible. APT further assumes some factors, which make returns of security to deviate from expectation. These factors are market and sector related, and they contribute to Performance of stocks. This multi-factor model was created with the assumption that some factors guide the performance of the stock market. These include sector related and relevant macroeconomic forces (Gatuhi, 2015). APT model assumes that several industry-specific and broader macroeconomic factors that impact asset returns besides the beta. Market Beta is the sensitivity of particular assets

to the shifts in returns, on which CAPM is anchored, such as the GDP, the rate of inflation and composition of rates of interest and so on, which could impact organizations in several ways (Tripathi & Seth, 2014).

The Arbitrage Pricing Theory proposes that expected returns are a function of several market indices which are theoretical in nature and broader macroeconomic factors (Aroni, 2011). APT measures the acceptable risk-return based on individual risk factors and tries to assess their significance and whether they are priced in tandem with market returns (Tripathi & Seth, 2014). APT correlates with the market portfolio concept, according to the theory individuals have different portfolios of investments with their particular systematic risk. APT proposes better results comparatively to CAPM because it used multiple factors for explaining shared and systematic risk (Hassan & Awais, 2015). The APT, as opposed to CAPM, accepts that various sources of risks impact an asset's expected return and stock market performance (Ouma & Muriu, 2014).

2.2.3 Capital Assets Pricing Model

Sharpe (1963) proposed CAPM (Capital Asset Pricing Model) which uses a single factor, Beta, to price assets. Regarded as the first asset-pricing model, CAPM presupposes that a single factor guides share prices or expected performance. CAPM laid the foundation of asset pricing given the simplicity and appealing nature of the model to users. Empirical investigations revealed that an investor can reduce the portfolio risk returns by selecting inversely related assets (Otweyo, 2014). CAPM considers market risk as the only source of risk while ignoring other sources. CAPM presupposes that investors are rewarded taking market-related risk and not company-related risks. The argument for this is that a firm's specific uncertainty can be avoided; a premise proposed by Harry Markowitz (Ouma & Muriu, 2014).

CAPM breaks the total risk into two, systematic risk and unsystematic risk. This model concerns itself with market-specific risk that is given a beta coefficient. The market uncertainty is the main risk that CAPM deals with, usually calculated using the beta coefficient (Muiruri, 2014). CAPM rests on some assumptions; first being that there is a risk-free rate of return, taxes don't exist while allowing short selling of assets. Another assumption is that there exist many securities in the market, and by creating a portfolio, company-specific risk can be diversified away, and lastly,

the aim of investors is to maximize their returns which mean they are risk averse (Ouma & Muriu, 2014).

2.3 Determinants of Stock Market Performance

Share price shifts are occasioned by shifts in the underlying economic variables and future expectations. Available literature intensity of macroeconomic variables in various markets dictates market indices.

2.3.1 Interest Rate

The interest rate is dependent on a country's income. The main principal role of interest rates is to mobilize and redistribute financial resources and facilitate the optimal allocation and use of these funds to enhance economic development. Excessive shifts of interest rates can pose significant threats to earnings and capital base of an organization as well as increase its operating expenses. Interest rate changes may have an impact on asset valuation, liabilities and the present value of expected cash flows (Osoro & Ogeto, 2014). A rise in the rate of interest raises the cost forgone on holding money, resulting in substitution actions between equity stocks and bonds; which bear interest. Higher rates of interest humpers the present value of cash flows, which would reduce the viability investments, hence, shrinks valuation of stock returns (Rahman, et al. 2009).

2.3.2 Economic Growth

Many scholars agree that an upward rise in economic activity causes growth in market returns since the level of real economic activity is a major factor in determining the stock market returns (Rehman et al. 2009). GDP (Gross Domestic Product) is the most used measurement of economic growth. A growing economy exhibits positive GDP which raises demand for loans (Osoro & Ogeto, 2014). The level of Gross Domestic Product (GDP) affects the profitability of firms. Any rise in economic output may raise expected cash flows and, hence, trigger a rise prices of shares, with the reverse impact during recession is justified (Kirui et al., 2014).

2.3.3 Money Supply

Supply of money is the total amount of liquid currency circulating or in existing in an economy. Monetary base M1 and M2 is the standardized measurement of the money supply. The monetary

base is the total of reserve balances and the total amount of currency in circulation. The increase in money supply leads to a more liquid economy with excesses which can be invested. The long term result will be monetary policy benefiting both the economy and investors in general. On the other hand, an increase in the supply of money results in the availability of liquidity at lower rates of interest. (Shrestha & Subedi, 2014). Inflation is brought about by increased supply of money in the economy which increases the rate of discount at the end affecting returns. As such, the Central Bank of Kenya is tasked with the sole responsibility of regulating the supply and demand for money circulating in Kenyan economy. Controlling money supply affects disposable cash which in turn affect share prices and expected returns (Kirui et al., 2014).

2.4 Empirical Review

Several studies have been carried on stock price volatility and stock market performance. For instance, Hooi, Albaity and Ibrahimy (2015) examined the dividend policy and volatility of stocks in Malaysia. They found an inverse relationship between the two variables that was statistically significant. They also found that share prices and size of the firm were inversely related. Further, volatility of earnings associated positively with long term with some level of statistical significance. Also, the relationship between debts to price volatility was identified as theorized in the study. However, the study found that the Malaysian market has no significant association between asset growth and price volatility.

