THE DIVIDEND DISCOUNT MODEL: IT'S RELIABILITY ON THE VALUATION OF COMMON STOCK AT THE NAIROBI STOCK EXCHANGE

BY

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DECLARATION

This management Research Project is my original work and has not been presented for a degree in any other university.

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Signed: ---------- Date: 6th Nov. 2003.

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

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DEDICATION

To my grandparents,
the late Rev. Wilson Muma Okwaro and Mrs. Grace Muma,
for their inspiring support throughout my academic life.
May the almighty God bless them.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

ABSTRACT

Valuation of common stock is very important yet a very complex process. The stock requires a deeper analysis compared to preferred stock or debts. The major techniques of valuation of common stock are:

(i) Relative valuation models which is based on the earnings power of the firm, the book value and sales.

(ii) The discounted cash flow techniques, where the value of stock is estimated based upon the present value of some measure of cash flow including dividends, operating cash flow among others.

The study was conducted to establish the reliability of the dividend discount model (which is based on the discounted cash flow techniques) on the valuation of common stock at the Nairobi Stock Exchange. Data was collected in form of share prices, market indices and dividend per share from the Nairobi Stock Exchange secretariat, and were used to predict share prices for each of the eighteen companies studied. Market model was used as a model of equilibrium to provide a link between the expected values which are non observable and real values that were used in testing the model. Predicted share prices were compared with the actual prices by computing the differences between them.

The differences were then subjected to t-test. The test of significance showed that out of the eighteen companies studied; only three showed that the differences were significant. I therefore concluded that the dividend discount model is not reliable in the valuation of common stock at the Nairobi Stock Exchange.

CHAPTER ONE

INTRODUCTION

1.1 Background

The investment process involves decisions by an investor on what marketable securities to invest in, the extent of the investment and when the investment should be made. The investment environment includes the kinds of marketable securities that exist, where and how they are bought or sold.

Investment is a commitment of funds for a certain period of time in order to derive a rate of return to compensate for the time funds are invested, the expected rate of inflation during that time, the liquidity premium and the risk involved. When an investor commits certain funds, he expects a stream of returns over the period of ownership. The investor could be an individual, a government, a pension fund or a corporation. The investor therefore trades a known shilling amount today for some expected future stream of payments that will be greater than the current outlay (Reilly and Brown 2000).

Since an investment involves sacrifice of a current shilling for a future shilling, time and risk must be taken into consideration. The sacrifice made today is certain while the returns expected in future are uncertain.

Discounted cash flow formulas take into account the risk on the value of an investment; hence the value can be determined as follows:

$$V_o = \frac{C_1}{(1+k_1)^1} + \frac{C_2}{(1+k_2)^2} + \ldots + \frac{C_t}{(1+k_t)^t} + \frac{C_n}{(1+k_n)^n} \quad \ldots\ldots\ldots(1)$$

V_o = the current or present value of an investment.

C_t = expected returns at time t.

k_t = required rate of return for each period

n = the number of periods over which returns are expected to be generated.

Investment may be real or financial. Real investment involves tangible assets such as land, machinery, factories among others. Financial investment is legal contracts written on pieces of paper such as treasury bills, bonds, preferred stocks and common stocks. They are also referred to as securities.

Treasury bills involve loaning money on short term basis to the government. Such a loan carries little (if any) risk that payment will not be forthcoming. Bonds represent a fairly long term commitment by the borrower to the lender and calls for cash payment each year up to maturity date.Prefered stocks are contractual but have a claim to income and assets after the firm's loans have been paid. Common stock is a legal representation of ownership position in a corporation; and the holders of this stock are paid dividends after the firm's debts have been settled.

The present value of a stock is similar to the present value of other assets; however the cash flows that the shareholders receive may be in form of dividends, interest payments, earnings or capital gains.

PV (stock) = PV (Expected future dividends, interest payments, earnings or capital gains).

In this study our main focus is the valuation of common stock (equity).

Equity is more risky than the other investment types described above and hence a deeper analysis is required. Two different attributes are generally involved: time and risk. Valuation of common stocks is very important; however it is more complex than that of other stocks. The investor will ensure that the expected rates of returns correspond with the risk involved.

In equity valuation, unlike bonds or preferred stocks the investor is uncertain about the size of the returns, their time patterns and the required rate of return (k). For bonds, the only unknown is the required rate of return, which is the prevailing nominal risk free rate plus the risk premium. Certain information is unavailable and investment in equity requires that future earnings, dividend and price be estimated (Amling 1978).

The required rate of returns involved must be determined and weighed against the estimated return to determine whether the shares are over-priced, fairly priced or under-priced (Reilly and Brown 2000).

Equity shareholders are the residual owners of a corporation. Their return is less certain than the return to lenders or preferred stockholders. The book value of equity is the shareholders equity

of a corporation less the par value of preferred stock divided by the number of shares outstanding (Van Horne 2001).

In valuation of ordinary shares a concept known as intrinsic value is commonly used as means of estimating the anticipated returns (Sprecher 1975). This concept means that shares of a company have some central intrinsic value that can be estimated from historical performance of the firm (Gitman 1998). The intrinsic or true value of any asset is based on cash flows that the investor expects to receive in the future from owning the asset.

The current market price can be compared with the intrinsic to find out whether a share is undervalued or overvalued.

Valuation of securities requires an analysis of the firm's economic and industry environment during the valuation process, irrespective of the capabilities of a firm and its management. The most popular methods of valuation of ordinary shares are based on earnings per share and dividend per share (Reilly and Brown 2000).

The dividend discount model is defined as any model that computes the value of share of stock as the present value of its expected future cash dividend (Bodie & Merton 2000). An investor in common stocks expects a return consisting of cash dividends and the change in stock price.

For an investor to be willing to invest in the stock he/she requires a market capitalization rate and hence the price of a share of stock is the present value of all expected future dividends per share discounted at market capitalization rate.

$$V_j = \frac{D_1}{(1+k_1)^1} + \frac{D_2}{(1+k_2)^2} + \frac{D_3}{(1+k_3)^3} + \ldots + \frac{D_n}{(1+k_n)} \quad \ldots\ldots (2)$$

V_j= value of common stock j

D_t = dividend during period t

k= required rate of return of stock j (market capitalization rate)

t= the holding period

As t approaches infinity:

$$V_j = \sum_{t=1}^{\infty} \frac{D_n}{(1+k_n)^n} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

The model was initially set forth by Williams (1938) and subsequently expanded by Gordon (1963) cited in Brealey &Myers (2000: 64-66).

For the above formula to apply, the capital markets must be well functioning i.e. where all securities in an equivalent risk class are priced to offer the same expected returns.

The focus of the dividend discount model is on determining the true value of one share of a particular company's common stock, even if larger purchases are being contemplated because it is assumed that larger purchases can be made at cost that is a simple multiple of the cost of one

share. To use the above equation (3), an investor must forecast all future dividends. Certain assumptions have to be made, these assumptions concern dividend growth rates. That is, the dividend per share at any time t can be viewed as being equal to the dividend per share at time t-1 times the growth rate of g_t (Sharpe *et al* 1999).

$D_t = D_{t-1}(1+g_t)$ ..... (4)

Or

Equivalently

$D_t - D_{t-1}/D_{t-1} = g_t$ .....(5)

Earnings per share model relates to the earnings per ordinary share at any given time multiplied by the price earnings ratio at time (t):

$P_{it} = EPS_{it} \times (P/E)_{it}$ ..... (6)

P_{it} = the estimated value of ordinary share

EPS_{it} = the estimated earnings per share i at time t

$(P/E)_{it}$ = The estimated price earning ratio of share i at time t

The application of EPS valuation model requires that:

i) The analysts must select some time horizon for the analysis and once this is done, the growth in earnings per share over this time horizon must be forecast. The EPS forecast facilitates a forecast of the horizon period.

ii) An appropriate price earnings ratio must be selected.

iii) The firm's performance must be considered as well as the market performance of the horizon period.

Earnings are important to investors because they provide cash flows necessary for paying dividends. Earnings per share method is also simpler and easier to use and can apply to stocks that do not pay dividends. Reported earnings are important determinants of stock prices. Empirical studies suggest that stock price movements are associated with earnings changes and differences between actual and predicted change lead to price adjustments (Elton and Grubber 1995). Despite the simplicity of the model, it is difficult to estimate price earnings ratio.

The major determinants of price earnings ratio are dividends payout, earnings growth, and earnings volatility cannot be easily forecasted.

Some opponents of earnings per share have argued that earnings are an inappropriate measure of economic returns because of the flexibility in choosing accounting methods.
Accounting earnings reflect a series of more or less arbitrary choices of accounting methods (Craig *et al* 1987).

A firm's reported earnings can be changed substantially by adopting different accounting procedures. A switch in the deprecation method used for reporting directly affects earning per share (Kerandi 1993).EPS does not take account of inflation, hence apparent growth in earnings

may not be real growth.EPS is also based on historic information and therefore lacks predictive value.

Miller and Modigliani (1961) argue that dividends are irrelevant and that it does not matter whether a firm capitalizes dividends or earnings, because price changes in shares will be reflected on both earnings and dividends and those investors would select whether to receive income as dividends or by sale of shares. In the real world it is generally accepted that dividends policy matters because of presence of transactions cost, taxation effects, monopolistic effects in the markets for borrowing and investment and indivisible investment opportunities (Wilkes, 1977). The dividends discount model therefore has a strong foundation for share valuation.
The dividend discount model is perceived as an appropriate model in this study because: first there is no sound methodology for evaluating price earnings ratio which in essence is the reciprocal of the required rate of return.

Secondly, dividends are the flow of returns received by the investors. Thirdly others have intensively used the dividend discount model in valuation of securities. There is evidence that complex dividend discount models improve the accuracy of the forecast and therefore are useful in selecting shares (Fuller and Chi Cheng 1984; Sorensen and Williamson 1985).Fourthly, the dividend discount model is based on a simple, widely understood concept. The fair value of any security should be equal to the discounted value of cash flows expected to be produced by that security.Fifth,the basic inputs for the model are standard outputs for many large investment management firms, that is these firms employ security analysts who are responsible for projecting corporate earnings(Sharpe *et al* 1999).Finally it is argued that the dividend discount

model provides a consistent and plausible framework for imbedding analysts judgments of share value(Michaud and Davis,1982).As a qualification of security value, the dividend discount model is often a first and critical step in a quantitative investment management program.

