THE RELATIONSHIP BETWEEN DIVIDEND POLICY AND STOCK PRICE VOLATILITY: A CASE OF COMPANIES LISTED AT NAIROBI SECURITIES EXCHANGE

PRESENTED BY

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DECLARATION

This research project is my own original work and has not been presented for any award ofdiploma or degree in any other university.

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DEDICATION

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ABBREVIATIONS

AG	- Asset growth
ANOVA	- Analysis of Variance
ASE	- American stock exchange
ATS	- Automated trading systems
CFO	- Chief finance officer
DPS	- Dividend per share
DY	- Dividend yield
EBIT	- Earnings before interest and tax
EPS	- Earnings per share
EV	- Earning volatility
MOU	- Memorandum of understanding
NASI	- NSE all share index
NSE	- Nairobi securities exchange
NYSE	- New York stock exchange
OECD	- Organization for economic co-operation and development
POR	- Payout ratio
PV	- Price volatility
SPSS	- Statistical package for social science
UK	- United Kingdom
US	- United States of America
VIF	- Variance inflation factor

ABSTRACT

The objective of the study was to determinethe relationship between dividend policy and share price volatility and also to determine other factors which may have potential influence on share price volatility for firms listed at Nairobi securities exchange. The study covered the period 2008-2012. A sample of 30 companies which were continuously listed and paid dividends continuously for the five year period was used to make generalization about the population. The study employed correlational descriptive research design to deduce the relationship between dividend policy (measured by dividend yield and payout ratio) and share price volatility after controlling for long term debt, firm size and growth in assets. The study used the multiple linear regression model and from the analysis of the modelthere was no evidence of significant relationship between dividend policy and share price volatility at 5% level of significance. Also none of the control variables used had a significant relationship with share price volatility at 5% level of significance.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Baskin (1989) examined the impact of dividend policy on stock price volatility andsuggested the use of the following control variables in testing the significance of the relationship between dividend yield and price volatility; operating earnings, size of the firm, level of debt financing, payout ratio and level of growth. His concept of price volatility was a deviation from Fama (1991) and Fama and French (1992)who focused on dividends and other cash flow variables such as accounting earnings, investment, industrial production and others to explain stock returns.

Allen and Rachim (1996) argue that dividend policy remains one of the controversial issues for many years of theoretical and empirical research and so is the case with its linkage with share price volatility. According to Miller and Modiglian (1961) dividend policy does not have any influence on the value of the firm in a perfect world where there is no corporate and personal taxes, all investors have similar expectations regarding company's future investment and profit, no transaction costs and no floatation costs .Gordon (1963) gives a different opinion and finds that payment of large dividends reduces risk and influences stock prices.According to Pandey (2004), practical researches which have mostly been done in developed countries have concluded that dividends and share prices are significantly associated, thus increasing dividends improve investors' confidence leading them to discount firm's cash flows at inferior required rate leading to a rise in share price. On the other hand lowering dividends increases investor's uncertainty causing prices to fall down.Baker, Farrelly and Edelman (1985) surveyed the chief financial officers (CFOs) of 562 firms listed on the New York Stock Exchange (NYSE) from three industry groups (150 utilities, 309 manufacturing, and 103 wholesale/retail) and they found that respondents strongly agreed that dividend policy affects common stock prices. The findings were also supported by the study ofBrealey, Myers, Allen and Moharty (2007) which found that dividend payout policy provides informationabout management's confidence in the future and therefore it has the potentiality to affect the stock prices.

Miller and Rock (1985) argue that dividend changes are signals sent intentionally by management to the company and shareholders about the current and future cash flows of the company. If the company announces a high dividend payout greater than expected by market, it reveals an increase in company's future cash flow hence an increase in stock prices.Similarly if the company announces a lower dividend payment than expected by market, it reveals a decrease in company's future cash flow hence a decrease in stock prices. Jensen (1986) in his theory of free cash flow hypothesis came up with findings almost similar to those of Miller and Rock (1985). He argued that free cash flow exists in a company when there are excess funds left over after undertaking all projects with positive net present value and that the conflict of interest between managers and shareholders over the payment policies of these free cash flows could explain the stock price volatility. The theory predicts that in the case of unexpected dividend payment, the share price is likely to increase.

1.1.1Dividend Policy

According to Pandey (2005) dividend policy is the practice that management follows in making dividend payout decisions out of firm's earnings by determining how much dividend to pay to shareholders and how much to re-invest. He argued that a perfect dividend policy is the one that strikes a balance between current dividends and future growth and maximizes the firm's stock price. Ross (1977) on the other hand defined dividend payment as the distribution of company's profits to shareholders. Baskin (1989) measured dividend policy of a firm by considering two measuresof dividends; dividend payout ratio and dividend yield.Brealey et al. (2007) defines dividend payout ratio as the percentage of earnings paid to shareholders in dividends while dividend yield as the return on investments for stock in the absence of capital gain.

There are three schools of thoughts that have emerged with regards to dividend payout. The first is the conservatives which see dividend payment as attractive hence a positive impact on the share prices, the second group believes that stock prices are negatively correlated with dividend payouts and finally the last group who maintain that dividend payout is irrelevant and does not have any influence on stock prices (Brealey et al., 2007).Linter (1956) argues that stockholders prefer stable dividends and the market puts

a premium on such stability. On the other hand Miller andModigliani(1961) holds a contrary opinion that dividend policy has nothing to do with the value of the firm. According to Fama (1997) dividend policy is relevant to the value as well as marketability of common stock. Pandey (2004) adds that when the firm changes its policy,investors assume that this is in response to the firm's expected change in profitability.

1.1.2Stock Price Volatility

According to Baskin (1989) Stock price volatility is the relative rate at which the price of a security moves up and down or simply it's the variation in stock price.The stock price volatility is estimated by calculating the annualized standard deviation of daily changes in stock prices. If the price moves up and down more rapidly over short time periods, then the stock has high volatility and if the price makes slight changes, then the stock has less volatility. Stock price volatility can be used by investors to measure the potential risk of a given stock hence it is always good to keep the volatility in stock prices on the minimal.

1.1.3 The Relationship between Dividend Policy and Stock Price Volatility.

Nazir, Nawat, Anwar and Ahmed (2010) studied the relationship between dividend policy and share price volatility and concluded that there exists a negative relationship between dividend policy (as measured by dividend yield and dividend payout ratio) and stock price volatility. This means that the higher the dividend yield, the lower the price volatility and the lower the dividend yield, the higher the price volatility. However the early study of Allen and Rachim (1996) showed a positive but non-significant relationship between dividend yield and stock price volatility. A number of theoretical mechanisms that cause the dividend yield and dividend payout ratio to vary inversely with stock price volatility have been suggested which include; duration effect, arbitrage effect, rate of return effect and information effect (Baskin, 1989).

Lintner (1956)studied different determinants of corporate dividend policy and its effect on firm's marketvalue by conducting the interviews of top managements of 28 firms. Result of his study showed that firm's Market Value depends on the Dividend Payout. Also Ross (1977) argued that dividends are relevant because they have informational value.As such a dividend increase may signal good future earnings and lead to an

increase in share prices. A dividend decrease may signal poor future earnings and therefore decline in share price.

1.1.4 Nairobi Securities Exchange

Nairobi securities exchange (NSE) is one of the emerging markets in Africa. It was constituted in 1954 as a voluntary association of stock brokers registered under the societies Act. The market has evolved over time. Today its main responsibility is to oversee the transfer of securities for all listed companies among other functions. NSE currently has 10 sectors namely agricultural, commercial and service, telecommunication and technology, automobile and accessories, banking, manufacturing and allied, construction and allied, energy and petroleum, insurance and investment, with 60 listed firms (NSE website, 2013).

The NSE plays an important role in economic development in Kenya, by providing a medium forthe transfer of funds from surplus spending units to deficit spending units. Companies can also raise funds for expansion and development from NSE through initial public offers.The market deals with a range of securities which include; ordinary shares, treasury and corporate bonds, debenture stocks and preference shares.(NSE website, 2013).

1.2Research Problem

According to Miller andModigliani (1961) dividend policy employed by a firm does not affect the value of the firm. They argued that the value of the firm is dependent on the firm's earnings which result from its investment policy, such that when the investment policy is given the dividend policy is of no consequence.Ross (1977) came up with signaling theory which differed with Miller andModigliani (1961). He argued that dividends are relevant because they have informational value therefore payment of dividends conveys to shareholders that the company is profitable and financially stable. As such a dividend increase may signal good future earnings and lead to an increase in share prices while a dividend decrease may signal poor future earnings and therefore decline in share price. AlsoGordon (1963) and Lintner (1962) proved that dividend payment has impact share prices. They argued that current dividends are better than uncertain future capital gains hence payments of dividends attract higher share prices.