Itotenaan et al (2013) investigated the Nigerian market to find out whether a relationship existed between oil prices and the performance of the stock market. The research study employed various empirical tests including the augmented Dickey-Fuller test, Vector autoregression estimation model, Johansen's cointegration model, and the Vector error correction model as well. The findings were that oil price changes is vital in explaining share price movement. In addition, according to the findings, there exists significant link oil prices and performance of the stock.

Profilet and Bacon (2013) explored the effect of particular financial variables on stock price volatility over time by looking at data of over five hundred enterprises traded publicly selected via the Value Line Investment Survey database employing Ordinary Least Squares (OLS) Regression. The research tested the impact of appropriate variables on the volatility of share prices- calculated by the variation of stock prices- for sampled firms selected from the Value Line Investment Survey

database. Size of the business and dividend yield associated negatively with each other according to the findings. The volatility of share price was negatively related to both leverage and growth.

Irandoost, Hassanzadeh, and Salteh (2013) addressed dividend policy and its impact on volatility of stocks and investment decisions on listed companies in Tehran Stock Exchange. The study sampled 65 firms and five-year data from 2007 to 2012 using correlation analysis method and multiple regressions to analyse data and test the hypotheses. The research findings established that dividend policy significantly impacted volatility of prices in the short run. However, dividend policy never had an effect on both volatility and investment decisions regarding cash and cash accruals.

Kolawole and Olalekan (2010) studied the impact of volatility of the rate of exchange on the market. The research findings revealed that the volatility of exchange rates, generated via GARCH process, had a stronger inverse effect on the Nigerian market. However, the results showed that both rates of interest and inflation didn't have a long run relationship with market capitalization. This was occasioned by the government being a major participant in the market. The proposed a coordinate fiscal and monetary to be established to check volatility of rates of exchange to increase stock market reach.

Zakaria, Muhammad, and Zulkifli (2012) explored listed companies in construction business Malaysia. The variables in the study were dividend policy and share price volatility and employed least square regression technique and moderating other variables namely company's debt, the size of the firm, growth of investments and volatility of earnings. The findings reveal that pay-out ratio influences price changes. Additionally, the findings further found that the size of firm significantly affects the volatility of share prices. The more significant the size is, the more it affects the volatile the price would be. Also, a company's share prices were influenced by the following three variables: dividend yield, investment growth, and earnings volatility.

Bikker, Broeders and Dreu (2010) looked at the impact performance of the market on pension funds investment decisions. The study affirmed market performance influenced that asset allocation in Dutch pension funds in two ways. First, in the short run, equity outperformed Bonds and other categories of investment which resulted in higher allocation to equity stocks, since pension funds don't usually re-evaluate their portfolio invested. Pension funds, averagely re-

evaluate about thirty-nine percent of the excess equity in each quarter, with sixty-one percent left floating. Secondly, in the medium term, when equity outperforms other investments, pension funds are forced to raise their strategic allocation to equities.

Adrian and Rosenberg (2008) looked at the cross-sectional pricing of the risk of volatility by breaking down instability of equity market into the short-run component and long-run component. The study findings revealed that risk prices are negatively significant for both sections of volatility which means that investors suffer insurance charges to mitigate the possibility of instability. The study also found that the risk of skewness in the market is catered for in the short run component, which was as a matter of interpretation, a constraint measure of tightness. The business cycle risk was captured in the long-term section.

Kiyamaza and Berument (2003) studied the day of the week impact on how volatile the main market indexes from 1988 to 2002. The study used the conditional variance framework and established presence volatility and return equations on the day of the week effect. The study also revealed that on Mondays, in Germany and Japan, volatility was at its highest. On Fridays, the US and Canada reported increased volatilities, While the United Kingdom experienced heightened volatility levels on Thursdays. Interestingly, the study also revealed that most of the markets experienced higher volatility on the particular days, and there was the corresponding decline in market capitalization.

Stivers and Sun (2002) examined uncertainty in the financial markets with a keen look at the movements in daily share prices returns and bond returns. The study employed the lagged implied volatility from equity index options to generate a fair measure of uncertainty in the market. The findings of the study found that share and bond returns move in a similar direction when there is lower uncertainty. However, there was an inverse relationship between the two securities during higher uncertainty.

Gworo (2012) studied the explored market capitalization and price volatility at the Nairobi Securities Exchange. This was a correlational study on the companies forming 20 share index at the by 31st December of 2011. The conclusion was a weak correlation between the market capitalization and volatility of stock prices.

Chege et al (2014) investigated the changing environment of return of share prices and volatility in the equity market in Kenya or the NSE using both monthly and weekly return series between

January 1999 and December 2013. The study used the GARCH-in-mean and E-GARCH models. The findings of the study found a high persistence of equity return shocks. The results also revealed that new disturbances do not affect present conditional variance and past variances do. The study also found the major world and domestic economic events seemed to attract volatility in the markets.

Kirui et al. (2014) evaluated three major macroeconomic variables at the NSE. Economic growth, rates of exchange and rate of inflation were studied to find out how they relate to market returns. The study employed the Engle-Granger two-step method to find out the relationship between returns and the mentioned macroeconomic variables and the Threshold Generalized Autoregressive Conditional Heteroscedasticity (TGARCH) model to bring out the leverage effects and persistence of volatility at the Nairobi Securities Exchange. The study revealed that the rate of exchange had a relationship with market returns while GDP, the rate of inflation, and the Treasury bills had a relationship which was insignificant. The impact of a single standard deviation shock on individual study variables on stock returns revealed that shock in the rate of exchange was inverse but in the end returned to equilibrium after a while.