The dividends and earnings valuation methods have not gained widespread or wholehearted acceptance by investors because of the choice of required rate of return. It has been the most difficult variable to estimate (Amling 1978).

According to Brigham and Gapenski (1996), the required rate of return of an investment is determined by:

1) The economy's real risk-free rate of return plus
2) The expected inflation rate during the holding period plus
3) A liquidity premium plus
4) A risk premium.

The required rate of return therefore depends on both systematic and the unsystematic risk. The two elements are separated clearly when the return for a single stock is related to the return on the market portfolio of all stocks.

Of the two, systematic risk is the most dominant determinant of the required rate of return. The market offers the investor a risk premium in excess of his risk less rate of return for taking systematic risk (Copeland and Weston 1988).According to Elton and Grubber it is the systematic risk that is important to the investor:

"...systematic risk is the only important ingredient in determining expected returns and that non systematic risk plays no role. Put in another way, the investor gets rewarded for bearing systematic risk." Elton and Grubber (1995:301)

$$\text{Systematic risk} = \frac{\text{Cov (j, m)}}{\delta^2 m} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

Where Cov (j, m) = Covariance between the security's return and the market.

$\delta^2 m$ = Market Variance

Systematic risk is referred to as Beta

$$\text{Therefore: } Bj = \frac{\text{Cov (j, m)}}{\delta^2} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

The required rate of return can be calculated once beta is known using Capital Asset Pricing Model:

$E(Rj) = Rf + (Rm - Rf)\, Bj$ ..... (9)

Where E (Rj) = the required rate of a security

Rf = the risk-free rate

Rm = the expected market return

Bj = the systematic risk of security j

Capital Asset Pricing Model can be used to value assets like ordinary shares.

Risk premium is the market risk premium (Rm-Rf) weighted by the index of the unsystematic risk Bj of an individual security. If the general economy is static, industry characteristic are unchanged and management policies have continuity, the measure of Bj of a security will be relatively stable when calculated for different time periods. If the condition of stability does not exist the value of Bj will vary over different periods.

As indicated above:

Rj = f (expected real rate, expected inflation and liquidity).

$$E(Rj) = Rf + \frac{Cov(Rm\,Ri)\,(E(Rm) - Rf)}{\delta^2 m} \quad \ldots\ldots\ldots\ldots\ldots\ldots (10)$$

$\frac{E(Rm - Rf)}{\delta^2 m}$ Can be replaced by λ

$$E(Rj) = Rf + \lambda Cov\,(Rm,Rj) \quad \text{.....(11)}$$

For the model to be useful in this study, Bj must remain constant over time.

The beta values in CAPM can be computed using the market model since forces within the market and the stock market have common significant influence or changes in prices in many if not all stocks. The stock prices are therefore sensitive to the above forces hence the required return of a share:

$$E(Rj) = \lambda + BjRm + E_1 \quad \text{.....(12)}$$

Where E (Rj) = average monthly rate of return of a given share j

Bj = beta, the market sensitivity of share j

Rm = monthly rate of return of NSE index

Ei = random variable representing variability in E (Rj) not associated with variations in Rm.

Therefore substituting the above value into the original equation of dividend discount model:

$$Po = \sum_{T=1}^{n} \left(\frac{D_t}{1 + Rf + (Cov\ Rm, Rj)} \right)^t + \left(\frac{D_n}{1 + Rf + (Cov\ Rm, Rj)} \right)^n \quad \text{.....(13)}$$

Therefore CAPM allows us to determine the appropriate discount rate for discounting expected dividends and terminal value to their present value.

CAPM has a number of assumptions and some of them do not hold in the real world; however it is still useful in evaluating financial decisions.

The question of whether investors emphasize on dividends or earnings per share observed cannot be easily resolved. However it has been observed that the dividend discount model is useful for valuation of a stable mature entity where assumption of a relatively constant growth for a long-term is appropriate (Reilly & Brown 2000). Earnings per share can be used when the aggregate market is not wither seriously over-valued or under-valued, implying that markets are slow or inefficient processors of information (Pike and Neale 1996).

Kerandi (1993) on testing the predictive ability of the dividends valuation model on ordinary shares, found that in a sample of 13 companies, only three companies showed that the differences were not significant. He concluded that the dividend valuation model is a poor predictor of share prices at the Nairobi Stock Exchange .

He attributed this to among other factors, inefficiency and imperfections in the market, and inappropriate discount factors.

First, the assumption that the stock exchange was efficient or at least not too inefficient may not have been realistic. During the period of Kerandi's study, NSE was not an active trading market. Active trading provides liquidity and enables investors to buy and sell shares at a price directly related to the market's assessment of their value. A strong secondary market also gives investors' confidence that they will be able to sell their securities quickly and cheaply.

Although, the state of efficiency of the NSE is still inconclusive, secondary markets are now in operation and investors protection codes and compensation fund were put in place in 1995.This study will therefore provide a significant contribution to the previous one.

Secondly, the market return and the risk free rate assumed in Kerandi's study were those derived by Muli (1991). Muli's results may not have been reliable. The study was done when the market was at a low stage of development. There was lack of trading floor, which might have affected the diversification effectiveness of the market, and consequently the market's activity level. There were only six brokers in the market and fewer securities were listed then.
The trading floor is currently operational with fifty brokers and more securities have been listed, thus opening up more avenues for investment diversification (Sawaya, 2000).

Finally the risk-free rates assumed by Kerandi were not market determined. Until July 1995, prevailing interest rates were determined by central authorities. The one year treasury bonds used

in that study as surrogates, was therefore unreliable, and could not represent the opportunity cost of capital relevant to a given firm. This study is conducted after liberalization of the markets, therefore the risk free rate is market determined.

1.2 Statement of the Problem

This study is testing the reliability of the dividend discount model on the valuation of equity at the Nairobi Stock Exchange. Kerandi (1993) found that in a sample of 13 companies, only three companies showed that the differences were not significant. He concluded that the dividend discount model is a poor predictor of share prices at the Nairobi Stock Exchange.

There could be different results if a different period of study is used as suggested by the previous researcher. During 1984 – 1988 periods the stock exchange was not as active as it is now considering the index at the end of 1999 was 2,303 compared to 915.34 at the end of 1990. The index has been rising for example it was 4,559 in 1994. The number of shares traded in 1993 was 27,292,000 compared to 157,487,000 in 1999. The market capitalization was Kshs. 72,395 Million in 1993 and Kshs.106,738 Million in 1999. The value of the shares traded was Kshs. 824,306,000 in 1993 and Kshs. 5,158,126,000 in 1999 (NSE, Investor's Factbook2000), justifying this research study.

The sample size chosen in this research has been increased to improve on the statistical significance of the previous research.

The study is being conducted when the Capital Markets Authority (CMA) is operational. The CMA has improved on the market efficiency in the Nairobi Stock Exchange by creating robust capital market legal and regulatory reforms, with full support from the government at a time

when the government is privatizing some state corporations. It will be interesting to test the reliability of this model to estimate the value of the corporations to be sold.

1.3 Objectives of the Study

The Research intends to establish:

(i) Whether the dividend discount model can be relied on by companies listed in the NSE in valuation of their ordinary shares.

(ii) The predictive ability of the dividend discount model by comparing the predicted prices with the actual prices.

1.4 Importance of the Study

(i) **To corporate managers**

The fundamental objective of financial management decisions is the maximization of shareholder's wealth. This refers to maximization of the value of a company's share. The capital market is relied on to value the shares, to be able to estimate the price at which the shares can be sold or bought. If the research finds that the dividend discount model can be used to predict the value of ordinary shares then managers will act better to the interest of shareholders.

ii) **Investors**

When people buy common stock, they give up their current consumption in the hope of attaining increased future consumption. They expect to collect dividends and eventually sell the stock at a

profit. If the value of investment can be estimated, then investors can compare this with the prevailing market price and hence make a wiser decision.

iii) **Kenyan Economy**

The research is critical to the economy especially with the ongoing privatization of state corporations. It will help the government to estimate the value of enterprises being privatized and prevent over or under valuation of the corporations. It will assist in determination of share prices offered to the public by looking into variables like dividend per share.

iv) Academicians

The academicians and researchers will also use the research as an addition to the wealth of knowledge and a foundation for further research in the area of study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Approaches to Valuation

The major schools of thought in determining security value and behavior of prices are:

i) Fundamentalists.

ii) Technicians.

iii) Efficient market hypothesis.

According to fundamentalists, the price of a security at any time is equal to the discounted value of the stream of income from the security. They believe that the value of a security depends on the underlying economic factors and hence the value of a stock is determined by analyzing variables such as current and future earnings, cash flows, interest rates and risk variables (Reilly and Brown 2000).Fundamental analysis therefore involves market analysis, company analysis and portfolio management.

Technicians argue that the market value of a share is determined by the interaction of supply and demand having very little to do with earnings and dividends. The supply and demand are governed by several factors both national and international. They believe that the prices of individual securities and overall value of the market move in trends, which persist for appreciable length of time, and that prevailing trends change in reaction to shifts in supply and demand relationships. These shifts no matter why they occur can be detected sooner or later in the action of the market itself. The analysis focuses upon the study of the stock market itself and not upon external factors that influence the market. The external factors are assumed to be fully

reflected in the share prices and the volume of stock exchange. The market itself provides all information for analyzing and predicting stock price behavior.

Efficient Market Hypothesis contends that a change in stock prices occurs randomly. It is not possible to predict future prices. They argue that price movement whether up or down occurs as a result of new information and since investors cannot predict the kind of new information it is not possible to predict future price movements.

Efficient Market Hypothesis clearly conflicts with the technical analysis. The theory states that previous prices changes or changes in returns are useless in predicting future prices implying that the work of technical analysis is useless. The vast majority of studies that have tested the weak form efficient market hypothesis have found that prices adjust rapidly to stock market information, supporting the random walk theory (Fama: 1970, 1991).

Fundamental analysts believe that occasionally market price and intrinsic value differ, but eventually investors recognize the discrepancy and correct it. Efficient Market Hypothesis does not contradict the potential value of such fundamental analyses, but it implies that in order to be successful one must understand relevant variables that affect rates of returns and estimate movements of relevant valuation variables. To demonstrate this, Malkiel and Cragg(1970) developed a model that did an excellent job of explaining past stock price movements using historical data. When this valuation model was used to project future stock prices changes using past company data, however, the results were consistently inferior to a buy and hold policy. This

implies that even with a good valuation model, you cannot select stocks that will provide inputs returns using only that past data as inputs (Reilly & Brown 2000).