Generally most investors are risk averse and they would like to venture in investments which are less risky and assured of stable return on their investment. Volatility of share prices has been experienced in some companies at NSE. For instance safaricom share price has been fluctuating in the recent past going downto kes 2.90 per share in September 2011and rising to the highest of kes 7.50 per share in July 2008 and in May 2013 while the dividend per share has shown an increasing trend from from kes 0.10 per share to kes 0.31 per share in 2013 (Business daily, may 2013). Most companies keep on changing their dividend pay out to their shareholders from year to year.Equally the share prices at NSE are not stable; they keep on changing eitherupwards or downwards. Therefore the interest of the study is to examine whether there exists a relationship linking dividend payment policies to share price volatility experienced at the NSE market.

Ngunjiri (2010) investigated the relationship between dividend payment policies and stock price volatility and concluded that the dividend policy has no impact on stock price volatility. HoweverNgobe, Simiyu and Limo (2013)found that dividend yield has a positive relationship with price volatility while payout ratio has a negative relationship with price volatility. Although researches have been done on the topic in the Kenyan market, they were done in the past under different economic conditions as compared to the current position. Business environment has changed over time owing to Global financial crisis which has played a significant role in decline of consumer wealth and downturn of economic activity leading to 2008- 2012 global recession (Williams, May 2012). Ngobe et al. (2013) did not consider control variables and recommended a further research to be done to include other variables such as growth and investment opportunities, ownership structure among others, therefore the study filled the knowledge gap by investigating the relationship between dividend policy and stock price volatility while controlling forfirm size, long term debtand growth in assets at NSE using the data of 2008-2012.The study sought to answer the following research questions;what is the relationship between dividend policy and stock price volatility?Andwhat other factors that may have potential influence on stock price volatility apart from dividend policy?

1.3 Research Objectives

The objectives of the research were:

i. Toestablish the relationship between dividend policy and stock price volatility.
ii. To investigate other factors that may have potential influence on stock price volatility.

1.4Value of the Study

The study would be of great value to investors in making buy or sell decisions of the securities. Investors tend to buy and hold the securities with low price volatility and sell securities with high price volatility.

Management team would be enlightened in making sound decisions regarding the appropriate payout ratio to shareholders.

Financial analysts would benefit in making sound decisions when advising their clients on the portfolio selection.

The study would also be of value to researchers and academicians who will use this work as a basis for further research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This topic will review various empirical studies and theories about the relationship between dividend policy and stock price volatility and related studies. The topic will also relate the theories with empirical studies of various researchers.

2.2 Theoretical Framework

The theories can largely be classified into two, those that are in support of the relationship between dividend policy and share price volatility and those which assumes no relationship between the variables. The theoryof Miller and Modigliani (1961) assumes no relationship between the variables. The theories in support of relationship include; bird-in-hand, tax differential and informational content/signaling theory.

2.2.1Dividend Irrelevance Proposition (MM Proposition)

According to Miller andModigliani(1961) firm's value is irrelevant to dividend policy and firm's value is solely based upon its earning ability. They argued that the value of the firm is dependent on the firm's earnings which result from its investment policy, such that when the policy is given the dividend policy is of no consequence. The assumptions they made were; that there exists perfect capital markets, taxes do not exist, firms have fixed investment policy and finally risk and uncertainty do not exist (all investors are able to forecast future prices and dividends with certainty).

They stated the conditions that face a firm under perfect capital market as either;

> The firm has sufficient funds to pay dividends. In this scenario the shareholders get cash but the firm's assets reduce (cash balance declines). What shareholders gain in the form of cash dividends, they lose in the form of their claims on the reduced assets and at the end there is no gain or loss.
>
> The firm does not have sufficient funds to pay dividend therefore it issues stocks in order to finance payment of dividends. This means that the existing shareholders get cash in the form of dividends but they suffer an equal amount of

capital loss since the value of their claim on assets reduce and therefore the shareholders wealth remain the same.

The firm does not pay dividends but the shareholders need cash. Shareholders can create ‘home made dividend’ by selling part of the shares at the market price in the market to obtain cash. This means that the shareholders will have less number of shares as they have exchanged a part of their claim on the firm to new shareholders for cash. There is no net loss or gain.

From the above the dividend is irrelevant to investors, meaning investors are less concerned about a company's dividend policy since they can simulate their own. Therefore firms having high payout of dividends need not command higher prices for their shares. However Bhattacharya (1979), John and Williams (1985) and Miller and Rock (1985) reported that the above statement could be only true if shareholders have symmetric information about the company’s financial position but normally managers pass positive information to the shareholders and retaining any negative information until any regulation or financial constraint force them to disclose that information.

2.2.2 Tax Differential Theory

According to Litzenberger and Ramaswany (1979) investors would prefer not to receive dividends now to avoid paying immediate taxes. Investors would prefer reinvesting them in the corporation which would result in a future capital gain on thestock price as the value of the stock increases. Theyarguedthat investors have to pay taxes on dividends received and capital gains realized. Capital gains tax rate is lower than ordinary income tax rate and capital gains tax is payable when the gain is realized. Hence, from the taxation viewpoint, investors should prefer capital gains to dividends. The value of a firm with a low payout ratio should therefore be higher than the one with a higher payout ratio. Due to this, Litzenbergerand Ramaswany (1979) argued that the assumption by Miller andModigliani(1961) that taxes do not exist is farfrom reality. In this theory, it is assumed that taxes on cash dividends are higher than those on capital gains. The stock price will be more attractive if less cash dividends are paid.

2.2.3Bird in Hand Theory

Gordon (1963) and Lintner (1962)concluded that investors prefer current dividends to capital gains. They argue that current dividends are certain and resolve uncertainty in the investors mind about the future. Because investors are risk averse preferring current to future dividends, near dividends are, therefore, discounted at a lower rate in comparison to future dividends. Because of this, equity costs reduce with high payout ratios. The stock price increases as shareholders get more dividends in cash as they view the stock as attractive, thus, lowering the cost of capital while increasing the value of common stock.

2.2.4Information Content or Signaling Theory

According to Ross (1977) dividends are relevant because they have informational value. The payment of dividends conveys to shareholders that the company is profitable and financially stable. As such a dividend increase may signal good future earnings and lead to an increase in share prices while a dividend decrease may signal poor future earnings and therefore decline in share price. The theory suggests that investors prefer dividend to capital gains.Miller andModigliani(1961) argued that investors' reaction to a change in dividend policy does not necessarily show that investors prefer dividends to capital gains, rather the fact that a price change follows a dividend action, simply indicates that there is important information or signaling content in the dividend announcement.

2.3 Determinants of Stock Price Volatility

According to Allen and Rachim (1996) the relationship between dividend policy and share price volatility after the inclusion of growth as a control variable would be suggestive of either the arbitrage or information effect. Alonso, Iturriga and Sanz (2005)suggested thatdebt, dividend and ownership structure significantly affect the value of the firm. Their research found that firms with positive growth opportunities indicated that debt has negative influence on firm value and in firms that have no growth opportunities,debt plays a role of disciplining managers. In the absence of growth opportunities, dividend is significantly and positively related to firm's value

Also there is a potential relationship between size of the firm and share price volatility. As the size of the firm increases, the company share price decreases (Atiase, 1985). According to Allen and Rachim (1996), small firms are less involved in

diversification activities, thus it will be less subjected to investor's scrutiny compared to large firms. As a result, stocks of small firm traded in a market, would be less informed, more illiquid and would face higher price volatility.Fama and French (2001) found that the assets of firms which paid dividends averaged about eight times than those firms which never paid dividends. On the other hand Ahmed and Javid (2009) found that firms with high profitability and stable earnings can afford to have larger free cash flows thus paying out larger dividends.

2.4 EmpiricalStudies

Khaled, Chijoke and Aruoriwo (2011) carried out a research on UK market with the objective of determining the relationship between dividend policy and stock price volatility.After applying a multiple regression analysis on the data, the research showed that there exists a positive relationship between dividend yield and stock price volatility. The research also showed evidence that debt level; firm's size and earning explain price volatility as well. Similarly, Allen and Rachim (1996) on their study of dividendpolicy on stock price volatility concluded that dividend yield is positively related to stock price volatility. The same results were equally found by Yasir, Zernigah and Muhammad (2012) who applied cross sectional regression analysis in their study on the relationship between dividend policy and share price volatility in Pakistan market.On the contrary, Baskin (1989) studied firms in U.S during the period 1967 to 1986 and found that the price volatility was negatively related to dividend yield and payout ratio similarly to findings by Nazir et al. (2010) in their study of Karachi stock exchange in Pakistan during the period 2003 – 2008.

Rashid and Rahman,(2008)researched on relationship between dividend policy and share price volatility and found a positive insignificant relationship between share price volatility and dividend yield for nonfinancial firms listed in the Dhaka Stock exchange during the period of 1999 – 2006. He also concluded that debt and growth have positive insignificant relationship with share price volatility while payout ratio had a significant negative relationship with price volatility. On the other hand Zuriawati, Joriah and Abdul (2012) studied the effect of dividend policy and share price volatility on Malaysian

construction and material companies and found a negative insignificant relationship between dividend yield and share price volatility.