2.5 Summary of Literature Review

Various studies on stock price volatility and capital markets performance have carried out across the world. For instance, Hooi et al. (2015), Muhammad and Zulkifli (2012), Irandoost et al. (2013) and Zakaria, et al. (2013) assessed the impact of pay-out policies on the stability of share price in their respective countries. Also, Profilet and Bacon (2013) explored the impact of particular financial variables on the price fluctuations over time while Bikker, Broeders and Dreu (2010) investigated the effects of performance of the stock market on pension fund's investment policies. Further, Kiyamaza and Berument (2003) explored day of the week effect on the major stock market indexes volatility, while Adrian and Rosenberg (2008) studied the cross-sectional pricing of volatility risk by breaking down volatility equity markets into long-run components and short-run components.

A study by Itotenaan et al. (2013) examined the effect of oil prices on the performance of the Nigerian stock market, whereas Kolawole and Olalekan (2010) examined the effects of volatility of exchange rate in the same market. Closer home, Chege et al. (2014) and Kirui et al. (2014)

studied the dynamics of market returns and how volatile the determinants of stock market performance related. However, most of the studies on share price volatility concentrate on the impact of payout policy on volatility of price while the studies on stock market performance mostly assess the stock market performance determinants as opposed to share price volatility and stock market performance.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section shows the research procedures adopted in the research exercise. The chapter shows the research design, the population of the study, data collection procedure, the data analysis procedure including the analytical model and the test of significance.

3.2 Research Design

Descriptive research design was adopted in the research. The choice was necessitated by the use of quantitative data, which was analysed, and conclusions made based on the outcomes. The descriptive study design also gave a detailed view of the performance of the stock market performance due to the behaviour of share prices.

3.3 Population of the Study

The study population comprised of the top twenty trading companies at the NSE that form the twenty share index. The NSE-20 share index is used a representative of the entire market. The choice of the population was because information on quoted companies is always readily available.

3.4 Data Collection

The research used secondary data. The data originated from various sources including the Kenya National Bureau of Statistics, the Nairobi Securities Exchange, and the central bank of Kenya. Data on annual share prices volatility and stock market indices was obtained from the NSE whereas data on economic growth, the supply of money and rates of interest was retrieved from the CBK while data on economic growth was sourced from the Kenya National Bureau of Statistics. Data was collected between the 2006 and 2015.

3.5 Data Analysis

Data analysis involved examining the data collected, making deductions and inferences. The data collected was analysed using the Karl Pearson correlation and multiple linear regression using the statistical package for social studies (SPSS) version 23. Correlation analysis was employed to

establish the nature and the degree of the relationship between study variables while regression analysis was employed to determine how the independent and dependent variables related.

3.5.1 Analytical Model

The multiple regression equations was as follows

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where;

Y = Stock Market Performance measured using the quarterly trend of the NSE 20 share index

X_1 = Share Price Volatility measure using the Parkinson's (1998) formula. The variable is measured by dividing the difference between the highest and lowest prices of the stock of a company in the year by the average of the sum of the highest and lowest prices of the stock of the same year (Parkinson, 1980; Baskin, 1989). For every year in the study period, the range is divided by the high and low average and is then squared. The variance for all the years are then averaged, and then a square root is applied to provide a variable equivalent to a standard deviation. The formula is as follows

$$SPV = \sqrt{\frac{\sum_{i=1}^n \left(\frac{H_i - L_i}{\frac{H_i + L_i}{2}} \right)^2}{n}}$$

SPV = Price Volatility, H_i = High Share Price, L_i = Low Share price, n = Time

X_2 = First control variable. Interest rate measured using the quarterly weighted average lending rate by commercial banks in Kenya

X_3 = Second control variable. Money Supply measured using broad money (M3) on quarterly basis

X_4 = Third control variable. Economic development measured using GDP growth on quarterly basis

β_0 = Constant

$\beta_1 - \beta_4$ = Regression Coefficients

ε = Error term

3.5.2 Test of Significance

To test the statistical significance the t and F-test were used at 5% significance level. The t –test was employed to test the regression coefficients significance, where if the t-value computed exceeded the critical value at the chosen significance level the null hypothesis was rejected. The F-test was utilized to test the overall significance of the model i.e. the goodness of fit where if the F computed exceeded the critical value at the chosen significance level the null hypothesis was to reject.

CHAPTER FOUR: DATA ANALYSIS, RESULTS, AND INTERPRETATION

4.1 Introduction

This section shows the study results of the effect of share price volatility on the performance of the NSE. The chapter presents the analysed data, the results and the interpretation of the findings

4.2 Response Rate

The study carried out a study of on the top twenty listed companies at the Kenya Exchange as at the tail end of 2015. The NSE-20 Share index comprises 20 listed firms, which represent 80% of the market capitalization hence a good proxy for measuring the study variables.

4.3 Descriptive Statistics

This section will provide graphical presentation of the research data comprising of the NSE 20 share index, share price volatility trend, Interest rate, and Money supply and GDP growth trends.