Most security analysts support fundamental analysts, and even technical analysts admit that a fundamental analyst with good analytical ability and a good sense of information's impact on the market should achieve above average returns. Technicians argue that the fundamental analyst can achieve these returns only if they can obtain new information before investors and process it correctly and quickly. It is difficult for an investor to obtain new information frequently and processes it quickly.

This study is conducted in line with the fundamentalists' perspective.

In conclusion, superior analysts or successful investors must understand what variables are relevant to the valuation process and have the ability to do a superior job of estimating these variables. Alternatively one can be superior if he or she has the ability to interpret the impact or estimate the effect of some public information better than others.

2.2 Effects of Dividends on Share Prices

The price of common stock is a function of the level of a company's earnings, dividend risk, the cost of money and future growth rates (Elton &Grubber 1995).A valuation model converts a set of forecasts of a series of company and economic variables into a forecast of market value for the company's stock. Inputs to a valuation model include future earnings, dividends and variability

of earnings. Valuation model therefore is a formal relationship that is expected to exist between a set of corporate and economic factors and the market's valuation of these factors.

The dividend discount model explains the relationship between the share price and dividends paid in a particular period. The price of a share today equals to the sum of discounted future dividends plus the terminal value discounted at the required rate of return. As the time period approaches infinity, the present value of the terminal value approaches zero, hence we can express today's price as a present value of a perpetual stream of cash dividends.

In a world of no taxes, Miller and Modigliani(1961) proved that pay out has no effect on shareholders wealth(share prices).Dividend policy is therefore irrelevant. They argue that the value of the firm depends on the firm's earnings which results from its investment policy. When corporate and personal taxes are introduced into the model, shareholders wealth decreases when dividends are paid out. Empirical research on the relationship between dividend yields and common stock prices has, in most cases not looked at the effect of departures from an optimal dividend pay out(Weston and Copeland 1992).

Although managers behave as though dividend policy is a critical variable, their behavior does not imply that market actually values that attention. Given the conflicting impacts of market imperfections, the relevance of dividend policy becomes an empirical question. A critical question may be asked – what does real world stock price suggest about how dividend policy affects equity valuation? In a real world there are market imperfections which include taxation effects, transactions costs, monopolist effects in the markets for borrowings, asymmetric

information and agency costs. Therefore a firm's dividend policy might impact on the value of its shares.

Brennan (1970) added a dividend yield variable to the capital asset pricing model, and reasoned that firms with higher dividend yields should have higher pre tax returns than equity in firms with lower payouts. This higher yield would compensate investors for higher taxes and, therefore equates after tax returns holding constant for systematic risk. Empirical tests of Brennan's model however, have not yielded definitive results with respect to dividend yield coefficient as noted by Black and Scholes (1974).

Long(1978) conducted a unique study on the relationship between dividend yield and market returns. He examined prices of two classes of common stock in a firm (Citizens Utilities Company of Atlanta, Georgia) with two classes of common stock. One pays cash dividend while the other class provides an equivalent dollar value in extra shares via stock split. Tax models of dividend policy predict the stock split shares will sell at a premium relation to the cash dividend shares. Surprisingly, Long found the opposite. The cash dividend shares sold at a significant premium to the other class of shares. Although this result represents only one firm, it suggests the market value cash dividend over capital gains. If taxes play a large role in the composition of investor's portfolios, high yield stocks to escape taxes, while low tax bracket investors should be more indifferent to the dividend policies of firms. In other words tax induced dividend clienteles should exist. Lewellen *et al* (1978) examined the dividend yields on portfolios held by

individual investors in a cross section of tax brackets and found weak support, suggesting that high tax bracket investors chose stocks that paid lower dividend yields.

Miller and Modigliani state that the tax differential in favor of capital gains is undoubtedly the major systematic imperfection in the market. Implying that existence of differential taxes on income and capital gains should make the shares of corporations that pay low more desirable, and thus a corporation can increase the value of its shares by reducing its payout ratio. Nevertheless, Miller and Modigliani still conclude that dividend policy has no effect on the share values.

Finally, a popular avenue of research of tax effect and tax-induced clientele effect has been the stock price behavior across the dividend day. Elton and Grubber (1970) authored an influential study of stock price behavior around the ex-dividend day, they found less than full dividend price drop on the dividend day during periods of differential taxation. Their study concludes that ex dividend price behavior of stocks is evidence of investor's preference for capital gains over cash dividends.

Empirical studies that clearly model how divided policy impacts firms value due to corporate flotation costs and investors translates are, unfortunately not available.

The Agency theory models that suggest dividend policy can help reduce agency conflicts between bond shares and stockholders have, to date, not been tested.

With respect to whether managers use dividend policy to convey news about changes in firms value based on their inside or asymmetric information, empirical studies are more definitive. Studies have shown that stock prices significantly rise when dividends are increased by more than the expected amount, and vice versa.The stocks splits study by Fama *et al* (1969) as cited in Fama (1976), found that when splits were accompanied by dividend announcements there was an increase in adjusted share prices for the group that announced dividend increase and a decline in share prices for the dividend decrease group. Other studies of the effect of unexpected dividend changes on share prices were made by Pettit (1972), Watts (1973) Kwan (1981) and Aharony and Swary (1980). Healy and Palepu(1988) found that investors interpret announcements of dividend initiations and omissions as managers forecast of future earnings changes. Further, Brickley (1983) has shown that "specially designated dividends" which bear such labels as "special" or "extra" when announced by the board, convey less favorable information than do increases in regular dividend. These findings suggest that market regards specially designated dividends as more temporary versus the permanent increase implied by an increase in regular dividend. Empirical evidence also shows that stock's prices do respond positively when firms announce repurchase programs. However, the economic factors that lead managers to choose cash dividends versus stock repurchases are not well understood.

To develop a theory that explains choice between payout mechanisms, the differential costs and benefits between the alternatives must be specified. Based on asymmetric information arguments, Barclay and Smith (1988), say that if managers time their repurchases in periods when they think, based on outside information, that their stock is undervalued, selling shareholders lose while remaining shareholders, including non selling managers, win. Such

gaining activity cannot be conducted to the disadvantage of selling shareholders since the market is aware of managers' ability to exploit inside information. A higher market price will be attached to firms with a regular cash dividend policy versus a more sporadic share repurchase policy. This observation might explain the reason why cash dividends are much more commonly used as a method of cash disbursement than stock repurchase.

In conclusion, it is difficult to summarize the dividend puzzle.

As Black (1976) noted, "The harder we look at the dividend picture, the more it seems like a puzzle with pieces that just do not fit together". In a perfect capital market world with both certainty and uncertainty cases; dividend policy is irrelevant, a trivial detail that managers could as well ignore. In a world of imperfections dividends policy is favored. However, certain market imperfections seem to favor a managed dividend policy, others favor residual dividend policy, yet other imperfections are ambiguous as to their impact. The empirical evidence on whether dividend policy affects stock value or required returns is mixed and generally inconclusive.

> "Because investors do not need dividends to get their hands on cash, they will not pay higher prices for the shares of firms with high payouts. Therefore firms might not worry about dividend policy. They should let dividends fluctuate as a by-product of their investment and financing decisions."
>
> Brealey and Myers (2000:449)

What is unknown dominates what is known about dividends policy. Little evidence suggests an appropriate dividends payout level. However, compelling evidence suggests that stock price changes accompany changes in cash dividends and stock repurchase announcements.

It should be noted that important studies have been made since the original Miller and Modigiliani irrelevance hypothesis in 1961. The nature of the market imperfections that might use dividend policy to matter were not understood by them. While taxes, fluctuates costs and transactions were identified quickly as having the potential to impact the argument, signalling theory and agency theory were developed later as potential explanations for relevance.

2.3 Valuation of New Issues

In the past decade, the Kenya government has embarked on privatization of state corporations. It is therefore critical to discuss how share valuation using the fundamental analysis can be used to determine shares to be offered to the general public for subscription . The price of a firm's shares is influenced by all factors that affect the expectations of the firm and its share.

Reilly and Brown (2000) recommend a three step valuation process:

i) Analysis of alternative economies and security markets.

ii) Analysis of the alternative industries.

iii) Analysis of individual companies and stocks.

Economic factors exert force on all industries in the economy. They include monetary and fiscal policies, political forces and international environment.

A number of models have been developed which have found an important linkage between the money supply and the level of share prices. These include Hamburger and Kochin(1972), Homa and Jaffee (1971) and Kraft and Kraft (1977). Chen *et al* (1986) found that inflation, industrial production, risk premium and the slope of the term structure of interest rates are the main factors

that affect expected returns. These factors change the business environment and add to the uncertainty of sales and carrying expectation and therefore the risk premium required by investors (Kerandi 1993).

Industry analysis is critical to valuation, since it is a prospect within the global basis environment,and determines how well or poorly an individual firm will perform. The firms do well in poor industries and vice versa.

Finally an enumerator can analyze and compare the entire industry using financial data (Page and Paul, 1979). This is difficult especially for the firms offering ordinary shares to the public for the first time. since financial data provided in the prospects are likely to be limited to a short time. However it does not imply that models of valuation should be abandoned (Fisher & Jordan 2001).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Population

All the companies quoted in the Nairobi Stock Exchange as at 31st December 1999.

3.2 Sampling Plan

The sample consists of only the companies trading on ordinary shares. The assumption made here is that investors require five years to assess the risk of the stock.

The study covered five years from 1st January 1995 to 31st December 1999. The five-year period, and especially December 1999 was chosen to fall within the period used in a previous study (Sawaya, 2000). Sawaya's study dealt with estimation of systematic risk for the Nairobi Stock Exchange and his findings, especially market portfolio beta and the percentage of diversification of the total unsystematic risk, are important to this study. The assumption that the market portfolio beta is approximately one, can only be assured by using the period that he used to estimate the beta.

He estimated the market return to be nearly 26 percent; with the one year Government of Kenya Treasury stock having a coupon rate of 20 percent (December, 1999 Issue), market return of 46 percent was used in CAPM.

Stratified sampling was used in the sample selection for the study. The quoted companies were divided into two groups; actively traded and non-actively traded companies.