Paul and David (1983) conducted a study on the Impact of Initiating Dividend Payments on Shareholders' Wealth on firms listed in NYSE and the ASE. The study considered 168 firms that either pay the first dividend in their corporate history or initiate dividends to shareholders. Data collected from companies listed in NYSE and the ASE for the period January 1954- December 1963. The dividend announcement dates and the amount of dividends paid by these companies were then collected. A dividend announcement date was the date when news of the forthcoming dividend first appeared in the Wall Street Journal. Dividend announcement dates and dividend amounts were collected not only for the initial dividend but also for the largest dividend increase that occurred during the following 12 quarters. This provided information on the dividend histories of the sample firms for the 3-year period following the initial dividend and also allowed a comparison of initial and subsequent dividends. Of the 168 initial firms, 114 increased their dividend within 3 years, seven decreased their dividend and the remaining 47 kept their dividend at the initial level. Finally, stock prices were collected for the month end before all dividend announcements to calculate changes in dividend yield, and earnings per share information was collected for the previous fiscal year to calculate changes in payout ratios. They concluded that initiating dividends increases shareholders' wealth.

Locally, Kuria (2001) carried a research on dividend policies in relation to company's growth in assets, return on assets and return on equity. A regression analysis showed a negative relationship between dividend payout ratios and growth in assets and concluded that managers used retained earnings to finance company's growth. He further concluded that an investor, especially the one interested in cash dividends rather than capital gains, will be able to distinguish these companies with high capital gains as reflected in increase in assets and increase in stock prices.

Bitok (2004) investigated the effect of dividend policy on value of firms listed in NSE using correlation and regression analysis and concluded that there is a weak positive relationship between payout and value of firm which he attributed to information signaling effect as advanced by Ross (1977). On the other handKalui (2004) analyzed the

factors that cause stock price volatility for companies listed in NSE for period between 1998-2002. He concluded that payout ratio, size, earning volatility and assets growth are some of the factors causing stock price volatility.

Maina (2009) carried a study on dividend payout patterns and share value: Evidence from Nairobi stock exchange.The study used secondary data which was obtained for the period 1998-2007 from 43 firms out of 49 listed companies. The data collected includes; Earnings per share, dividend per share, market value of common stock, book value of equity, capital expenditure, total assets and long term debts for the entire period of study. The study used correlation and regression analysis to determine the relationship between share value and dividend payout and revealed a strong positive correlation between share value and dividend payout ratio.

Ngunjiri (2010) studied on the relationship between dividend payment policies and stock price volatility for the period 2004-2008. Secondary data was obtained from NSE of 40 companies and analyzed using regression analysis. He concluded that dividend payment policies have no impact on stock price volatility. Thiong'o (2011) investigated the relationship between dividend payment and stock prices for firms listed at NSE for the period 2006-2010. The study employed simple linear regression and came up with the findings that there exists a weak positive relationship between dividend payout ratio and stock prices.Ngobe et al. (2013) studied the relationship between dividend policy and stock price volatility for the period 1999-2008 at NSE using correlation and multiple regression analysis and concluded that dividend yield has a positive relationship with price volatility while payout ratio has a negative relationship with price volatility, contrary to the findings of Ngunjiri (2010).

2.5 Summary

Various studies across the globe have been done on the research topic, some studies giving similar findings while others getting contradictory findings.Internationally the studies that have been done and showed a negative relationship between dividend yield and stock price volatility include Baskin (1989), Nazir et al. (2010)and Zuriawati et al. (2012). On the other hand the studies which have revealed a positive relationship include

that of Allen and Rachim (1996),Rashid and Rahman (2008), Khaled et al. (2011) and Yasir et al. (2012).

Locally Ngunjiri (2010) found a negative non-significant relationship between price volatility and dividend yield as well as payout ratio, contrary toNgobe et al. (2013) who found a significant positive relationship between payout and share price volatility and a significant negative relationship between dividend payout ratio and share price volatility.From the foregoing summary it emerges that the researches have not been conclusive as regards to the relationship between dividend policies and share price volatility, therefore the study sought to fill this gap.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter provided a discussion of the research methodology that was used in the study.The research design especially with respect to the choice of the design as well as Population of study, sample and sampling techniques, data collection methods, data analysis and data presentation methods were covered.

3.2 Research Design

The study employed correlationaldescriptive research design to determine the relationship between dividend policy and share price volatility.Sekeran (2000) defined descriptive research design as one which determines and reports the way things are. It obtains information concerning current status of the phenomena to describe 'what exists' with respect to variables in a situation.The design waspreferred because it accomodates correlational studies which seeks to investigate the relationship between variables.

3.3 Population

The population of the studyconsisted of60 firmslisted at the NSE as at the end of 2012.

3.4 Sampling Design

The study was carried out on those firms from NSE which were continuously listed and paid dividends continuously during the 5 year period 2008-2012 and their data available from NSE and CMA. A sample of 30 companies which met the criteria was used in the study.

3.5 Data Collection

The study used secondary data. The data was collected from NSE regarding share prices. Data relating to dividend yield, dividend payout ratio, firm size, earning volatility, long term debt and growth in assets were collected from financial statements of companies listed in Nairobi stock exchange which were listed continuously and paid dividends continuously during the study period.

3.6 Data Analysis

This study used quantitative method of data analysis. The research data was subjected to cross-sectional analysis.Data wasanalyzed using Statistical Package for Social Sciences (SPSS) program and presented using tables and figuresthat gave a clear picture of the research findings at a glance. Multiple linear regression analysis was used to determine the relationship between dividend policy and share price volatility and a correlation analysis was done between the variables. Model(1) used price volatility (PV) as dependent variable against two independent variables, dividend yield (DY) and dividend payout ratio (POR). Firm size (Z), long term debt (DA) and growth in asset (AG) were used as control factors for the modified model (2).

3.6.1 Analytical Model

The study used a regression model similar to that used by Fama and French (1988), Baskin (1989) and Allen and Rachim (1996) stated as below;

$$PV_i = \beta_0 + \beta_1 DY_i + \beta_2 POR_i + e_i \qquad (1)$$

The regression model was modified to include the control variables as below;

$$PV_i = \beta_0 + \beta_1 DY_i + \beta_2 POR_i + \beta_3 Z_i + \beta_4 DA_i + \beta_5 AG_i + e_i \qquad (2)$$

Where;

PV_i = Share price volatility for firm i

DY_i = Dividend yield for firm i

POR_i = Payout ratio for firm i

Z_i= market value of firm i

DA_i= Long term debt for firm i

AG_i= Growth in assets for firm i

e_i = Error term

β_0 was a constant and β_1,β_2, β_3, β_4 and $\beta_5$were coefficients of regression equation.

3.6.2Measurement of Variables

The variables in the model were measured as per below criteria.

Price volatility (PV)

The dependent variable in the regression was derived by following the Parkinson's (1980) extreme value estimate or estimating variance of the rate of return. For each year, the annual range of stock prices were divided by the average of the high and low stock prices and then raised to the second power. These average measures of variance for all available years were then transformed to a standard deviation by using a square root transformation.

$$PV = \sqrt{\frac{\sum_j^n [H_j - L_j] / \left[\frac{H_j + L_j}{2}\right]^2}{n}}$$

H_j= highest stock price for year j

L_j=Lowest stock price for year j

n= number of years

Dividend yield (DY)

The variable was calculated by summing all the annual cash dividends paid and proposed to common stock holders and then dividing this sum by the market value of the stock in the year. The figures were then averaged over the period of study.

$$DY = \sum_j^n \frac{D_j / MV_j}{n}$$

D_j= The sum of cash dividend paid and proposed to common shareholders in year j

n= number of years

MV_j= Market value of firm at the end of year j

Payout Ratio (POR)

The total cumulative individual company earnings and dividends were calculated for all years. The Payout was then determined which is the ratio of total dividends to total earnings. The ratio for all the years of study were then averaged.

$$POR = \sum_j^n \frac{D_j/E_j}{n}$$

D_j=The sum of cash dividend paid and proposed to common shareholders in year j

E_j= Net income after tax for year j

n= number of years

Size (Z)

The variable size was constructed in a form that reflects the order of magnitude in real terms. The variable was calculated by taking the total number of assets in every year and then a transformation of natural logarithm wasapplied.It was then averaged over the period of study.

$$Z = \frac{1}{n} \sum_j^n In\left[ASSET_j\right]$$

$ASSET_j$= Total assets at the end of year j

n= number of years

Long-term Debt (DA)

The ratio of the sum of all the long-term debt (debt with maturity more than one year) to total assets was taken. It was thenaveraged over the period of study.

$$DA = \sum_j^n \frac{LD_j/ASSET_j}{n}$$

LD_j= Long-term debt at the end of year j

$ASSET_j$= Total assets at the end of year j

n= number of years

Growth in Assets (AG)

The annual growth rate was calculated by taking the ratio of the change in total assets in a year. Then the ratio was averaged over the years.

$$AG=\sum_{j}^{n}\frac{\left[\frac{\Delta ASSET_j}{ASSET_j}\right]}{n}$$

$\triangle ASSET_j$= change in total asset of year j

$ASSET_j$= Total assets at the end of year j

n= number of years

3.6.3 Testing of Hypothesis

The study tested the following hypothesis;

H_0: There is no significant relationship between dividend policy and share price volatility.