4.3.1 NSE 20 Share Index Trend

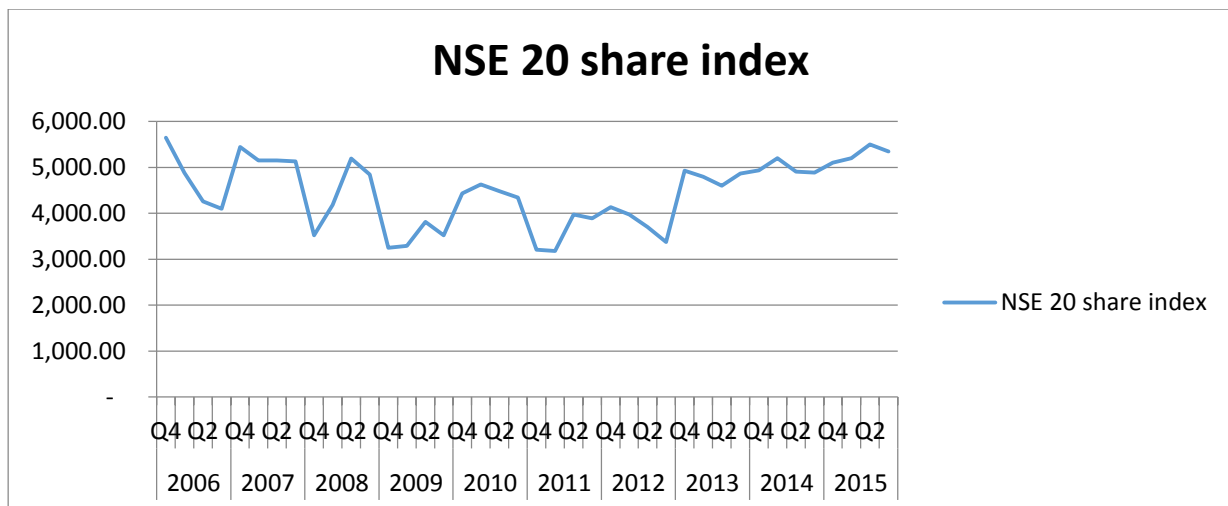


Figure 4.1 NSE 20 Share Index Trend

Source: Research findings

Figure 4.1 shows the quarterly NSE 20 share index trend in the Kenyan Market for 10 years from 2006 to 2015. The figure shows that NSE20 share index fluctuated in the various years indicating that stock market performance in Kenya had not been constant. The trend shows that stock market performance was good in 2007 and 2008 and the performance declined in 2009 and 2013 and then improved from 2013 respectively.

4.3.2 Share Price Volatility Trend

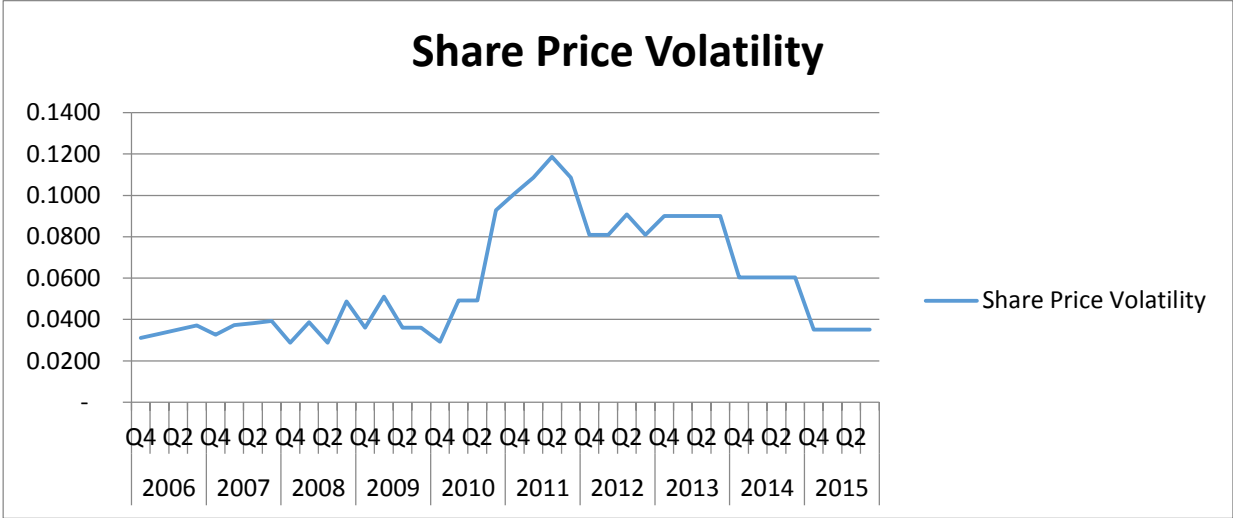


Figure 4.2 Share Price Volatility Trend

Source: Research Findings

Figure 4.2 shows the share price volatility of NSE 20 share index firms for 10 years from 2006 to 2015. The trend shows that volatility in share prices had been fluctuating up and down in the considered period with the highest fluctuation being witnessed around 2011 and 2013 respectively.