Stratifying was done by observing changes in the shares prices and the rate of buying and selling using daily price lists supplied by NSE secretariat.

The sample is made up of eighteen companies classified as actively traded. The first six months of the year 2000 was used to test the model. The period was chosen because it is expected that the parameters involved were almost constant.

3.3 Data Collection

Data required was collected in form of secondary data, and in particular the bid prices of the stock. Annual dividends per share were used, as monthly dividend per share; since the investors' reaction to these figures are the same irrespective of whether they are looked at from a monthly or annual point of view.

Secondary data was used in the study. The following data were collected:

1. Bid prices of the stock.
2. Annual dividend per share.

The data was obtained from:

1. Nairobi Stock Exchange secretariat.
2. Published annual statements of the sample companies.

3.4 Data Analysis

As indicated in the introduction of this paper price of a share:

$$P_o = \frac{D_1}{(1+k_1)^1} + \frac{D_2}{(1+k_2)^2} + \ldots + \frac{D_t}{(1+k)^t} + \frac{D_n + P_n}{(1+k_n)^n} \quad \ldots\ldots\ldots(14)$$

Where D_t= expected dividend at some time horizon t.

n = time horizon n

k = required rate of returns

P_n = expected terminal price

P_o = the present price

The dividend discount model represents a formal notation for the statement that share prices depend on expected returns, but this is not sufficient to make the statement testable.

To provide a level between expected values and real values a model of equilibrium is required. The market model therefore can be used as a model of equilibrium. It is a single factor model, which shows the relationship between the security return and the market return. Following Fama (1976) the model can be used in an efficient capital market.

"Assume that all events of interest take place at discrete points in time t-1,t,t+1,e.t.c.

Then define

Θ_{t-1} = the set of information available at time t-1, which is relevant for determining security prices at t-1.

$\emptyset^m_{t-1}$ = the set of information that the market uses to determine security prices at t-1. Thus $\emptyset^m_{t-1}$ is a subset of $\emptyset_{t-1}$;$\emptyset^m_{t-1}$ contains at most the information in $\emptyset_{t-1}$, but it could be less.

$P_{j,\ t-1}$ = the price of security j at time t = 1, j = 1...2,...n) where n is the number of securities in the market.

$f^m(P_{j,t+\tau}....Pn,\ t+\tau/\ \emptyset^m_{t-1})$ = The joint probability density function for security prices at time $t+\tau(\ \tau>=0)$ assessed by market at time t-1 on the basis of the information $\emptyset^m_{t-1}$

$f(P_{j,\ t+\tau}.....,Pn,\ t+\tau/\ \emptyset_{t-1})$ = the "true" joint probability density function for the security prices at time $t+\tau(\tau>=0)$ that is "implied by" the information $\emptyset_{t-1}$ "

(Fama, 1976:134)

The market model assumes joint distribution of security prices is multivariate normal. The "market" assesses a joint distribution of security at time t. The market equilibrium is obtained at time t-1 at price sets $P_{1,\ t-1}$,.....$P_{n,t-1}$ when the investors demand for individual securities equals to the outstanding supply of the security.

Since the "true" joint distribution of the prices of different securities at time t is multivariate, the joint of security returns $f(R_1 ..... Rm/\ \emptyset_{t-1})$,is also multivariate normal (Fama,1976).If a bivariate normal distribution is obtained from the multivariate function, a linear regression equation results:

$$E(Rjt/Rmt) = a + Bj\ Rmt \quad \text{.....(15)}$$

t = 1, 2 .....t

Rjt = the returns on security's from time t= 1 to time t

Rmt = average of the returns of these stocks from time t=1 to time t.

Where Bj = cov (Rjt/Rmt) / δ^2Rmt

And a = E(Rjt $Ø_{t-1}$) - BjE (Rmt)/ $Ø_{t-1}$ ..... (16)

T=1,2....t

Øt = 1 the set of information available at time t=1, which is relevant for determining security prices at time t=1.

P_j t=1 The price of security at time t=1, j = 1,2....n where n is the number of securities in the market.

$$Rit = \frac{(P_jt - P_j,t-1)}{(Bjt-1)} \quad \text{.....(17)}$$

a=E (Rit)/$Ø_{t-1}$, Rmt) = a+Bi Rmt).....(18)

j at time t which is reduced to

Rjt = a + Bj Rmt + Ejt.....(19)

Ejt = the deviation of Rjt from its conditional expected value.

Therefore E(Ejt/$Ø_{t-1}$, Rmt) = 0.0 ..... (20)

In deriving our expected values using market model, we will assume that during each period the market sets prices, so that fm (Rjt, Rmt/$Ø^{m}$t-1) is perceived as a bivariate normal distribution of Rjt, and Rmt, and is constant through time, implying that aj, Bj, and the time distribution of Ejt are the same period after period.

The expected terminal price will be computed from the market model to obtain the monthly returns for each company. The market portfolio m will contain all ordinary shares on the Nairobi Stock Exchange. To derive Rmt, we will average the returns of these shares for the period 1995–1999. The estimators of the market model cov Bj and j involves substituting unbiased estimators of E(Rj) , E(Rmt) and Cov (Rj, Rmt) .

Where P_o = present value of ordinary share

ke = required rate of return on share j

T = holding period

$$Po = \sum_{t=1}^{n} \frac{Dt}{(1+k_e)^t} + \frac{Dn}{(1+k_n)^n} \quad \ldots\ldots\ldots\ldots\ldots\ldots (21)$$

$$Rj = \sum_{t=1}^{T} \frac{Rjt}{T} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (22)$$

$$Rm = \sum_{t=1}^{T} \frac{Rmt}{T} \quad \text{..... (23)}$$

$$S^2(Rm) = \sum_{t=1}^{T} \frac{Rmt - \overline{Rm}}{T-1} \quad \text{..... (24)}$$

$$Sjm = \sum_{t=1}^{T} \frac{(Rjt - \overline{Rj})(Rmt - \overline{Rm})}{T-1} \quad \text{.....(25)}$$

$$\text{Therefore } Bj = \frac{Sjm}{S^2(Rmj)} \quad \text{.....(26)}$$

and $aj = Rj + Bjm$ .....(27)

The basic CAPM was used to derive the beta for each of the companies to be studied. Bjs computed for each company will be our beta values. One year government of Kenya Treasury bills rate plus market returns Rm computed when deriving the market model will give us full market returns.

Therefore average market returns is computed using:-

$$Rm = \frac{(mt - mt\text{-}1)}{Mt - 1} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (28)$$

Where Rm = monthly market returns at period t

Mt = market index at period t

Mt-1= market index at period t-1.

The results were summarized using descriptive statistics such as mean and standard deviation. Each price obtained was compared to the actual price for that period.

This was done by finding the difference between the actual and predicted prices then testing whether the difference between the two are significant.

The following hypothesis was tested:

H_o: There is no significant difference between the actual share prices

and the predicted share prices using dividend discount model.

H_a: There is a significant difference between the actual and the predicted share price using dividend discount model.

The *t*- test was used as the appropriate test statistic.

$$T = \frac{(d-\mu)}{s/\sqrt{n}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (29)$$

d= the means of the differences between the two samples.

s= the standard deviations of the differences.

n= number of observations

The dividend discount model qualified as a reliable model depending on the number of companies for which it predicts share prices that are not significantly different from the actual one.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

The study was conducted to establish the reliability of the dividend model on the valuation of common stock at the Nairobi Stock Exchange. The hypothesis in chapter three was therefore investigated, and examined in detail. The raw data collected was in the form of share prices, market indices and dividend per share, which were then used to predict the value of shares of each of the companies studied. Eighteen companies were studied. Appendix A and Appendix B show the companies studied and their returns (compared to market return) respectively. The returns were computed from the monthly share prices between December 1994 and January 2000.

4.2 The Market Model

Monthly returns computed from the share prices and market indices were used to derive the market model for each company, as indicated in appendix C. We therefore, obtained beta values using CAPM. CAPM was assumed to estimate the required rate of return for each company (table 1). The market model was then used to forecast expected share prices for the first six months of the year 2000, and the results summarized in table 2 for each of the companies studied. To determine the significance of relationship between the two prices (the predicted and actual prices), the differences computed were used to carry out hypothesis testing for each company. The analysis was done using Ms Excel Data analysis and is summarized in table 3. Appendix D shows the results of the eighteen companies studied. The market model was not a good predictor for fourteen companies (about 78 percent) and was a good predictor for only four

companies (about twenty-two percent).This further suggest the possibility of market inefficiency (NSE).

TABLE 1 THE MARKET MODEL DERIVED FOR EACH COMPANY

COMPANY	MARKET MODEL	BETA
BROOKE BOND	R=-0.0017-0.2104RM	-0.2104
GEORGEWILLIAMSON	R=0.0029+0.2100RM	0.21
KAKUZI	R=0.0015+0.0740RM	0.074
SASINI TEA AND COFFEE	R=-0.0094+0.2043RM	0.2043
DIAMOND TRUST	R=-0.0150+0.1599RM	0.1599
NATION MEDIA GROUP	R=0.0145+0.0783RM	0.0783
STANDARD N.PAPER	R=0.0625+0.4430RM	0.443
BARCLAYS BANK	R=-0.0048+0.1933RM	0.1933
C.F.C LTD	R=0.0015-0.3909RM	0.3909
B.A.T	R=0.0114+0.1385RM	0.1385
BAMBURI PORTLAND LTD	R=0.0303+0.1088RM	0.1088
E.A.B.L	R=-0.0043+0.1881RM	0.1881
K.P.L.C LTD	R=0.0132+0.0727RM	0.0727
TOTAL KENYA LTD	R=-0.0149+0.1499RM	0.1499
STANDARD CHARTERED	R=-0.0068+0.1871RM	0.1871
K.C.B LTD	R=0.0145+0.0783RM	0.0783
CAR&GENERAL LTD	R=0.0476+1.0678RM	1.0678
I.C.D.C LTD	R=0.0079+0.2059RM	0.2059