H_1: There exists significant relationship between dividend policy and share price volatility.

The study used T-statistic to test the significance of the relationship between individual predictor variables and share price volatility and F-statistic to test the significance of the relationship between stock price volatility and all predictor variables at 5% level of significance.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

The chapter discussed data analysis, findings and interpretations of the findings.It accountedfor the analysis and findings of theregression model (1) without control variables and the same process was repeated using regression model (2) with control variables. Model (1) refers to the model with dividend yield and dividend payout ratio as predictor variables and share price volatility as the response variable while model (2) refers to the model with Dividend yield, Dividend payout ratio, firm size, long term debt and asset growth as predictor variables and share price volatility as the response variable.

4.2Nature and strength of the Relationship of Model(1)

Table 1: Correlations of Model (1)

		Share price volatility	Dividend Yield	Payout Ratio
Pearson Correlation	Share price volatility	1.000	-.226	-.154
	Dividend Yield	-.226	1.000	.435
	Payout Ratio	-.154	.435	1.000
Sig. (2-tailed)	Share price volatility	.	.115	.208
	Dividend Yield	.115	.	.008
	Payout Ratio	.208	.008	.
N	Share price volatility	30	30	30
	Dividend Yield	30	30	30
	Payout Ratio	30	30	30

Source: Research data (2013)

From the results in table 1, there exists a negative correlation between share price volatility and dividend yield (r = -0.226). Also share price volatility was found to be negatively correlated to payout ratio (r = -0.154). The findings are similar to Baskin (1989) who found a negative relationship between the two predictor variables and share price volatility. The correlation between dividend yield and share price volatility was not significant since its p-value of 0.115 was greater than 0.05. Also the correlation between

payout ratio and share price volatility was not significant since its p-value of 0.208 was more than 0.05.A correlation between two variables is said to be significant if its P-Value is less than 0.05 (at 5% significance level).

4.2.1Regression Analysis of Model(1)

The result of regression equation for model (1) based on the results of table 2 was expressed as;

PV = 0.184 - 0.893DY - 0.190POR

From the above equation, it was found that for every one unit increase in dividend yield, share price volatility decreases by 0.893 units, other factors kept constant .Also for every one unit increase in dividend payout ratio, share price volatility decreases by 0.190 units, other factors kept constant. Finally 0.184 in the model indicates that share price volatility stands at 0.184 when all predictor variables are equal to zero.

Table 2:Coefficients of Model (1)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B			
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	VIF
1	(Constant)	.184	.043		4.277	.000	.096	.272		
	Dividend Yield	-.893	.945	-.196	-.945	.353	-2.832	1.046	-.226	1.233
	Payout Ratio	-.019	.058	-.069	-.332	.743	-.138	.099	-.154	1.233

Source: Research data (2013)

The slopes were tested using the hypothesisas follows; H_0: $\beta_i = 0$ against H_1: $\beta_i \neq 0$ where i = 1, 2. Using the SPSS output, the null hypothesis (H_0) is rejected if the p-value is less than the level of significance, in this research 0.05. Based on the results of table 2, the p-value for slope of dividend yield was 0.353 which was greater than 0.05 hence the research failed to reject the null hypothesis. This implied that there is no significant relationship between dividend yield and share price volatility. Also the p-value for the

payout ratio was 0.743 which was greater than 0.05 hence the research failed to reject the null hypothesis implying no significant relationship between payout ratio and share price volatility.

4.2.2 Test of Significance of Model(1)

F-test was used to test the significance of the whole model. The relationship between dependent variable and independent variables is said to be statistically significant if the P-value is less than 0.05 (at 5% level of significance). From Table 3 below, the P-value for the model was 0.466 which was greater than 0.05, hence the research found that the relationship between share price volatility dividendpolicy (measured by dividend yield and dividend payout ratio) was not significant at 5% significance level.

Table 3: ANOVA of model (1)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.011	2	.005	.786	.466[b]
	Residual	.189	27	.007		
	Total	.200	29			

Source: Research data (2013)

The coefficient of determination (R^2) measures the degree of variations in the response variable that can be explained by the changes in the predictor variables in the regression equation. From table 4 below, R^2 was found to be 0.055 meaning that 5.50% variations inshare price volatility were explained by changes in dividend policy. This means the reliability of the model is low as 94.50% of variations remain unexplained by the model.

The value of Durbin- Watson of 2.320 as shown in table 4 below was prove that there exists no autocorrelation as the value was less than 7.0(threshold for autocorrelation).Multi-collinearity was tested as well using the variance inflation factors in table 2.Multicollinearity problem exists when the variance inflation factor of a given predictor variable is equal to or greater than ten ($VIF_i \geq 10$). The VIF for dividend yield was 1.233 while that of payout ratio was 1.233 hence no multicollinearity problem since the values were less than ten.

Table 4: Regression statistics of model (1)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.235[a]	.055	-.015	.08361436	.055	.786	2	27	.466	2.240

Source: Research data (2013)

4.3Nature and strength of the Relationship (Model 2)

The modified model represents the model which was modified to accommodate the control variables. From table 8, the research found; a negative correlation between share price volatility and dividend yield (correlation coefficient (r) = -0.226). This correlation was not significant since its corresponding p-value of 0.115 was greater than 0.05.There was insignificant negative correlation between share price volatility and payout ratio (r= -0.154) since its corresponding p-value of 0.208 was greater than 0.05. Share price volatility and firm size had insignificant positive correlation (r= 0.279) since its corresponding p-value of 0.068 was greater than 0.05. There was a positive correlation between share price volatility and long term debt (r= 0.271) which was insignificant since its corresponding p-value of 0.073 was greater than 0.05. Finally there existedinsignificant negative correlation between share price volatility and growth in assets (r = -0.082) since its p-value of 0.333 was greater than 0.05. A correlation is said to be significant if its p-value is less than 0.05(5% level of significance).

4.3.1 Regression Analysis of Model(2)

The result of regression equation for the modified model (2) based on the results in table 5was expressed as;

$$PV = – 0.020 –1.090DY – 0.040POR + 0.009Z + 0.184D – 0.087G$$

From the above equation, share price volatility stands at -0.02 when all predictor variables are equal to zero. When dividend yield increases by one unit, share price volatility decreases by 1.09 units. When payout ratio increases by one unit, share price volatility decreases by 0.040 units.When the size of the firm increases by one unit, share price volatility also increases by 0.009 units. When long term Debt increases by one unit,

share price volatility increases by 0.184 units. Finally when asset growth increases by one unit, share price volatility decreases by 0.087 units.

Table 5: Coefficientsof model (2)

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	-.002	.215		-.010	.992	-.445	.441		
Dividend Yield	-1.09	.968	-.240	-1.13	.270	-3.090	.903	.730	1.370
Payout Ratio	-.040	.057	-.142	-.691	.496	-.158	.079	.779	1.284
Firm Size	.009	.009	.195	1.001	.327	-.009	.027	.874	1.145
Long term Debt	.184	.150	.243	1.228	.232	-.125	.493	.841	1.189
Growth in Assets	-.087	.129	-.134	-.674	.507	-.354	.180	.837	1.195

Source: Research data (2013)

The slopes were tested using the hypothesis as follows; H_0: $\beta_i = 0$ against H_1: $\beta_i \neq 0$, where i = 1, 2, 3, 4, 5. The slope indicates the impact of individual predictor variable on the response variable (share price volatility) in the multiple linear regression model. The null hypothesis of a particular slope would be rejected if its p-value was less than the level of significance (0.05). Based on results in table 5, it was found that all predictor variables had a p- value of greater than 0.05. The p-value for dividend yield was 0.270, p-value for dividend payout ratio was 0.496, p-value for firm size was 0.327, p-value for long term debt was 0.232 and p-value for asset growth was 0.507. This implied that the relationship between each individual predictor variable and share price volatility was found to be statistically insignificant at 5% level of significance.

4.3.2 Testing the Significance ofModel(2)

F-test was used to test the significance of the whole model.From table 6below it was found that the relationship between stock price volatility and all predictor variables was statistically insignificant at 5% level of significance since the p-value of 0.314 was greater than 0.05.

Table 6:ANOVA of model (2)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.041	5	.008	1.258	.314
	Residual	.158	24	.007		
	Total	.200	29			

Source: Research data (2013)

From table 7,the coefficient of determination, R^2 was found to be 0.208 meaning that 20.8% variations in share price volatility were explained by changes in predictor variables.The value of Durbin- Watson of 2.320 as shown in table 7 below was prove that there exists no autocorrelation as the value was less than 7.0(threshold for autocorrelation). Multicollinearity was tested using the variance inflation factors (VIFs).Multicollinearity problem exists when the variance inflation factor of a given predictor variable is equal to or greater than ten ($VIF_i \geq 10$).From table 5, VIF for Dividend yield was 1.370, dividend Payout ratio VIF = 1.284, firm size VIF = 1.145, Long term debt VIF = 1.189 and finally Asset growth VIF was 1.195.This meantthat the problem of multicollinearity did not exist since all the variance inflation factors were below the cut-off point of 10.