4.3.3 Interest Rates Trend

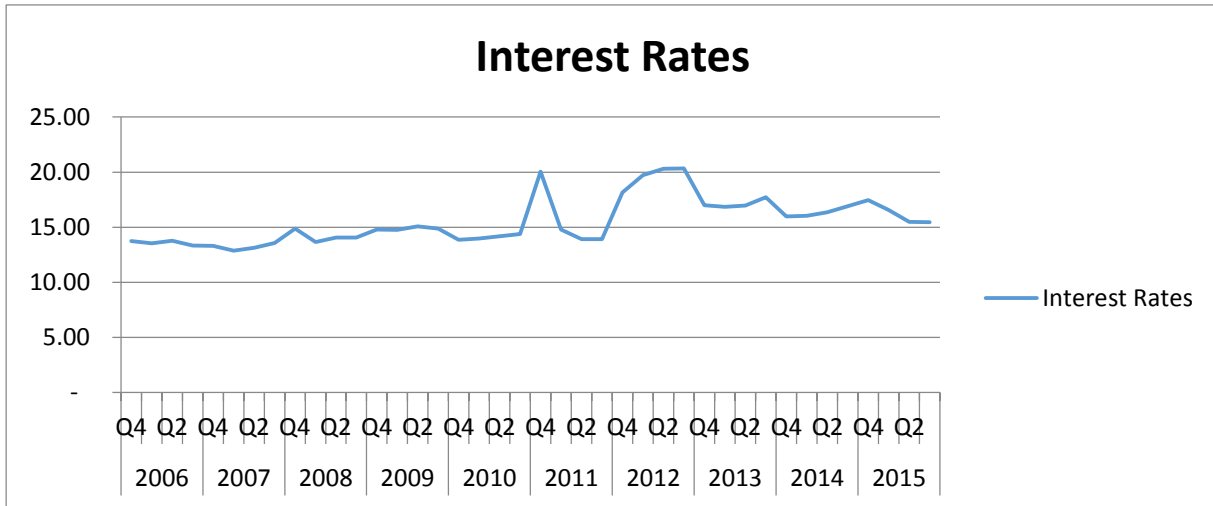


Figure 4.3 Interest Rates Trend

Source: Research Findings

Figure 4.3 shows interest trends in Kenya for 10 years from 2006 to 2015. The figure shows that interest rates in Kenya relatively constant since 2006 then experiencing comparatively more ruggedness between 2011 and 2012 than the other years.

4.3.4 Money Supply Trend

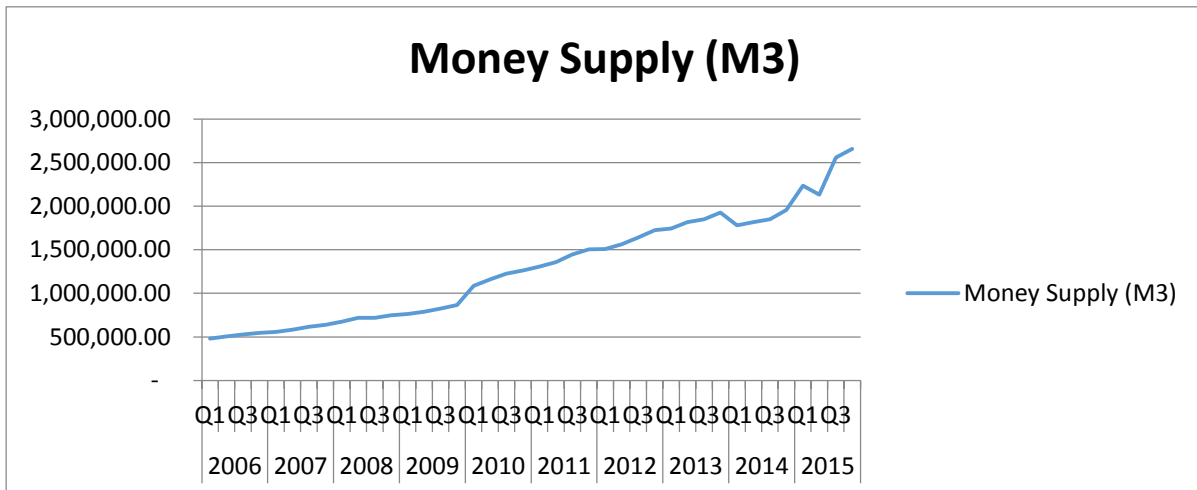


Figure 4.4 Money Supply Trend

Source: Research Findings

Figure 4.4 shows money supply trends in Kenya for 10 years from 2006 to 2015. The figure shows that money supply had been steadily increasing from 2006 all through to 2015.

4.3.5 GDP Growth Trend

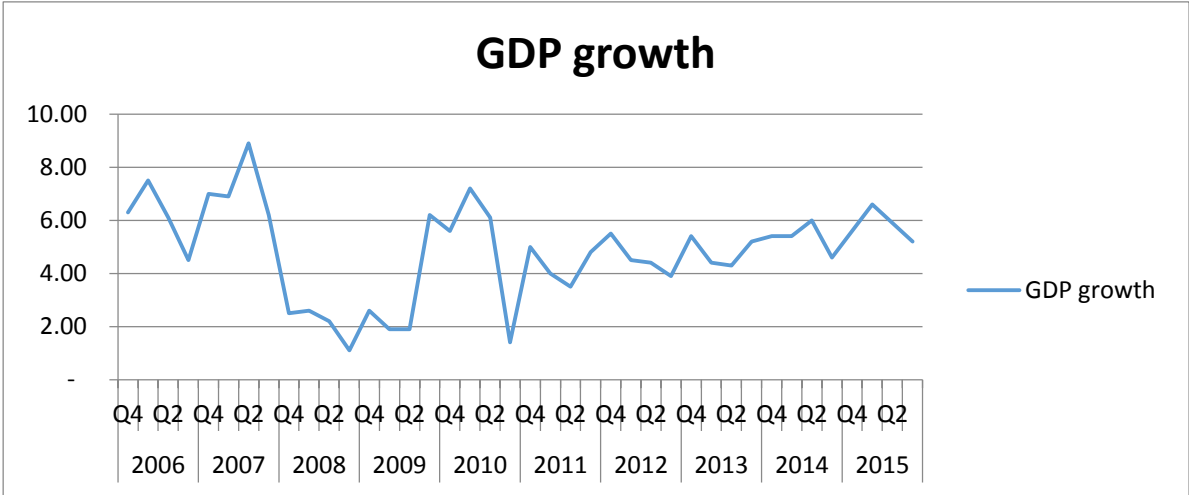


Figure 4.5 GDP Growth Trend

Source: Research Findings

Figure 4.5 shows the gross domestic product (GDP) growth in Kenya for ten years from 2006 to 2015. The figure indicates that GDP growth in Kenya has been fluctuating over the study period with a steep decline in 2008, being the lowest point in the period under the study, and in the second and third quarter in 2010 and stagnation in 2009 respectively.