TABLE 2 PREDICTED SHARE PRICES USING THE MARKET MODEL

COMPANY / MONTHS		Jan-00	Feb-00	Mar-00	Apr-00	May-00	Jun-00
BROOKE BOND	Actual	104	104	88	78	76	74
	Predicted	103.69	104.32	104.26	104.82	104.39	100.38
	Difference	0.31	-0.32	-16.26	-26.82	-28.39	-26.36
GEORGE WILLIAMSON	Actual	93	87	87	90	77	75
	Predicted	93.39	92.94	93.1	92.71	93.2	96.87
	Difference	-0.39	-5.94	-6.1	-2.71	-16.2	-21.87
KAKUZI	Actual	97.5	77.5	70	67	67	66.5
	Predicted	87.14	87.04	87.14	87.05	87.25	88.51
	Difference	10.36	-9.54	-17.14	-20.05	-20.25	-22.01
SASINI	Actual	45	36	35.5	31.75	36.5	35
	Predicted	44.64	43.89	43.42	42.71	42.41	43.53
	Difference	0.36	-7.89	-7.92	-10.96	-5.91	-8.53
DIAMOND TRUST	Actual	25	28	26.75	24.75	21.25	20
	Predicted	25.64	25.1	24.7	24.2	23.88	24.19
	Difference	-0.64	2.9	2.05	0.55	-2.63	-4.19
NATION MEDIA	Actual	93	90.5	87.5	75	74	75
	Predicted	101.5	102.68	104.18	105.41	107.03	110.05
	Difference	-8.5	-12.18	-16.68	-30.41	-33.03	-35.05
STANDARD NEWSPAPER	Actual	10.75	10.5	10.05	8.05	8.75	6.1
	Predicted	10.49	10.97	11.63	12.18	13	14.82
	Difference	0.26	-0.47	-1.58	-4.13	-4.25	-8.72
BARCLAYS	Actual	101	115	90	90	87	86
	Predicted	102.63	101.41	100.81	99.66	99.4	102.34
	Difference	-1.63	13.59	-10.81	-9.66	-12.4	-16.34
C.F.C	Actual	14.05	14	15.15	16	13.65	9.8
	Predicted	14.23	14.46	14.51	14.72	14.68	13.7
	Difference	-0.18	-0.46	0.64	1.38	-1.03	-3.9
B.A.T	Actual	73	94	64	62	61	57
	Predicted	78.45	78.94	79.78	80.31	81.35	84.25
	Difference	-5.45	15.06	-15.78	-18.31	-20.35	-27.25
BAMBURI	Actual	26.25	26	27.5	26.5	28.5	29.25
	Predicted	27.06	27.77	28.59	29.35	30.27	31.76
	Difference	-0.81	-1.77	-1.09	-2.85	-1.77	-2.51
E.A.B.L	Actual	66.5	70	70	69	66.5	65.5
	Predicted	69.78	69	68.63	67.9	67.75	69.69
	Difference	-3.28	1	1.37	1.1	-1.25	-4.19

COMPANY \ MONTHS		Jan-00	Feb-00	Mar-00	Apr-00	May-00	Jun-00
K.P.L.C	Actual	93.5	91.5	88	78	50	51.5
	Predicted	96.81	97.83	99.08	100.14	101.54	104.17
	Difference	-3.31	-5.8	-11.08	-22.14	-51.54	-52.67
TOTAL KENYA	Actual	49	65	48.75	49	49	51
	Predicted	47.58	46.61	45.87	44.95	44.36	44.86
	Difference	1.42	18.39	2.88	4.05	4.64	6.14
STANDARD CHARTERED	Actual	57	75.5	52.5	47.75	47	48
	Predicted	56.18	55.41	54.97	54.25	54	55.4
	Difference	0.82	20.09	-2.47	-6.5	-7	-7.4
K.C.B	Actual	35	31.5	25	26.5	27.5	28
	Predicted	31.97	35.54	36.03	36.46	37.02	38.06
	Difference	3.03	-4.04	-11.03	-9.96	-9.52	-10.06
CAR&GENERAL	Actual	10	10	10	10	10.25	10.05
	Predicted	10.54	10.63	11.07	11.2	11.87	14.65
	Difference	-0.54	-0.63	-1.07	-1.2	-1.62	-4.6
I.C.D.C	Actual	50	45	40.5	46.75	47	49.5
	Predicted	50.46	50.48	50.82	50.86	51.38	53.64
	Difference	-0.46	-5.8	-10.32	-4.11	-4.38	-4.14

TABLE 3 AN ANALYSIS OF THE DIFFERENCES BETWEEN ACTUAL AND PREDICTED PRICES BY THE MARKET MODEL

COMPANY	MEAN	VARIANCE	STD DEV	T COMP. (CONFID.)	NULL HYPOTHESIS
BROOKE BOND	-16.31	177.94	13.339	13.999	Reject Ho
G.WILLIAMSON	-8.868	69.768	8.353	8.766	Reject Ho
KAKUZI	-13.105	151.636	12.314	12.923	Reject Ho
SASINI	-6.808	14.96	3.868	4.059	Reject Ho
DIAMOND TRUST	-0.327	7.431	2.726	2.861	Reject Ho
NATION MEDIA	-22.64	133.41	11.55	12.121	Reject Ho
STANDARD N.PAPER	-3.148	10.894	3.3	3.464	Reject Ho
BARCLAYS BANK	-6.208	117.402	10.835	11.371	Reject Ho
C.F.C	-0.675	3.361	1.833	1.924	Do not Reject Ho
B.A.T	-11.967	225.975	15.032	15.776	Reject Ho
BAMBURI	-1.798	0.622	0.789	0.828	Do not Reject Ho
E.A.B.L	-0.875	5.874	2.424	2.543	Do not Reject Ho
K.P.L.C	-24.423	501.81	22.401	23.508	Reject Ho
TOTAL KENYA	6.253	37.902	6.156	6.46	Reject Ho
STANDARD BANK	-0.41	111.077	10.539	11.06	Reject Ho
K.C.B	-6.93	30.01	5.478	5.749	Reject Ho
CAR AND GENERAL	-1.61	2.301	1.517	1.592	Do not Reject Ho
I.C.D.C	-4.868	10.273	3.205	3.364	Reject Ho
				Lev.of significance=	0.05
				Degrees of freed.	5
				t critical	2.571

4.3 The Dividend Discount Model

In order to test the dividend discount model, we first estimated the required rate of return of each company as shown in table 4. The rates of returns were then used to discount the forecasted dividend per share and the terminal prices to their present values, for each company for the first six months of the year 2000. Table 5 shows the actual, predicted and differences of prices for each of the eighteen companies. The results were tested for significance by hypothesis testing on the difference for each company. The analysis was done using Ms Excel data analysis and is shown on Appendix E. Table 6 shows a summary including mean, t-statistic and decision rule.

All the eighteen companies had their shares "predicted" but only three had positive results (about seventeen percent), while the rest were negative (Eighty three percent).

We therefore reject our null hypothesis and conclude that dividend discount model is not a good predictor of share prices at the Nairobi Stock Exchange. The model cannot be relied on by companies listed in the Nairobi Stock Exchange to predict their share prices:

The results may be attributed to:

i) Inefficient market (NSE).

ii) Inappropriate discounting factors.

iii) Information differentials.

iv) Measurement and evaluation problems, among others.

As suggested earlier in this report the NSE could be inefficient, but the model can be used where all securities in an equivalent class are priced to offer the same expected returns (where the market is efficient). Some managers believe that the market is highly inefficient and that any valuation method (including the dividend discount model) that is based on rationality of market

participants will prove ineffective (Sharpe *et al* 1999). The study assumed that the Nairobi Stock Exchange is an efficient market. Although there is active trading in the NSE, improved liquidity, and investor protection regulations; its state of efficiency is still inconclusive.

Inappropriate discounting factors used may have contributed to the results above, since the discounting factors (rates of return) for each company was obtained through CAPM. The assumptions of CAPM may not have existed for the period of study, as explained above. The market (NSE) may not have been efficient as such and hence the use of CAPM may not have been appropriate. The assumption that the rate of return was constant for the six months of the period of testing the model may also have affected the results. The rate of return might have been volatile since, even the government of Kenya Treasury Bonds has been unstable. In July 1999 the Bonds rated at 14.5% (July 1999 issue).The government of Kenya Treasury bonds rates has been falling as from December 2000. Although CAPM assumption do not hold in the real world, CAPM still serves as a useful framework for evaluating financial decisions. To reflect the real world, the assumptions may be relaxed by using extended versions of CAPM (Sharpe *et al* 1999).

Information differentials may have contributed to the results obtained in the study. The presence of "noise" may cause markets to be inefficient, but prevents an investor from taking advantage from inefficiencies. "Noise" makes it difficult to test either practical or academic theories about how the market works. The estimated and /or the actual prices obtained above may be made up of both "noise" and information. This may have led to imperfect observations and hence the knowledge of expetectations on the stocks was limited.

Brennan (1973) noted that the possibility of inaccurate data should be obvious in any valuation model. The estimates of the beta coefficients, expected market return among others may be debatable as preserved by Sayawa (2000). Omosa (1989) also indicated that the differences in prices may arise due to:

i) Under-specification bias

ii) Measurement errors especially where predictions are involved.

iii) Heteroscedasticity

iv) Normality and other assumptions

v) Joint hypothesis

vi) Thin trading leading to delays in price adjustments.

The study assumed that prices are determined by the expected dividend per share. However, since the results are contrary, it therefore implies that the prices of shares do not only depend on dividends. This supports the widely accepted view within the academic community that it is not the firm's dividend policy that determines the value of the shares, but also other critical variables like earnings power of the company. Empirical evidence suggests that the most commonly used method of share valuation in both United Kingdom and Germany is earnings per share model (Pike and Neale 1996).Most managers prefer that the dividend discount model be incorporated into a broader framework of multiple valuation models. The basic idea behind this approach is that different valuation models contain information about security mispricings, some of these valuation models are based on market anomalities, such as over-reaction to the expected news about the company. Due to the limitations of individual models, a combination of the models

forecasts can produce estimates of mispricings superior to any single model. An example of such is Franklin Portfolio Associates (FPA) Model, used in Boston. The model takes into account fundamental momentum, relative values, future cash flow and supplementary (Sharpe *et al* 1999).

In conclusion, the empirical results highly depend on the methodology employed in the test.