Table 7: Regression statistics of model (2)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.456[a]	.208	.043	.08121216	2.320

Source: Research data (2013)

4.4 Discussion of the Regression Analysis Results

The research used two models of regression equations in interpreting the findings, model (1) and model (2). The coefficient of determination, $R^2$for model (1)was 0.055 while that of model (2) improved to 0.208, meaning that the predictor variables of model (1) accounted for only 5.5% of the variations in share price volatility while predictor variables of modified model (2) accounted for 20.8% of variations in share price volatility. The gradient of dividend yield for model (1) was -0.893 while in the modified model (2) it was -1.090. This meant that the slope for the dividend yield was slightly steeper in the modified model (2) as compared to model (1). The gradient for payout ratio for model (1) was -0.190 while in the modified model (2) was found to be -0.040. Therefore the slope for the payout ratio was steeper in the model (1) as compared to the modified model (2).

The regression results from the two models showed that there exists insignificant relationship between dividend policy (as measured by dividend yield and dividend payout ratio) and stock price volatility. Also the control variables in model (2) which included; firm size, long term debt and growth in assets showed insignificant relationship with stock price volatility.

CHAPTER FIVE:SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The chapter gives the summary of findings from chapter four, conclusions of the research, recommendations, limitations of the study and suggestions regarding areas for further research.

5.2 Summary of the Findings

From model(1) which analyzed the relationship between share price volatility and dividend policy, the research found an insignificant negative relationship between share price volatility and dividend policy. The modified regression model (2) which included the control variables also found that there was an insignificant negative relationship between share price volatility and dividend policy. The control variables which include firm size, long term debt and growth in assets were also found to have insignificant impact on share price volatility at 5% level of significance.

The regression model (1) had an R of 0.235 and R^2 of 0.055 while the modified regression model (2) had an R of 0.456 and R^2 of 0.208 .From model (1), the correlation matrix showed that there exists insignificant negative correlation between price volatility and dividend yield (r = -0.226). Also share price volatility was found to have negative insignificant correlation with dividend payout ratio (r = -0.154).From the modified regression model (2),the correlation matrix showed that share price volatility (PV) had insignificant negative correlation with dividend yield, payout ratio and Growth with r -0.226, r = -0.154 and r = -0.82 respectively. Also share price volatility showed insignificant positive correlation with Size (r = 0.279) and Long term debt (r = 0.271).

5.2 Conclusions

A sample of 30 companies was used in the study to make generalization on the entire population. The null hypothesis (H_0) stated that there exists no significant relationship between dividend policy and share price volatility against alternative hypothesis (H_1)which stated that there exists significant relationship between dividend policy and share price volatility. From the findings in chapter four, table 6, the p-values for the

proxies of dividend policy (dividend yield and dividend payout ratio) of 0.270 and 0.496 respectively were greater than 0.05 (5% level of significance). Therefore the research findings failed to reject the null hypothesis and concluded that there was no significant relationship between dividend policy and share price volatility. Also the p-values for firm size, long term debt and growth in assets were 0.327, 0.232 and 0.507 respectively which were greater than 0.05 hence the research concluded that firm size, long term debt and growth in assets have no significant relationship with share price volatility.

5.2 Recommendations

The main objective of the study was to determine the relationship between dividend policy and share price volatility. Given that there exists aninsignificant relationship between dividend policy and share price volatility, the research recommends that investors should not use the dividend policy applied by a firm as a measure of analyzing the variations of its stock prices at Nairobi stock exchange.

5.3 Limitations of the study

The study encountered difficult in obtaining data from Nairobi securities exchange and capital markets authority for some few companies whose data was missing in some years. This meant that these companies had to be left out and did not form part of statistics.The other limitation is the length of period of the study. The study used five-year period which was sufficient, however a longer period would yield better results.

5.4 Recommendations for further research.

Further studies can be done to include more control variables which could have a potential impact on stock price volatility for instance the effect of inflation. Also Further research can be done on the same topic but involve the use of other models other than multiple linear regression such as polynomial models of second order. Further research can also be done in the same topic but include the east Africa market.

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APPENDICES

Appendix 1:List of firms sampled

1 Kakuzi ltd
2 Limuru tea co. ltd
3 kapchorua tea ltd
4 williamson tea kenya ltd
5 Rea vipingo plantations ltd
6 Kenya Airways Ltd
7 Nation Media Group
8 Scangroup Ltd
9 TPS Eastern Africa (Serena) Ltd
10 Safaricom Ltd
11 Barclays Bank Ltd
12 Diamond Trust Bank Kenya Ltd
13 Equity Bank Ltd
14 Housing Finance Co Ltd
15 Kenya Commercial Bank Ltd
16 NIC Bank Ltd
17 Standard Chartered Bank Ltd
18 The Co-operative Bank of Kenya Ltd
19 Jubilee Holdings Ltd
20 Kenya Re-Insurance Corporation Ltd
21 B.O.C Kenya Ltd
22 British American Tobacco K. Ltd
23 Carbacid Investments Ltd
24 East African Breweries Ltd
25 Mumias Sugar Co. Ltd
26 Bamburi Cement Ltd
27 Crown Berger Ltd
28 E.A.Cables Ltd
29 Kengen ltd
30 Kenya Power & Lighting Co ltd

Appendix 2: Stock Price Volatility

Price Volatility						Average
	2008	**2009**	**2010**	**2011**	**2012**	
Kakuzi ltd	0.1460	0.1481	0.1266	0.0767	0.0591	**0.1172**
Limuru tea co. ltd	0.0179	0.0174	0.0242	0.0252	0.0288	**0.0231**
kapchorua tea ltd	0.0769	0.0673	0.0913	0.0699	0.0596	**0.0738**
williamson tea kenya ltd	0.0826	0.1031	0.0966	0.0576	0.0611	**0.0822**
Rea vipingo plantations ltd	0.1291	0.2197	0.2023	0.1757	0.1512	**0.1787**
Kenya Airways Ltd	0.1151	0.1667	0.1728	0.0990	0.1938	**0.1538**
Nation Media Group	0.0694	0.0566	0.0522	0.0456	0.0575	**0.0568**
Scangroup Ltd	0.1195	0.1868	0.0744	0.1154	0.1061	**0.1259**
TPS Eastern Africa (Serena) Ltd	0.0917	0.1414	0.0937	0.0937	0.1031	**0.1064**
Safaricom Ltd	0.4071	0.4268	0.2841	0.4198	0.4031	**0.3917**
Barclays Bank Ltd	0.1053	0.1053	0.0996	0.1941	0.1724	**0.1411**
Diamond Trust Bank Kenya Ltd	0.0968	0.1011	0.0851	0.0824	0.0592	**0.0862**
Equity Bank Ltd	0.0719	0.1796	0.1885	0.1726	0.1533	**0.1589**
Housing Finance Co Ltd	0.1989	0.1902	0.1839	0.1986	0.1545	**0.1859**
Kenya Commercial Bank Ltd	0.1706	0.1581	0.1253	0.1677	0.1772	**0.1608**
NIC Bank Ltd	0.1064	0.1333	0.1245	0.1467	0.1383	**0.1306**
Standard Chartered Bank Ltd	0.0476	0.0475	0.0598	0.0546	0.0475	**0.0516**
The Co-operative Bank of Kenya Ltd	0.1856	0.2977	0.2491	0.2218	0.1863	**0.2320**
Jubilee Holdings Ltd	0.0705	0.0686	0.0677	0.0462	0.0411	**0.0601**
Kenya Re-Insurance Corporation Ltd	0.2204	0.2516	0.1756	0.2619	0.2544	**0.2349**
B.O.C Kenya Ltd	0.0000	0.0261	0.0420	0.0669	0.0485	**0.0431**
British American Tobacco K. Ltd	0.0468	0.0500	0.0497	0.0497	0.0488	**0.0490**
Carbacid Investments Ltd	0.0000	0.0000	0.0714	0.0650	0.0697	**0.0533**
East African Breweries Ltd	0.0647	0.0707	0.0684	0.0471	0.1762	**0.0971**
Mumias Sugar Co. Ltd	0.2092	0.3865	0.2586	0.2592	0.3299	**0.2953**
Bamburi Cement Ltd	0.0326	0.0617	0.0426	0.0506	0.0512	**0.0487**
Crown Berger Ltd	0.2165	0.2431	0.1405	0.1593	0.1460	**0.1857**
E.A.Cables Ltd	0.1441	0.1822	0.1289	0.2210	0.1558	**0.1695**
Kengen ltd	0.1346	0.2355	0.2209	0.1566	0.2692	**0.2095**
Kenya Power & Lighting Co ltd	0.0431	0.0701	0.0693	0.1367	0.1731	**0.1098**

Source: CMA/NSE (2013)