4.4 Regression Analysis

The study employed multiple linear regression to establish how the research variables related. The results of the regression model will comprise of the model summary, Analysis of variance (ANOVA) and an account of the regression coefficients

4.4.1 Model Summary

Table 4.1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.615 ^a	.378	.307	.137712

a. Predictors: (Constant), GDP growth, Money Supply, Share Price Volatility, Interest Rates

Source: Research Findings

Table 4.2 shows that the coefficient of determination (R-square) value is 0.378, which shows that 37.8% of the change in performance of stock market is explained by the study variables while 62.2% is explained by the rest of the variables not considered in this study. The correlation coefficient value is 0.615 which indicates a strong relationship between the variables of the study.

4.4.2 Analysis of Variance

Table 4.2 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.404	4	.101	5.325	.002 ^b
	Residual	.664	35	.019		
	Total	1.068	39			

a. Dependent Variable: Stock Market Performance

b. Predictors: (Constant), GDP growth, Money Supply, Share Price Volatility, Interest Rates

Source: Research findings

The results in Table 4.3 show that the F value is 5.325 which is significant at 5% significance level since the P-value ($0.002 < 0.05$). This indicates that the regression model is important to explain the effect of share price volatility on the performance of the stock market.

4.4.3 Regression Coefficients

Table 4.3 Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.553	.740		8.852	.000
1 Share Price Volatility	-.526	.621	-.158	-.847	.403
Interest Rates	-.037	.016	-.465	-2.288	.028
Money Supply	.162	.060	.508	2.708	.010
GDP growth	.036	.012	.388	2.880	.007

a. Dependent Variable: Stock Market Performance

Source: Research Findings

From the results on Table 4.4 the resultant regression equation is

$$Y = 6.553 - 0.526X_1 - 0.037X_2 + 0.162X_3 + 0.036X_4 + \varepsilon$$

The results on Table 4.4 show that share price volatility (X_1) had an insignificant inverse effect on the performance of the stock market as interest rates (X_2) posted significant effect on the performance of the stock market. Further, the results show a significant positive effect of supply of money (X_3) on GDP growth. This indicates that money supply, interest rates, and economic development have a notable effect on the performance of stock market while share price volatility has an insignificant relationship with stock market performance.

4.5 Correlation Analysis

Correlation analysis was employed to establish the nature and the degree of the interaction between the lead variables in the research. Table 4.1 shows the results obtained

Table 4.4 Correlation Matrix

	Stock Market Performance	Share Price Volatility	Interest Rate	Money Supply	GDP growth
Stock Market Performance	1				
Share Price Volatility	-.181	1			
Interest Rate	-.267	.669**	1		
Money Supply	.106	.598**	.671**	1	
GDP growth	.444**	-.041	-.096	.011	1

Source: Research Findings

The results of table 4.1 show that a negative correlation exists between stock market performance and volatility of share price and also as indicated by the correlation coefficient values of -0.181 and -0.267 respectively. The results also show there exists a positive correlation between stock market performance and the supply of money as well as GDP growth as indicated by correlation coefficient values of 0.106 and 0.444 respectively.

4.6 Interpretation of Findings

The study explored the effect of stability of share price on the performance of the Kenyan market. The study found that insignificant inverse relationship between the volatility of share prices and stock market performance, which means that share price negatively affects stock market performance. This finding conforms to that of Shaharudin, Samad and Bhat (2009) who revealed that the unexpected returns are negatively associated to the sudden change in stock returns volatility

The study also showed a significantly adverse effect of interest rate changes on the performance of the Kenyan stock market, which means that an increase in interest rates negatively, affects stock market performance. This finding is similar to that of Rahman, et al. (2009) who posits that higher interest rates reduce the present value of cash flows, which diminishes investors urge to invest hence lessen the valuation of stock returns.

The study also found that money supply and economic growth positively and significantly influences stock market performance, which means that money supply, and economic growth positively affects stock market performance. This finding conforms to the view of Shrestha & Subedi (2014) that a rise in the provision of money ensures the higher liquidity at a lower interest rate in the market. Osoro and Ogeto (2014) also supports that growing GDP raises the demand for credit which will impact return on stocks as corporate profitability is also affected.

CHAPTER FIVE: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the research findings, conclusions, and recommendations of the study, the study limitation and then suggestions for additional studies.

5.2 Summary

This study examined the effect of share price volatility on performance of the stock at the NSE. The study carried out on twenty listed companies at the NSE that form the NSE-20 share index by the end of 2015. The dependent variable was stock market performance measured using the quarterly trend of the 20 Share index. The independent variable was volatility in share prices calculated using the difference between the highest prices and lowest prices of stock of a company in the year divided by the average the sum of the highest prices and lowest of the stock of that year. Interest rates, money supply, and economic growth formed the controls variables of the study.

The graphical presentation of the research variables trends shows that the NSE-20 index has been changing in the various years indicating that stock market performance in Kenya has not been constant. The results also show that volatility in share prices had been fluctuating during the study period with the highest fluctuation being witnessed around 2011 and 2013 respectively. The study also found that interest rates in Kenya have been increasing and decreasing over the study period and that money supply had been steadily increasing from 2006 all through to 2015. Finally, the study revealed that GDP growth in Kenya has been fluctuating over the study period with a steep decline in 2008 and the second and third quarter in 2010 and stagnation in 2009 respectively.