TABLE 4 THE REQUIRED RATES OF RETURN COMPUTED FOR EACH COMPANY

COMPANY	CAPM RATE %
BROOKE BOND	18.74
GEORGE WILLIAMSON	21.26
KAKUZI	20.44
SASINI TEA AND COFFEE	21.23
DIAMOND TRUST	20.96
NATION MEDIA GROUP	20.47
STANDARD NEWSPAPER GROUP	22.66
BARCLAYS BANK	21.16
C.F.C BANK	17.65
B.A.T	20.83
BAMBURI PORTLAND	20.65
EAST AFRICAN BREWERIES	21.13
K.P.L.C	20.44
TOTAL KENYA	20.9
STANDARD CHARTERED BANK	21.12
K.C.B	20.47
CAR AND GENERAL	26.41
I.C.D.C	21.24

TABLE 5 PREDICTED PRICES USING THE DIVIDEND DISCOUNT MODEL

COMPANY \ MONTHS		Jan-00	Feb-00	Mar-00	Apr-00	May-00	Jun-00
BROOKE BOND	Actual	104	104	88	78	76	74
	Predicted	90.69	80.2	70.87	63.34	56.53	49.54
	Difference	13.31	23.8	17.13	14.66	19.47	24.46
GEORGE WILLIAMSON	Actual	93	87	87	90	77	75
	Predicted	77.7	64.46	53.93	44.98	37.96	33.15
	Difference	15.3	22.54	33.07	45.2	39.04	41.85
KAKUZI	Actual	97.5	77.5	70	67	67	66.5
	Predicted	73.56	62.21	52.91	45.09	38.72	33.77
	Difference	23.94	15.29	17.09	21.91	28.8	32.73
SASINI	Actual	45	36	35.5	31.75	36.5	35
	Predicted	36.89	29.98	24.54	19.98	16.43	13.97
	Difference	8.11	6.02	10.96	11.77	20.07	21.07
DIAMOND TRUST	Actual	25	28	26.75	24.75	21.25	20
	Predicted	21.86	18.36	15.62	13.34	11.56	10.32
	Difference	3.14	9.64	11.13	11.41	9.69	9.68
NATION MEDIA	Actual	93	90.5	87.5	75	74	75
	Predicted	85.71	73.06	63.25	54.06	47.36	44.04
	Difference	7.29	17.44	24.25	20.94	26.64	30.96
STANDARD NEWSPAPER	Actual	10.75	10.5	10.05	8.05	8.75	6.1
	Predicted	8.55	7.29	6.3	5.38	4.68	4.35
	Difference	2.2	3.21	3.75	2.67	4.07	1.75
BARCLAYS	Actual	101	115	90	90	87	86
	Predicted	92.89	84.01	77.18	71.35	66.97	64.38
	Difference	8.11	30.99	12.82	18.65	20.03	21.62
C.F.C BANK	Actual	14.05	14	15.15	16	13.65	9.8
	Predicted	12.66	11.48	10.5	9.5	8.62	7.15
	Difference	1.39	2.52	4.65	6.5	5.03	2.65
B.A.T	Actual	73	94	64	62	61	57
	Predicted	77.09	75.62	75.22	75.14	74.76	74.97
	Difference	-4.09	18.38	-11.22	-13.14	-13.76	-17.97
BAMBURI	Actual	26.25	26	27.5	26.5	28.5	29.25
	Predicted	23.53	21.09	19.05	17.25	15.76	14.65
	Difference	2.72	4.91	8.45	9.25	12.74	14.6
E.A.B.L	Actual	66.5	70	70	69	66.5	65.5
	Predicted	64.35	59.34	55.53	52.25	49.82	48.49
	Difference	2.15	10.66	14.47	16.75	16.68	17.01

COMPANY \ MONTHS		Jan-00	Feb-00	Mar-00	Apr-00	May-00	Jun-00
K.P.L.C	Actual	93.5	91.5	88	78	50	51.5
	Predicted	87.02	89.26	67.11	57.61	43.42	43.19
	Difference	6.48	2.24	20.89	20.39	6.58	8.31
TOTAL KENYA	Actual	49	65	48.75	49	49	51
	Predicted	42.54	37.71	33.95	30.72	28.46	26.51
	Difference	6.46	27.29	14.8	18.28	20.54	24.43
STANDARD CHARTERED	Actual	57	75.5	52.5	47.75	47	48
	Predicted	55.42	48.21	52.96	52.96	52.67	52.97
	Difference	1.58	27.29	-0.46	-5.21	-5.67	-4.97
K.C.B	Actual	35	31.5	25	26.5	27.5	28.5
	Predicted	26.54	24.49	20.61	17.31	14.59	12.45
	Difference	8.46	7.01	4.39	9.19	12.91	16.05
CAR AND GENERAL	Actual	10	10	10	10	10.25	10.05
	Predicted	8.34	6.65	5.48	4.39	3.68	3.59
	Difference	1.66	3.35	4.42	5.61	6.57	6.46
I.C.D.C	Actual	50	45	40.5	46.75	47	49.5
	Predicted	43.34	37.47	32.81	28.8	25.67	23.6
	Difference	6.66	7.53	7.69	17.95	21.33	24.24

TABLE 6 AN ANALYSIS OF THE DIFFERENCES BETWEEN THE ACTUAL AND PREDICTED PRICES USING THE DIVIDEND DISCOUNT MODEL

COMPANY	MEAN	VARIANCE	STD DEV.	T.COMP. (CONF.)	NULL HYPOTHESIS
BROOKE BOND	18.805	21.511	4.638	4.867	Reject Ho
G.WILLIAMSON	32.833	137.237	11.715	12.294	Reject Ho
KAKUZI	23.293	44.848	6.697	7.028	Reject Ho
SASINI	13	38.683	6.22	6.527	Reject Ho
DIAMOND TRUST	9.115	9.191	3.032	3.181	Reject Ho
NATION MEDIA	21.253	68.366	8.268	8.677	Reject Ho
STANDARD N.PAPER	2.942	0.808	0.899	0.944	Do not Reject Ho
BARCLAYS BANK	18.703	61.613	7.849	8.237	Reject Ho
C.F.C	3.79	3.659	1.913	2.007	Do not Reject Ho
B.A..T	-6.967	174.831	13.222	13.876	Reject Ho
BAMBURI	8.695	19.566	4.423	4.642	Reject Ho
E.A.B.L	12.953	33.806	5.814	6.102	Reject Ho
K.P.L.C	10.815	61.944	7.87	8.26	Reject Ho
TOTAL KENYA	18.633	55.037	7.419	7.785	Reject Ho
STANDARD BANK	2.093	161.031	12.69	13.317	Reject Ho
K.C.B	9.668	17.57	4.192	4.399	Reject Ho
CAR AND GENERAL	4.678	3.712	1.927	2.022	Do not Reject Ho
I.C.D.C	14.51	68.987	8.306	8.716	Reject Ho
				Lev.of Sig.	0.05
				Degrees of fred.	5
				t critical	2.571

CHAPTER FIVE

CONCLUSIONS, LIMITATIONS AND SUGESTIONS FOR FURTHER RESEARCH

5.1 Conclusions

The main objective of the study was to establish the reliability of the dividend discount model on the valuation of common stocks at the Nairobi Stock Exchange. In order to achieve this, share prices were predicted using the dividend discount model and then compared with the actual prices. The differences between the two were obtained .T-tests were carried out on the differences to establish whether the two prices were significantly different from each other. Of the eighteen companies studied, only three companies showed that the differences were significant.

We can therefore, conclude that the dividend discount model cannot be relied on by companies in the valuation of their common stocks at the NSE. The results are attributed to among other factors, the inefficient market (NSE), inappropriate discounting factors, information differentials and measurement and evaluation problems. Valuation of common stocks is also a complex process since it involves forecasting future dividends and future prices, which are uncertain in amount and time of occurrence. All conclusions drawn here should be understood on the basis of the research limitations discussed below.

5.2 Limitations of the Study

- We assumed the Capital Asset Pricing Model (CAPM) in deriving the discounting factors. All CAPM assumptions are violated in the real world. As indicated elsewhere in this report, it is possible to extend the model by relaxing the unrealistic assumptions without

drastically changing the model. In this study none of the assumptions have been relaxed, therefore the results are not guaranteed for a real world situation.

- The applicability of the market model which was used as a model of equilibrium in the study is questionable (Sawaya, 2000).The model is actually different from CAPM, since it does not describe how prices are set for securities. There are numerous general equilibrium models that have been derived. If one of them is proved to be correct, then better estimates of returns should be obtained by using that model rather than the market model. The use of alternative models can make some difference and hence results obtained in this study may be inferior to analysis incorporating other equilibrium models.

- The risk-free rate used in the study (one year government of Kenya Treasury Stocks) was not stable over the period of study, as it was assumed to be(as detailed elsewhere in the report); this might have affected the required returns of various companies studied as indicated elsewhere in the report.

- The procedure of selecting the sample of eighteen companies studied was subjective and judgmental. It is not easy to judge between actively and none actively traded firms. It is therefore difficult to generalize the results of this analysis as a representative on the reliability of the dividend discount model in the entire market.

5.3 Suggestions for Further Research

- The CAPM model assumptions are not practical in the real world situation; however it is possible to extend the model by relaxing the assumptions without drastically changing it. For instance the study assumed a risk-free rate; a better result could be obtained without the risk-free rate using the zero beta portfolios. This implies that the Security Market Line (SML) will be more flat than the original version (with the risk-free rate).Many organizations that estimate the SML generally find that it conforms to the zero betas CAPM than the original CAPM (Sharpe *et al* 1999).It would therefore be interesting and more practical for one to conduct a study based on the same and many other extensions of CAPM.

- A further study may also be conducted using a different model of equilibrium rather than the market model .More dynamic models like Arbitrage Pricing Model may produce a result with better significance.

- Since a firm's share price is not only influenced by it's dividends as indicated elsewhere in the report, use of multiple models may result to more robust analysis than a single model like the dividend discount model. The multiple models have produced accurate prices of stocks in Boston; they have been successfully used by FPA as indicated in chapter four. Further studies may be conducted using the models in various markets.