Appendix 3: Dividends per Share

DPS					
	2008	**2009**	**2010**	**2011**	**2012**
Kakuzi ltd	1.00	2.50	2.50	3.25	3.75
Limuru tea co. ltd	10.00	7.50	7.50	7.50	7.50
kapchorua tea ltd	2.50	6.50	6.25	7.50	7.50
williamson tea kenya ltd	0.50	4.00	6.25	15.00	57.50
Rea vipingo plantations ltd	0.20	0.50	0.80	1.10	1.10
Kenya Airways Ltd	1.75	1.00	1.00	1.50	0.81
Nation Media Group	5.50	5.50	8.00	8.00	10.00
Scangroup Ltd	0.26	0.50	0.70	0.70	0.60
TPS Eastern Africa (Serena) Ltd	1.25	1.25	1.25	1.30	1.30
Safaricom Ltd	0.05	0.10	0.20	0.22	0.31
Barclays Bank Ltd	2.00	2.50	1.36	1.56	1.00
Diamond Trust Bank Kenya Ltd	1.13	1.25	1.29	1.65	1.90
Equity Bank Ltd	3.00	0.40	0.80	1.00	1.25
Housing Finance Co Ltd	0.30	0.50	0.70	1.20	1.40
Kenya Commercial Bank Ltd	1.00	1.00	1.25	1.85	1.90
NIC Bank Ltd	0.50	0.50	0.50	0.50	1.00
Standard Chartered Bank Ltd	10.00	12.00	13.50	11.00	12.50
The Co-operative Bank of (K) Ltd	0.10	0.20	0.40	0.40	0.50
Jubilee Holdings Ltd	4.25	4.50	5.50	5.50	7.00
Kenya Re-Insurance Corp. Ltd	0.50	0.50	0.35	0.35	0.40
B.O.C Kenya Ltd	4.80	4.80	9.40	4.80	5.05
British American Tobacco (K) Ltd	17.00	14.75	13.25	30.50	32.50
Carbacid Investments Ltd	10.00	15.00	5.00	5.00	6.00
East African Breweries Ltd	8.05	8.05	8.75	8.75	8.75
Mumias Sugar Co. Ltd	0.40	0.40	0.40	0.50	0.50
Bamburi Cement Ltd	6.00	11.00	8.50	10.00	10.50
Crown Berger Ltd	1.25	1.25	1.25	1.25	1.25
E.A.Cables Ltd	1.00	1.00	1.00	0.80	1.00
Kengen ltd	0.90	0.50	0.50	0.50	0.60
Kenya Power & Lighting Co ltd	4.00	8.00	8.00	0.45	0.50

Source: CMA/NSE (2013)

Appendix 4: Earnings per Share

EPS					
	2008	**2009**	**2010**	**2011**	**2012**
Kakuzi ltd	14.14	17.34	15.87	28.06	19.35
Limuru tea co. ltd	14.10	22.50	62.40	33.70	84.90
kapchorua tea ltd	-17.84	17.87	35.60	47.80	19.93
williamson tea kenya ltd	-11.14	12.55	100.05	97.46	93.74
Rea vipingo plantations ltd	2.80	2.48	1.12	7.79	6.34
Kenya Airways Ltd	9.91	-8.84	4.40	7.65	3.58
Nation Media Group	9.09	7.74	9.77	12.71	15.94
Scangroup Ltd	1.79	1.81	2.11	2.55	2.21
TPS Eastern Africa (Serena) Ltd	2.10	3.32	4.39	4.50	3.60
Safaricom Ltd	0.35	0.27	0.38	0.33	0.32
Barclays Bank Ltd	1.02	1.12	1.95	1.49	1.61
Diamond Trust Bank Kenya Ltd	6.07	6.19	11.31	13.15	17.44
Equity Bank Ltd	10.68	1.14	1.93	2.79	3.26
Housing Finance Co Ltd	0.70	1.02	1.65	2.70	3.22
Kenya Commercial Bank Ltd	1.97	1.84	2.76	3.72	4.11
NIC Bank Ltd	2.63	2.75	4.60	5.54	6.03
Standard Chartered Bank Ltd	11.11	16.45	18.58	19.28	26.60
The Co-operative Bank of K. Ltd	0.80	0.85	1.31	1.54	1.84
Jubilee Holdings Ltd	14.40	18.33	32.00	30.00	35.00
Kenya Re-Insurance Corp. Ltd	1.57	2.21	2.57	2.74	4.00
B.O.C Kenya Ltd	10.26	7.88	4.06	7.71	10.11
British American Tobacco K. Ltd	17.00	14.78	17.67	30.98	32.71
Carbacid Investments Ltd	14.72	22.63	9.05	8.89	11.46
East African Breweries Ltd	9.55	8.71	9.08	9.30	13.46
Mumias Sugar Co. Ltd	0.79	1.05	1.03	1.26	1.32
Bamburi Cement Ltd	8.78	18.32	14.02	14.44	12.17
Crown Berger Ltd	2.69	6.42	6.26	7.19	7.31
E.A.Cables Ltd	1.55	1.22	0.89	1.15	1.74
Kengen ltd	2.19	0.94	0.89	0.94	1.28
Kenya Power & Lighting Co ltd	22.30	40.76	46.97	2.16	2.36

Source: CMA/NSE (2013)

Appendix 5: Dividend Yield

DIVIDEND YIELD						Average
	2008	**2009**	**2010**	**2011**	**2012**	
Kakuzi ltd	0.0435	0.0787	0.0307	0.0468	0.0543	**0.0508**
Limuru tea co. ltd	0.0328	0.0246	0.0250	0.0224	0.0174	**0.0244**
kapchorua tea ltd	0.0333	0.0956	0.0428	0.0652	0.0620	**0.0598**
williamson tea kenya ltd	0.0087	0.0851	0.0283	0.0811	0.2500	**0.0906**
Rea vipingo plantations ltd	0.0118	0.0450	0.0447	0.0620	0.0647	**0.0456**
Kenya Airways Ltd	0.0337	0.0506	0.0167	0.0462	0.0579	**0.0410**
Nation Media Group	0.0385	0.0466	0.0479	0.0571	0.0450	**0.0470**
Scangroup Ltd	0.0103	0.0196	0.0114	0.0169	0.0089	**0.0134**
TPS Eastern Africa (Serena) Ltd	0.0240	0.0278	0.0182	0.0236	0.0317	**0.0251**
Safaricom Ltd	0.0139	0.0220	0.0148	0.0427	0.0614	**0.0310**
Barclays Bank Ltd	0.0396	0.0556	0.0218	0.1195	0.0637	**0.0600**
Diamond Trust Bank Kenya Ltd	0.0165	0.0179	0.0096	0.0182	0.1210	**0.0366**
Equity Bank Ltd	0.0170	0.0279	0.0299	0.0610	0.0521	**0.0376**
Housing Finance Co Ltd	0.0155	0.0278	0.0264	0.0968	0.0903	**0.0514**
Kenya Commercial Bank Ltd	0.0426	0.0488	0.0575	0.1098	0.0639	**0.0645**
NIC Bank Ltd	0.0115	0.0160	0.0109	0.0208	0.0261	**0.0171**
Standard Chartered Bank Ltd	0.0625	0.0745	0.0523	0.0688	0.0530	**0.0622**
The Co-operative Bank of K. Ltd	0.0094	0.0223	0.0211	0.0327	0.0405	**0.0252**
Jubilee Holdings Ltd	0.0346	0.0391	0.0299	0.0355	0.0405	**0.0359**
Kenya Re-Insurance Corpo. Ltd	0.0392	0.0427	0.0317	0.0479	0.0369	**0.0397**
B.O.C Kenya Ltd	0.0300	0.0320	0.0712	0.0480	0.0508	**0.0464**
British American Tobacco K. Ltd	0.1298	0.0829	0.0491	0.1240	0.0659	**0.0903**
Carbacid Investments Ltd	0.0730	0.1095	0.0313	0.0417	0.0480	**0.0607**
East African Breweries Ltd	0.0405	0.0537	0.0483	0.0449	0.0380	**0.0451**
Mumias Sugar Co. Ltd	0.0315	0.0667	0.0311	0.0699	0.0820	**0.0562**
Bamburi Cement Ltd	0.0364	0.0705	0.0455	0.0800	0.0568	**0.0578**
Crown Berger Ltd	0.0505	0.0521	0.0347	0.0610	0.0294	**0.0455**
E.A.Cables Ltd	0.0381	0.0494	0.0615	0.0758	0.0837	**0.0617**
Kengen ltd	0.0367	0.0344	0.0292	0.0369	0.0690	**0.0412**
Kenya Power & Lighting Co ltd	0.0188	0.0548	0.0400	0.0209	0.0333	**0.0336**

Source: CMA/NSE (2013)