5.3 Conclusion

The study found that share price volatility had an insignificant negative effect on performance of the stock market while interest rates negatively affected stock market performance while economic growth and supply of money positively impacts stock market performance. Volatility on its own had an insignificant impact on the performance of the stock market as opposed to other variables which had a significant impact. It meant that there are other variable/s that heavily affect the

performance of the stock market other than volatility in share prices. The percentage may be contributed by single variable or a combination of several variables.

Interest rates, the supply of money and economy growth, significantly affected performance. This research paper, thus concludes that share price volatility negatively affects stock market performance such that any increase in share price volatility significantly and inversely affects stock market returns. The study also concludes that an upward rise in interest rates has an impact on the performance of the stock market negatively while an increase in money supply and growth in GDP results in an excellent performance of the stock exchange.

5.4 Recommendations for Policy

Since share price volatility adversely affects the performance of stock markets, this study recommends to policy institutions like the Capital Markets Authority of Kenya to develop effective policies on share trading rules to reduce high share volatility. Further, the study established that an increase in interest rates negatively affects the stock market performance. Therefore, the finding of the study recommends to the Central Bank of Kenya to come up with an effective policy on interest rates to ensure that their rise and fall does not adversely impact the Kenyan economy.

Money supply positively impacts stock market's performance. This study thus recommends enhance the Kenya's stock market performance. Finally, the study established that economic growth positively affects the performance of the stock market in Kenya. The study thus recommends that the government should ensure a stable economy and institute policies to ensure that the economy is growing to enhance the performance of the stock market.

5.5 Limitations of the Study

This study employed NSE 20 share index data to measure stock market performance at the Nairobi Securities Exchange. However, even though the NSE 20 share index presents 80% of the market capitalization the index may not be representative enough since the firms making up the index are not frequently revised and some of the firms may not be frequently traded.

The study findings revealed that the study variables only explain 37.8% of the variation of the regression model which indicates that apart from share price volatility, interest rates, money supply, and economic growth there are another variable which affects stock market performance

and the study variables only explain a small percentage. Other variables explain the other 62.2%, this could be one or a combination of several factors.

The study used secondary data from the Kenyan market hence it may not be possible to generalize the findings to every stock market across the globe since the Nairobi Securities Exchange is considered a frontier and emerging market. In addition, stock market across the world operates under different macro and micro economic conditions which may be different from the Kenyan stock market. The theories adopted were limited to EMH, APT and CAPM. There remains a question on theories of behavioural finance and the Adaptive Market Hypothesis which view asset pricing and volatility and returns from a different angle.

5.6 Suggestions for Further Research

This study utilized regression model in analysing the effect of share price volatility on stock market performance. Additional research can be undertaken using a different model like the granger causality test to test the causal effect of share price volatility on stock market performance and to establish whether share price volatility affects stock market performance

Additionally, the study focused on share price volatility, interest rates, money supply and economic growth to determine their effect on stock market performance. Additional study can be carried using other variables like inflations, political stability, balance of payments, taxation among other variables.

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APPENDICES

Appendix I: List of Firms Listed at the NSE

1. A.Baumann CO Ltd
2. Athi River Mining
3. Atlas Development and Support Services
4. B.O.C Kenya Ltd
5. Bamburi Cement Ltd
6. Barclays Bank Ltd
7. British American Tobacco Kenya
8. British-American Investments Company (Kenya) Ltd
9. Car and General (K) Ltd
10. Carbacid Investments Ltd
11. Centum Investment Co Ltd
12. CFC Stanbic Holdings Ltd
13. CIC Insurance Group Ltd
14. Crown Berger Ltd
15. Diamond Trust Bank Kenya Ltd
16. E.A.Cables Ltd
17. E.A.Portland Cement Ltd
18. Eaagads Ltd
19. East African Breweries Ltd
20. Equity Bank Ltd
21. Eveready East Africa Ltd
22. Express Ltd
23. Flame Tree Group Holdings Ltd
24. Home Afrika Ltd
25. Housing Finance Co Ltd
26. Hutchings Biemer Ltd
27. I&M Holdings Ltd
28. Jubilee Holdings Ltd
29. Kakuzi
30. Kapchorua Tea Co. Ltd
31. KenGen Ltd
32. KenolKobil Ltd
33. Kenya Airways Ltd
34. Kenya Commercial Bank Ltd
35. Kenya Orchards Ltd
36. Kenya Power & Lighting Co Ltd
37. Kenya Re-Insurance Corporation Ltd
38. Kurwitu Ventures
39. Liberty Kenya Holdings Ltd
40. Limuru Tea Co. Ltd
41. Longhorn Kenya Ltd
42. Marshalls (E.A.) Ltd
43. Mumias Sugar Co. Ltd
44. Nairobi Securities Exchange Ltd
45. Nation Media Group
46. National Bank of Kenya Ltd
47. NIC Bank Ltd
48. Olympia Capital Holdings Ltd
49. Pan Africa Insurance Holdings Ltd
50. Rea Vipingo Plantations Ltd
51. Safaricom Ltd
52. Sameer Africa Ltd
53. Sasini Ltd
54. Scangroup Ltd
55. Standard Chartered Bank Ltd
56. Standard Group Ltd
57. The Co-operative Bank of Kenya Ltd
58. Total Kenya Ltd
59. TPS Eastern Africa (Serena) Ltd
60. Trans-Century Ltd
61. Uchumi Supermarket Ltd
62. Umeme Ltd
63. Unga Group Ltd
64. Williamson Tea Kenya Ltd