APPENDICES

APPENDIX A
COMPANIES STUDIED

NAME	CODE
BROOKE BOND	R1
GEORGE WILLIAMSON	R2
KAKUZI	R3
SASINI TEA AND COFEE	R4
DIAMOND TRUST	R5
NATION MEDIA GROUP	R6
STANDARD NEWSPAPER	R7
BARCLAYS BANK	R8
C.F.C BANK	R9
B.A.T LIMITED	R10
BAMBURI PORTLAND	R11
EAST AFRICAN BREWERIES	R12
K.P.L.C	R13
TOTAL KENYA	R14
STANDARD CHARTERED	R15
K.C.B	R16
CAR AND GENERAL	R17
I.C.D.C	R18
MARKET RETURN	RM

APPENDIX B
MONTHLY RETURNS FOR THE MARKET AND SAMPLE COMPANIES

MONTHS	R1	R2	R3	R4	R5	R6	R7	R8
1	-0.1710	-0.0714	-0.0328	-0.2241	-0.2683	-0.2000	-0.4000	-0.1237
2	-0.5291	-0.0385	-0.0678	-0.0167	-0.0167	0.1458	0.2375	0.0613
3	0.9619	0.0080	-0.0818	-0.0508	0.0085	0.0182	-0.0741	-0.1734
4	-0.0049	-0.0794	-0.0396	-0.1429	0.0924	0.0238	-0.1236	0.0070
5	0.0244	-0.1897	-0.0103	-0.0972	-0.0769	-0.1279	-0.0622	-0.0556
6	-0.0619	0.0745	0.0417	0.0769	0.0333	0.1933	0.3142	0.0662
7	0.0000	-0.2030	0.0000	0.0071	-0.1774	-0.0615	-0.7306	-0.1103
8	-0.0406	-0.1304	0.0000	-0.0355	-0.0441	-0.1607	1.6250	0.0000
9	-0.3122	-0.1071	-0.2900	-0.0662	0.0462	-0.0426	-0.6190	0.0000
10	0.2154	0.2000	0.1408	0.1339	0.1863	0.2963	0.0000	0.1705
11	0.2025	0.1733	0.1420	-0.0069	-0.1157	0.0971	0.0000	-0.0066
12	0.0000	0.0000	0.0000	0.0000	-0.0093	0.0000	2.2375	0.0000
13	0.0000	0.0909	0.0162	-0.0979	-0.0189	0.0104	0.0039	0.0333
14	0.0000	-0.2656	0.0213	0.0078	-0.0096	0.0309	0.0038	-0.0387
15	-0.3947	-0.0071	0.0417	-0.1000	-0.0583	0.0000	-0.0038	-0.0268
16	0.4783	-0.0571	-0.0500	-0.1624	-0.1134	-0.2000	-0.0462	-0.2414
17	0.0235	-0.1515	0.0105	0.2245	-0.0407	0.0625	-0.1694	0.0727
18	0.0287	0.1696	-0.0625	-0.0500	0.0788	0.2000	-0.0291	-0.0593
19	-0.0168	0.0000	0.0278	-0.1053	-0.1685	0.0000	-0.0950	-0.0090
20	0.0057	0.0076	0.0432	0.0392	0.0338	0.0490	-0.1215	-0.0545
21	0.0000	0.0606	-0.0052	0.0189	-0.0850	-0.0093	-0.0440	-0.0673
22	0.0056	0.0286	0.0156	0.0741	-0.0857	0.0189	0.0592	-0.0052
23	-0.1629	0.0069	0.0051	0.0345	0.1406	0.0463	0.1242	0.1917
24	0.0067	0.0138	0.0306	0.0333	-0.0616	-0.0442	0.5580	0.0261
25	-0.1000	0.0000	0.0000	0.2097	-0.1168	0.0278	0.0106	-0.1356
26	-0.0815	-0.0612	0.0099	0.0067	0.0331	0.5135	0.0175	0.1275
27	0.0000	0.0145	0.0000	0.1258	-0.0320	-0.3095	0.7241	-0.0435
28	0.0081	0.0000	0.0294	-0.0706	-0.0083	-0.0862	0.0200	0.0000
29	-0.0160	0.0071	0.0095	0.0127	0.0000	0.1321	0.3137	0.0000
30	0.0081	0.0851	0.1792	0.0625	-0.0667	0.0000	0.2015	-0.0364

MONTHS	R1	R2	R3	R4	R5	R6	R7	R8
31	-0.0242	0.6863	0.2000	0.1529	-0.0893	0.0500	0.2422	0.0094
32	-0.0083	-0.0233	-0.0333	-0.0408	-0.1176	0.0079	-0.0400	0.0093
33	-0.0833	-0.3175	-0.3379	0.0000	-0.0333	0.0315	0.1042	0.0648
34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	0.1818	0.2558	0.1458	0.0106	0.0115	0.0153	0.0189	-0.0087
36	-0.0385	0.1296	0.1727	0.2632	0.0455	0.0226	-0.1111	0.1140
37	-0.0400	0.1148	0.0078	-0.2583	0.0000	0.0809	0.2500	-0.2480
38	-0.0083	0.1103	-0.0769	-0.2079	-0.0978	0.4082	-0.4667	-0.0576
39	0.0168	0.0132	0.0000	0.0780	0.0602	-0.5990	-0.2031	0.1778
40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
41	0.0992	-0.0850	0.1917	-0.0132	0.0000	0.3976	0.3922	-0.0377
42	0.0677	-0.0857	0.0140	0.0000	-0.0932	0.0345	-0.4366	-0.0392
43	0.0563	0.0156	0.0345	0.0000	0.0025	0.0250	-0.0125	0.0204
44	-0.0133	0.0154	-0.0667	0.0400	0.0125	0.0163	-0.3924	-0.0200
45	-0.0541	0.0000	-0.0357	-0.0385	-0.0123	-0.0240	0.3042	0.0102
46	-0.0929	0.0303	0.0148	-0.0667	0.0125	0.0246	0.1502	0.0404
47	0.1102	0.0368	0.0292	0.0000	0.0864	0.0960	0.1944	0.2621
48	0.0071	0.0142	0.0000	0.0000	0.1364	-0.0073	0.1628	-0.0538
49	0.0000	-0.0210	0.0284	-0.1429	0.0400	0.0294	0.0000	-0.0325
50	0.0070	0.0000	-0.1724	-0.0333	-0.0288	-0.0357	-0.3640	-0.0756
51	0.0280	0.0143	-0.0250	0.0000	-0.0099	0.0000	0.2736	-0.0364
52	0.0000	0.0000	-0.0085	-0.1034	-0.0400	-0.0593	-0.1111	0.0189
53	0.0068	0.0070	0.0431	0.0385	-0.0208	0.0157	-0.2556	0.0370
54	0.0000	-0.0210	0.0000	0.0000	0.0319	-0.0698	-0.1045	0.0536
55	-0.2230	-0.1786	0.0000	0.0648	-0.1753	-0.0833	0.0000	-0.1525
56	-0.1304	0.0000	-0.1736	-0.0348	0.1500	-0.0182	0.3375	0.0000
57	0.0200	-0.0435	0.0000	-0.0631	0.0000	-0.0185	-0.3769	0.0100
58	0.0196	-0.1636	-0.0950	-0.1731	0.0543	-0.0283	0.1200	0.0198
59	0.0000	0.0109	-0.0387	0.0465	0.0722	-0.0291	-0.1205	0.0000
60	0.0000	0.0000	0.1207	0.0000	-0.0385	-0.0700	0.0914	-0.0194

MONTHS	R9	R10	R11	R12	R13	R14	R15	R16	R17
1	0.0000	-0.2857	-0.0769	-0.2304	0.0000	-0.2292	-0.1933	-0.2000	-0.0625
2	0.7143	-0.1250	-0.0333	-0.1130	0.0211	0.0769	0.0331	0.1458	-0.0139
3	-0.5000	-0.0500	0.1207	-0.1210	0.1856	-0.3381	-0.1360	0.0182	0.0169
4	0.1833	-0.0226	0.0308	0.0145	-0.0870	-0.0360	-0.0556	0.0238	-0.0028
5	0.0211	-0.1154	-0.4739	0.0000	0.2286	0.0299	0.0098	-0.1279	0.0250
6	-0.1862	-0.0609	-0.0071	0.0000	-0.0698	0.0507	0.0583	0.1933	0.2195
7	-0.0763	-0.1296	-0.0214	-0.1357	-0.1667	-0.1793	-0.0963	-0.0615	-0.1111
8	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.1607	0.0250
9	-0.0367	0.0426	-0.2117	0.1488	0.0600	-0.0504	-0.0355	-0.0426	-0.0439
10	-0.0190	0.0204	0.1667	0.0216	0.1792	0.3717	0.1263	0.2963	0.0459
11	0.1553	0.0000	0.1429	-0.0915	0.1200	0.0968	-0.0467	0.0971	-0.0122
12	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	-0.0336	-0.1100	-0.0069	-0.1085	0.2500	0.0059	0.0392	0.0104	0.0123
14	-0.0609	0.0056	-0.0769	-0.0957	-0.0286	0.0000	-0.0189	0.0309	0.0244
15	0.0000	-0.2067	0.1818	-0.0529	-0.4765	0.0000	-0.0385	0.0000	0.0000
16	-0.0648	-0.0845	-0.3526	-0.1472	-0.0618	0.0000	-0.1200	-0.2000	0.0000
17	-0.1188	0.0615	0.1089	0.0298	-0.0120	-0.4444	0.1080	0.0625	0.0000
18	-0.0112	-0.5652	1.5357	0.1156	0.0061	-0.1421	-0.0564	0.2000	2.0714
19	-0.1455	-0.0167	-0.0423	-0.0311	0.2771	-0.0675	0.0217	0.0000	-0.6628
20	-0.0080	1.2542	-0.5735	-0.0160	0.1321	-0.0592	-0.0372	0.0490	-0.0805
21	0.0000	-0.5789	1.1724	0.0870	0.0167	-0.0280	0.0166	-0.0093	0.0125
22	0.0054	1.2143	-0.5516	0.0300	0.1311	-0.1007	0.0054	0.0189	-0.0123
23	0.2133	0.3387	0.4159	0.0194	-0.3478	0.5040	0.1676	0.0463	0.0000
24	0.0989	-0.2771	0.2750	0.1524	0.3333	-0.2021	0.0741	-0.0442	0.0000
25	-0.1600	0.0333	-0.2157	0.0248	-0.0583	-0.1733	-0.1940	0.0278	2.0500
26	-0.0476	0.0161	-0.0063	-0.0565	0.5044	0.1532	-0.0107	0.5135	-0.7361
27	0.3000	-0.0317	-0.0566	0.0256	0.0059	-0.0979	0.0162	-0.3095	0.0559
28	-0.2308	0.0246	-0.4667	-0.0500	0.0351	-0.0233	-0.0053	-0.0862	-0.0588
29	0.5000	-0.0400	1.0000	0.0088	-0.0113	0.0317	0.0695	0.1321	0.0000
30	-0.3333	-0.0583	0.1313	-0.0783	-0.0571	-0.0769	-0.0750	0.0000	0.0000