Appendix 6: Dividend Payout ratio

POR						Average
	2008	**2009**	**2010**	**2011**	**2012**	
Kakuzi ltd	0.0707	0.1442	0.1575	0.1158	0.1938	**0.1364**
Limuru tea co. ltd	0.7092	0.3333	0.1202	0.2226	0.0883	**0.2947**
kapchorua tea ltd	-0.1401	0.3637	0.1756	0.1569	0.3763	**0.1865**
williamson tea kenya ltd	-0.0449	0.3187	0.0625	0.1539	0.6134	**0.2207**
Rea vipingo plantations ltd	0.0714	0.2016	0.7143	0.1412	0.1735	**0.2604**
Kenya Airways Ltd	0.1766	-0.1131	0.2273	0.1961	0.2263	**0.1426**
Nation Media Group	0.6051	0.7106	0.8188	0.6294	0.6274	**0.6783**
Scangroup Ltd	0.1453	0.2762	0.3318	0.2745	0.2715	**0.2599**
TPS Eastern Africa (Serena) Ltd	0.5952	0.3765	0.2847	0.2889	0.3611	**0.3813**
Safaricom Ltd	0.1445	0.3774	0.5263	0.6667	0.9688	**0.5367**
Barclays Bank Ltd	1.9608	2.2321	0.6974	1.0470	0.6211	**1.3117**
Diamond Trust Bank Kenya Ltd	0.1862	0.2019	0.1141	0.1255	0.1089	**0.1473**
Equity Bank Ltd	0.2809	0.3509	0.4145	0.3584	0.3834	**0.3576**
Housing Finance Co Ltd	0.4286	0.4902	0.4242	0.4444	0.4348	**0.4444**
Kenya Commercial Bank Ltd	0.5076	0.5435	0.4529	0.4973	0.4623	**0.4927**
NIC Bank Ltd	0.1901	0.1818	0.1087	0.0903	0.1658	**0.1473**
Standard Chartered Bank Ltd	0.9001	0.7295	0.7266	0.5705	0.4699	**0.6793**
The Co-operative Bank of K. Ltd	0.1250	0.2353	0.3053	0.2597	0.2717	**0.2394**
Jubilee Holdings Ltd	0.2951	0.2455	0.1719	0.1833	0.2000	**0.2192**
Kenya Re-Insurance Corpo. Ltd	0.3185	0.2262	0.1362	0.1277	0.1000	**0.1817**
B.O.C Kenya Ltd	0.4678	0.6091	2.3153	0.6226	0.4995	**0.9029**
British American Tobacco K. Ltd	1.0000	0.9980	0.7499	0.9845	0.9936	**0.9452**
Carbacid Investments Ltd	0.6793	0.6628	0.5525	0.5624	0.5236	**0.5961**
East African Breweries Ltd	0.8429	0.9242	0.9637	0.9409	0.6501	**0.8643**
Mumias Sugar Co. Ltd	0.5063	0.3810	0.3883	0.3968	0.3788	**0.4102**
Bamburi Cement Ltd	0.6834	0.6004	0.6063	0.6925	0.8628	**0.6891**
Crown Berger Ltd	0.4647	0.1947	0.1997	0.1739	0.1710	**0.2408**
E.A.Cables Ltd	0.6452	0.8197	1.1236	0.6957	0.5747	**0.7718**
Kengen ltd	0.4110	0.5319	0.5618	0.5319	0.4688	**0.5011**
Kenya Power & Lighting Co ltd	0.1794	0.1963	0.1703	0.2083	0.2119	**0.1392**

Source: CMA/NSE (2013)

Appendix 7: Firm Size

Firm Size						Average
	2008	**2009**	**2010**	**2011**	**2012**	
Kakuzi ltd	21.7025	21.7787	21.8922	22.0628	21.9963	**21.8865**
Limuru tea co. ltd	17.8721	18.2557	18.8800	19.0691	19.5839	**18.7322**
kapchorua tea ltd	20.7052	20.8784	21.1010	21.1745	21.3953	**21.0509**
williamson tea kenya ltd	21.9987	21.4378	22.3964	22.5205	22.7033	**22.2113**
Rea vipingo plantations ltd	21.2131	21.0697	21.2580	21.5513	21.5889	**21.3362**
Kenya Airways Ltd	25.0779	25.0398	25.0173	25.0895	25.0727	**25.0594**
Nation Media Group	22.6287	22.6061	22.8827	22.8999	23.0914	**22.8218**
Scangroup Ltd	22.0514	22.0927	22.8039	22.8621	22.8805	**22.5381**
TPS Eastern Africa (Serena) Ltd	22.5961	22.6721	23.2017	23.2983	23.3248	**23.0186**
Safaricom Ltd	25.0323	25.2416	25.3688	25.4582	25.5265	**23.9439**
Barclays Bank Ltd	25.8503	25.8285	25.8732	25.8352	25.9427	**25.8660**
Diamond Trust Bank Kenya Ltd	24.3067	24.7512	24.9232	25.1493	25.4032	**24.9067**
Equity Bank Ltd	25.0912	25.3365	25.6862	26.0029	26.2170	**25.6668**
Housing Finance Co Ltd	23.3857	23.6268	24.1001	24.1850	24.4358	**22.5651**
Kenya Commercial Bank Ltd	25.9766	25.9963	26.2501	26.5245	26.6297	**26.2755**
NIC Bank Ltd	24.4756	24.5852	24.8010	25.0925	25.4086	**24.8726**
Standard Chartered Bank Ltd	25.3186	25.5418	25.6843	25.8234	25.9981	**25.6732**
The Co-operative Bank of K. Ltd	25.1522	25.4299	25.7624	25.8491	26.0245	**25.6436**
Jubilee Holdings Ltd	23.7291	23.8903	24.1472	24.3619	24.5823	**24.1422**
Kenya Re-Insurance Corpo. Ltd	23.3381	23.4314	23.5706	23.6728	23.8924	**23.5811**
B.O.C Kenya Ltd	21.3773	21.3403	21.3677	21.3203	21.4112	**21.3634**
British American Tobacco K. Ltd	23.0561	23.1322	23.1322	23.3443	23.4430	**23.2216**
Carbacid Investments Ltd	20.9135	21.0427	21.1368	21.2771	21.4228	**21.1586**
East African Breweries Ltd	21.9004	24.2656	24.3666	24.6256	24.7230	**23.9762**
Mumias Sugar Co. Ltd	23.3732	23.5841	23.6320	23.8664	24.0338	**23.6979**
Bamburi Cement Ltd	24.0631	24.1925	24.2290	24.2349	24.4853	**24.2410**
Crown Berger Ltd	21.4655	21.3430	21.4025	21.6204	21.7666	**21.5196**
E.A.Cables Ltd	21.8363	21.9883	22.2314	22.3313	22.5556	**22.1886**
Kengen ltd	25.3960	25.4110	25.6904	25.8046	25.8179	**25.6240**
Kenya Power & Lighting Co ltd	24.8145	24.9939	25.1080	25.5205	25.6221	**25.2118**

Source: CMA/NSE (2013)

Appendix 8:Long Term Debt to Total Assets Ratio

Debt to total assets ratio						Average
	2008	**2009**	**2010**	**2011**	**2012**	
Kakuzi ltd	0.0410	0.0000	0.0000	0.0000	0.0000	**0.0082**
Limuru tea co. ltd	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**
kapchorua tea ltd	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**
williamson tea kenya ltd	0.0342	0.0523	0.0231	0.0241	0.0221	**0.0312**
Rea vipingo plantations ltd	0.0200	0.0150	0.0200	0.0400	0.0200	**0.0230**
Kenya Airways Ltd	0.3240	0.3770	0.3190	0.2760	0.2400	**0.3072**
Nation Media Group	0.0120	0.0040	0.0000	0.0130	0.0080	**0.0074**
Scangroup Ltd	0.0010	0.0030	0.0240	0.0000	0.0410	**0.0138**
TPS Eastern Africa (Serena) Ltd	0.1620	0.1720	0.1010	0.1260	0.0980	**0.1318**
Safaricom Ltd	0.0871	0.0521	0.0731	0.8737	0.0993	**0.2371**
Barclays Bank Ltd	0.0260	0.0260	0.0250	0.0270	0.0240	**0.0256**
Diamond Trust Bank Kenya Ltd	0.0030	0.0290	0.0252	0.0360	0.0283	**0.0243**
Equity Bank Ltd	0.0820	0.0640	0.0560	0.0750	0.1090	**0.0772**
Housing Finance Co Ltd	0.0279	0.0930	0.2940	0.2510	0.2960	**0.1924**
Kenya Commercial Bank Ltd	0.0000	0.0170	0.0240	0.0260	0.0240	**0.0182**
NIC Bank Ltd	0.0104	0.0054	0.0029	0.0010	0.0333	**0.0106**
Standard Chartered Bank Ltd	0.0014	0.0634	0.0728	0.4984	0.0704	**0.1413**
The Co-operative Bank of K. Ltd	0.0022	0.0020	0.0010	0.0014	0.0230	**0.0059**
Jubilee Holdings Ltd	0.0510	0.0420	0.0390	0.0330	0.0270	**0.0384**
Kenya Re-Insurance Corpo. Ltd	0.1410	0.1370	0.1240	0.1200	0.0870	**0.1218**
B.O.C Kenya Ltd	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**
British American Tobacco K. Ltd	0.4160	0.4430	0.3830	0.3980	0.4170	**0.4114**
Carbacid Investments Ltd	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**
East African Breweries Ltd	0.0000	0.0000	0.0000	0.0790	0.3660	**0.0890**
Mumias Sugar Co. Ltd	0.0000	0.1684	0.1196	0.1034	0.1068	**0.0996**
Bamburi Cement Ltd	0.0240	0.0220	0.0320	0.0180	0.0134	**0.0219**
Crown Berger Ltd	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**
E.A.Cables Ltd	0.1210	0.1020	0.1080	0.0300	0.0270	**0.0776**
Kengen ltd	0.1820	0.2370	0.4150	0.3990	0.3790	**0.3224**
Kenya Power & Lighting Co ltd	0.1600	0.1610	0.1630	0.1630	0.1600	**0.1614**