Appendix II: Quarterly NSE 20 Share Index Data

Year/Quarter	Q4	Q3	Q2	Q1
2006	5,645.65	4,880.00	4,260.00	4,100.00
2007	5,444.83	5,150.00	5,150.00	5,130.00
2008	3,521.18	4,180.00	5,190.00	4,840.00
2009	3,247.44	3,290.00	3,810.00	3,520.00
2010	4,432.60	4,630.00	4,480.00	4,340.00
2011	3,205.00	3,180.00	3,970.00	3,890.00
2012	4,133.00	3,970.00	3,700.00	3,370.00
2013	4,926.97	4,793.20	4,598.16	4,860.83
2014	4,936.00	5,199.00	4,906.00	4,885.00
2015	5,100.00	5,200.00	5,500.00	5,346.00

Appendix III: Summary of Share Price Volatility

Firm	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Av.
Sasini	0.077	0.059	0.146	0.148	0.127	0.440	0.820	0.640	0.230	0.139	0.283
Barclays	0.194	0.172	0.105	0.105	0.097	0.400	0.240	0.240	0.120	0.106	0.278
Equity	0.173	0.153	0.072	0.180	0.189	0.300	0.110	0.820	0.250	0.207	0.245
KCB	0.168	0.177	0.171	0.158	0.125	0.370	0.560	0.260	0.130	0.138	0.326
Stanchart	0.055	0.048	0.048	0.048	0.060	0.180	0.180	0.190	0.060	0.066	0.093
Co-op	0.222	0.186	0.186	0.298	0.249	0.250	0.240	0.220	0.280	0.274	0.240
KQ	0.099	0.194	0.115	0.167	0.173	0.370	0.310	0.320	0.170	0.190	0.211
NMG	0.046	0.058	0.069	0.057	0.052	0.170	0.200	0.410	0.140	0.057	0.126
Scangroup	0.115	0.106	0.120	0.187	0.074	0.360	0.230	0.250	0.390	0.082	0.191
Centum	0.046	0.041	0.071	0.069	0.068	1.940	0.280	0.320	0.290	0.074	0.320
Athi River	0.159	0.146	0.217	0.243	0.141	0.240	0.170	0.280	0.180	0.155	0.193
Bamburi	0.051	0.051	0.033	0.062	0.043	0.200	0.180	0.130	0.240	0.047	0.104
Kengen	0.157	0.269	0.135	0.236	0.221	0.370	0.250	0.280	0.340	0.243	0.250
Kenol Kobil	0.129	0.221	0.144	0.182	0.129	0.300	0.340	0.400	0.210	0.142	0.220
KPLC	0.137	0.173	0.043	0.070	0.069	0.190	0.230	0.210	0.350	0.076	0.155
B.A.T	0.050	0.049	0.047	0.050	0.050	0.180	0.300	0.070	0.320	0.055	0.117
E.A.B.L	0.047	0.176	0.065	0.071	0.068	0.220	0.140	0.370	0.130	0.075	0.136
Stanbic	0.147	0.138	0.106	0.133	0.125	0.760	0.290	1.100	0.290	0.137	0.323
Safaricom	0.420	0.403	0.407	0.427	0.284	0.330	0.190	0.250	0.170	0.313	0.319
Britam	0.000	0.000	0.000	0.000	0.000	0.123	0.210	0.440	0.540	0.231	0.154
Mean	0.124	0.141	0.115	0.144	0.117	0.435	0.324	0.360	0.242	0.140	

Appendix IV: Quarterly Interest Rates Data

Year/Quarter	Q4	Q3	Q2	Q1
2006	13.74	13.54	13.79	13.33
2007	13.32	12.87	13.14	13.56
2008	14.87	13.66	14.06	14.06
2009	14.8	14.76	15.09	14.87
2010	13.87	13.98	14.19	14.39
2011	20.04	14.79	13.91	13.92
2012	18.15	19.73	20.3	20.34
2013	16.99	16.86	16.97	17.73
2014	15.99	16.04	16.36	16.91
2015	17.45	16.57	15.48	15.46

Appendix V: Quarterly Money Supply Data

Year/Quarter	Q1	Q2	Q3	Q4
2006	478,763.00	504,457.00	528,507.00	545,783.00
2007	557,650.00	581,440.00	615,595.00	638,440.00
2008	673,720.00	716,890.00	719,543.00	747,127.00
2009	761,007.00	789,807.00	824,550.00	866,800.00
2010	1,086,504.00	1,160,438.00	1,224,547.00	1,261,646.00
2011	1,305,511.00	1,355,670.00	1,444,592.00	1,505,853.00
2012	1,509,222.00	1,564,173.00	1,640,561.00	1,723,349.00
2013	1,744,233.00	1,815,433.00	1,849,167.00	1,924,700.00
2014	1,779,118.00	1,814,700.00	1,850,994.00	1,957,492.20
2015	2,234,800.00	2,133,400.00	2,556,000.00	2,658,200.00

Appendix VI: Quarterly Economic Growth Data

Year/Quarter	Q4	Q3	Q2	Q1
2006	6.30	7.50	6.10	4.50
2007	7.00	6.90	8.90	6.20
2008	2.50	2.60	2.20	1.10
2009	2.60	1.90	1.90	6.20
2010	5.60	7.20	6.10	1.40
2011	5.00	4.00	3.50	4.80
2012	5.50	4.50	4.40	3.90
2013	5.40	4.40	4.30	5.20
2014	5.40	5.40	6.00	4.60
2015	5.60	6.60	5.90	5.20