Source: CMA/NSE (2013)

Appendix 9: Growth in Assets

Growth in Assets						Average
	2008	**2009**	**2010**	**2011**	**2012**	
Kakuzi ltd	0.1210	0.0791	0.1202	0.1860	(0.0643)	**0.0884**
Limuru tea co. ltd	0.1920	0.4677	0.8669	0.2081	0.6734	**0.4816**
kapchorua tea ltd	(0.1152)	0.1891	0.2493	0.0763	0.2472	**0.1293**
williamson tea kenya ltd	(0.0465)	(0.4293)	1.6081	0.1321	0.2007	**0.2930**
Rea vipingo plantations ltd	0.3990	(0.1335)	0.2072	0.3408	0.0384	**0.1704**
Kenya Airways Ltd	0.0070	(0.0374)	(0.0222)	0.0748	(0.0166)	**0.0011**
Nation Media Group	0.1400	(0.0223)	0.3186	0.0173	0.2111	**0.1329**
Scangroup Ltd	1.1400	0.0422	1.0364	0.0600	0.0185	**0.4594**
TPS Eastern Africa (Serena) Ltd	(0.3010)	0.0789	0.6984	0.1014	0.0268	**0.1209**
Safaricom Ltd	0.3180	0.2328	0.1357	0.0935	0.0707	**0.1701**
Barclays Bank Ltd	0.0690	(0.0216)	0.0457	(0.0372)	0.1134	**0.0339**
Diamond Trust Bank Kenya Ltd	0.5700	0.5597	0.1876	0.2538	0.2891	**0.3720**
Equity Bank Ltd	0.4860	0.2781	0.4187	0.3725	0.2388	**0.3588**
Housing Finance Co Ltd	0.3760	0.2728	0.6052	0.0885	0.2851	**0.3255**
Kenya Commercial Bank Ltd	0.3700	0.0199	0.2889	0.3157	0.1109	**0.2211**
NIC Bank Ltd	0.3620	0.1159	0.2409	0.3384	0.3718	**0.2858**
Standard Chartered Bank Ltd	0.0870	0.2500	0.1532	0.1492	0.1908	**0.1661**
Co-operative Bank of K. Ltd	0.2780	0.3200	0.3945	0.0905	0.1918	**0.2550**
Jubilee Holdings Ltd	(0.1940)	0.1749	0.2930	0.2394	0.2465	**0.1520**
Kenya Re-Insurance Corpo. ltd	0.0540	0.0977	0.1493	0.1076	0.2457	**0.1309**
B.O.C Kenya Ltd	0.0184	(0.0363)	0.0278	(0.0463)	0.0951	**0.0117**
British American Tobacco K. Ltd	0.1119	0.0790	-	0.2364	0.1037	**0.1062**
Carbacid Investments Ltd	0.1067	0.1379	0.0987	0.1507	0.1568	**0.1301**
East African Breweries Ltd	1.5350	0.0646	0.1063	0.2957	0.1023	**0.4208**
Mumias Sugar Co. Ltd	0.1876	0.2348	0.0491	0.2641	0.1822	**0.1836**
Bamburi Cement Ltd	0.3620	0.1381	0.0372	0.0059	0.2846	**0.1656**
Crown Berger Ltd	0.0153	(0.1153)	0.0613	0.2435	0.1574	**0.0724**
E.A.Cables Ltd	(0.0500)	0.1642	0.2752	0.1050	0.2515	**0.1492**
Kengen ltd	0.0490	0.0151	0.3223	0.1210	0.0134	**0.1042**
Kenya Power & Lighting Co ltd	0.2640	0.1965	0.1209	0.5106	0.1070	**0.2398**

Source: CMA/NSE (2013)

Appendix 10:Data for Regression model

	PV	DY	POR	SIZE	DEBT	GROWTH
Kakuzi ltd	0.1172	0.0508	0.1364	21.8865	0.0082	0.0884
Limuru tea co. ltd	0.0231	0.0244	0.2947	18.7322	0.0000	0.4816
kapchorua tea ltd	0.0738	0.0598	0.1865	21.0509	0.0000	0.1293
williamson tea kenya ltd	0.0822	0.0906	0.2207	22.2113	0.0312	0.2930
Rea vipingo plantations ltd	0.1787	0.0456	0.2604	21.3362	0.0230	0.1704
Kenya Airways Ltd	0.1538	0.0410	0.1426	25.0594	0.3072	0.0011
Nation Media Group	0.0568	0.0470	0.6783	22.8218	0.0074	0.1329
Scangroup Ltd	0.1259	0.0134	0.2599	22.5381	0.0138	0.4594
TPS Eastern Africa (Serena) Ltd	0.1064	0.0251	0.3813	23.0186	0.1318	0.1209
Safaricom Ltd	0.3917	0.0310	0.5367	23.9439	0.2371	0.1701
Barclays Bank Ltd	0.1411	0.0600	1.3117	25.8660	0.0256	0.0339
Diamond Trust Bank Kenya Ltd	0.0862	0.0366	0.1473	24.9067	0.0243	0.3720
Equity Bank Ltd	0.1589	0.0376	0.3576	25.6668	0.0772	0.3588
Housing Finance Co Ltd	0.1859	0.0514	0.4444	22.5651	0.1924	0.3255
Kenya Commercial Bank Ltd	0.1608	0.0645	0.4927	26.2755	0.0182	0.2211
NIC Bank Ltd	0.1306	0.0171	0.1473	24.8726	0.0106	0.2858
Standard Chartered Bank Ltd	0.0516	0.0622	0.6793	25.6732	0.1413	0.1661
The Co-operative Bank of Kenya Ltd	0.2320	0.0252	0.2394	25.6436	0.0059	0.2550
Jubilee Holdings Ltd	0.0601	0.0359	0.2192	24.1422	0.0384	0.1520
Kenya Re-Insurance Corporation Ltd	0.2349	0.0397	0.1817	23.5811	0.1218	0.1309
B.O.C Kenya Ltd	0.0431	0.0464	0.9029	21.3634	0.0000	0.0117
British American Tobacco Kenya Ltd	0.0490	0.0903	0.9452	23.2216	0.4114	0.1062
Carbacid Investments Ltd	0.0533	0.0607	0.5961	21.1586	0.0000	0.1301
East African Breweries Ltd	0.0971	0.0451	0.8643	23.9762	0.0890	0.4208
Mumias Sugar Co. Ltd	0.2953	0.0562	0.4102	23.6979	0.0996	0.1836
Bamburi Cement Ltd	0.0487	0.0578	0.6891	24.2410	0.0219	0.1656
Crown Berger Ltd	0.1857	0.0455	0.2408	21.5196	0.0000	0.0724
E.A.Cables Ltd	0.1695	0.0617	0.7718	22.1886	0.0776	0.1492
Kengen ltd	0.2095	0.0412	0.5011	25.6240	0.3224	0.1042
Kenya Power & Lighting Co ltd	0.1098	0.0336	0.1392	25.2118	0.1614	0.2398

Source: CMA/NSE (2013)

Appendix 11: Table 8: correlations of the modified model (2)

Table 8: correlations of model (2)

		Share price volatility	Dividend Yield	Payout Ratio	Firm Size	Long term Debt	Growth in Assets
Pearson Correlation	Share price volatility	1.000	-.226	-.154	.279	.271	-.082
	Dividend Yield	-.226	1.000	.435	-.066	.177	-.342
	Payout Ratio	-.154	.435	1.000	.107	.147	-.269
	Firm Size	.279	-.066	.107	1.000	.309	-.062
	Long term Debt	.271	.177	.147	.309	1.000	-.235
	Growth in Assets	-.082	-.342	-.269	-.062	-.235	1.000
Sig. (2-tailed)	Share price volatility	.	.115	.208	.068	.073	.333
	Dividend Yield	.115	.	.008	.364	.175	.032
	Payout Ratio	.208	.008	.	.287	.219	.075
	Firm Size	.068	.364	.287	.	.048	.372
	Long term Debt	.073	.175	.219	.048	.	.106
	Growth in Assets	.333	.032	.075	.372	.106	.
N	Share price volatility	30	30	30	30	30	30
	Dividend Yield	30	30	30	30	30	30
	Payout Ratio	30	30	30	30	30	30
	Firm Size	30	30	30	30	30	30
	Long term Debt	30	30	30	30	30	30
	Growth in Assets	30	30	30	30	30	30

Source: Research data