MONTHS	R9	R10	R11	R12	R13	R14	R15	R16	R17
31	0.0000	-0.0973	-0.0718	-0.1085	0.0606	-0.0500	-0.0270	0.0500	0.0000
32	0.0000	0.0000	-0.1190	-0.0053	0.0800	-0.1053	-0.0222	0.0079	0.0063
33	-0.1200	-0.0196	-0.1554	0.0745	-0.1534	0.0196	0.0455	0.0315	0.0000
34	0.0000	0.0000	0.1600	-0.0396	0.1250	0.0096	0.0000	0.0000	0.2578
35	0.1506	0.0600	0.1034	0.0515	0.0333	0.2286	0.0326	0.0153	-0.0173
36	-0.0123	-0.0472	-0.1375	0.0000	0.0753	-0.0698	-0.1474	0.0226	-0.3467
37	-0.0475	-0.1089	0.1594	0.0000	-0.1000	-0.1667	0.0679	0.0809	0.0000
38	-0.2126	-0.0222	-0.1688	-0.0441	-0.0556	-0.1300	-0.0983	0.4082	-0.0769
39	0.1667	0.0227	0.0526	0.0000	0.0647	-0.0575	0.1026	-0.5990	0.0000
40	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0833
41	-0.0257	0.0000	0.0000	0.0872	0.0497	0.0244	-0.0291	0.3976	0.0909
42	-0.0616	-0.0111	-0.1714	0.0755	0.0263	0.0000	-0.0419	0.0345	0.0000
43	0.0000	0.0787	0.0172	-0.0351	0.0103	-0.0238	0.0000	0.0250	0.0000
44	-0.0313	0.0625	-0.0508	-0.0364	-0.0660	-0.0976	-0.0125	0.0163	0.0000
45	-0.0323	0.0784	0.0000	-0.1274	0.0489	-0.0203	-0.0253	-0.0240	0.0292
46	0.0000	0.0000	-0.0714	0.1135	-0.4301	-0.0552	0.0390	0.0246	-0.0283
47	0.0067	0.3909	0.3846	0.3010	0.1364	0.4307	0.2625	0.0960	0.0000
48	0.3245	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0842	-0.0073	0.0417
49	0.3375	0.1373	-0.1389	-0.0224	0.0240	0.1327	0.0162	0.0294	0.0160
50	-0.4393	-0.0460	-0.0323	0.0687	-0.0938	-0.1712	-0.0213	-0.0357	-0.2126
51	-0.0633	0.1386	-0.1917	0.0929	0.0172	0.0217	-0.0109	0.0000	0.0000
52	0.0000	0.0159	0.0309	0.0327	-0.0508	-0.0213	0.0110	-0.0593	0.0000
53	0.0676	-0.1042	0.0500	-0.0127	0.0089	0.0326	0.0870	0.0157	0.0000
54	0.0000	-0.1163	0.1143	0.0192	-0.0265	0.0526	0.0800	-0.0698	0.0000
55	0.0000	0.0526	0.0256	0.0440	-0.0909	0.0400	0.0185	-0.0833	0.0000
56	0.0033	0.0438	-0.1250	0.0000	-0.0400	-0.1154	0.0091	-0.0182	0.0000
57	0.4120	-0.0778	-0.0095	-0.1325	-0.1667	0.0435	0.0595	-0.0185	0.0000
58	-0.3412	-0.0260	0.0000	-0.0278	0.0375	0.0000	-0.0646	-0.0283	0.0000
59	0.0179	0.0333	0.0096	0.0000	0.1506	0.0052	0.0273	-0.0291	0.0000
60	-0.0140	-0.0581	0.0000	-0.0500	-0.0209	0.0155	-0.3805	-0.0700	0.0000

MONTHS	R18	RM
1	-0.3226	-0.0790
2	0.0238	0.0776
3	-0.4419	-0.1007
4	0.3854	-0.0080
5	-0.1504	-0.0119
6	0.0796	0.0053
7	-0.1803	-0.0239
8	0.0000	-0.0070
9	0.2500	-0.0341
10	0.1600	0.0877
11	-0.1241	0.0563
12	0.0000	-0.0221
13	0.0394	0.0113
14	0.0227	-0.0033
15	0.0370	-0.0203
16	-0.1143	-0.0198
17	0.0887	-0.0562
18	-0.2296	0.1107
19	0.2212	-0.1094
20	-0.0315	0.0054
21	0.1789	0.0201
22	-0.1310	-0.0028
23	0.2698	0.0247
24	0.0688	0.0130
25	0.0819	0.0926
26	-0.0270	-0.0686
27	0.1111	0.0689
28	0.0000	0.0396
29	0.2000	-0.2667
30	0.1000	0.2581

MONTHS	R18	RM
31	-0.4811	-0.0235
32	0.0073	-0.0181
33	0.0000	-0.0972
34	0.3913	0.1664
35	-0.1042	-0.1989
36	-0.1686	0.1078
37	0.0070	0.0056
38	0.0069	0.0052
39	0.0000	-0.0084
40	0.0828	-0.0937
41	-0.0255	-0.0173
42	-0.0523	-0.0494
43	-0.0552	0.0102
44	-0.0365	-0.0229
45	-0.0076	-0.0181
46	0.2824	0.0120
47	0.0000	0.2556
48	0.0298	-0.1752
49	0.0636	-0.0311
50	0.0435	-0.0070
51	0.0521	0.0160
52	-0.0099	-0.0740
53	0.0000	0.0457
54	0.0000	-0.0458
55	0.0000	-0.0424
56	0.0000	0.2156
57	0.0000	-0.1699
58	0.0000	-0.0254
59	-0.1000	0.0328
60	-0.1000	-0.1805

APPENDIX C
A REPRODUCTION OF THE COMPUTER PRINTOUTS FOR THE MARKET MODEL

SIMPLE
REGRESSION
OFR1 ON RM
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.109102
R Square	0.011903
Adjusted R Square	-0.00513
Standard Error	0.185017
Observations	**60**

ANOVA

	df	*SS*	*MS*
Regression	1	0.023918	0.023918
Residual	58	1.985419	0.034231
Total	**59**	**2.009337**	

	Coefficients	*Standard Error*	*t Stat*
Intercept	-0.00167	0.023941	-0.06961
X Variable 1	-0.21036	0.251654	-0.83589

R2 ON RM

Regression Statistics	
Multiple R	0.146943
R Square	0.021592
Adjusted R Square	0.004723
Standard Error	0.136426
Observations	60

ANOVA

	df	*SS*	*MS*
Regression	1	0.023823	0.023823
Residual	58	1.079507	0.018612
Total	59	1.10333	

	Coefficients	*Standard Error*	*t Stat*
Intercept	0.002926	0.017653	0.165738
X Variable 1	0.209939	0.185563	1.131366

R3 ON RM

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.074652
R Square	0.005573
Adjusted R Square	-0.01157
Standard Error	0.095454
Observations	60

ANOVA

	df	*SS*	*MS*
Regression	1	0.002962	0.002962
Residual	58	0.528465	0.009111
Total	59	0.531426	

	Coefficients	*Standard Error*	*t Stat*
Intercept	0.001538	0.012352	0.124488
X Variable 1	0.074021	0.129833	0.570121

R4 ON RM

Regression Statistics	
Multiple R	0.195916
R Square	0.038383
Adjusted R Square	0.021803
Standard Error	0.098704
Observations	60

ANOVA

	df	*SS*	*MS*
Regression	1	0.022555	0.022555
Residual	58	0.565065	0.009743
Total	59	0.58762	

	Coefficients	*Standard Error*	*t Stat*
Intercept	-0.00935	0.012772	-0.73203
X Variable 1	0.204273	0.134254	1.521537

R5 ON RM
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.183466
R Square	0.03366
Adjusted R Square	0.016999
Standard Error	0.082721
Observations	60

ANOVA

	df	*SS*	*MS*
Regression	1	0.013824	0.013824
Residual	58	0.396883	0.006843
Total	59	0.410708	

	Coefficients	*Standard Error*	*t Stat*
Intercept	-0.015	0.010704	-1.40112
X Variable 1	0.159924	0.112515	1.421358

R6 ON RM

Regression Statistics	
Multiple R	0.047958
R Square	0.0023
Adjusted R Square	-0.0149
Standard Error	0.157483
Observations	60

ANOVA

	df	*SS*	*MS*
Regression	1	0.003316	0.003316
Residual	58	1.438444	0.024801
Total	59	1.44176	

	Coefficients	*Standard Error*	*t Stat*
Intercept	0.014455	0.020378	0.709347
X Variable 1	**0.078325**	**0.214203**	**0.365661**

R7 ON RM

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.047958
R Square	0.0023
Adjusted R Square	-0.0149
Standard Error	0.157483
Observations	60

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	0.003316	0.003316	0.133708
Residual	58	1 438444	0.024801	
Total	59	1.44176		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.014455	0.020378	0.709347	0.480951
X Variable 1	**0.078325**	**0.214203**	**0.365661**	**0.715949**

R8 ON RM

Regression Statistics	
Multiple R	0.205741
R Square	0.04233
Adjusted R Square	0.025818
Standard Error	0.088736
Observations	60

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	0.020186	0.020186	2.563632
Residual	58	0.456697	0.007874	
Total	59	0 476883		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0.00483	0.011482	-0.42039	0.675754
X Variable 1	0.19325	0.120696	1.601134	0.11478

R9 ON RM
SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.188744
R Square	0.035624
Adjusted R Square	0.018997
Standard Error	0.19632
Observations	60

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	0.082577	0.082577	2.142532
Residual	58	2.235416	0.038542	
Total	59	2.317993		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.001546	0.025404	0.06087	0.951672
X Variable 1	-0.39086	0.267028	-1.46374	0.148664

R10 ON RM

Regression Statistics	
Multiple R	0.048666
R Square	0.002368
Adjusted R Square	-0.01483
Standard Error	0.274349
Observations	60

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	0.010364	0.010364	0.137695
Residual	58	4.3655	0.075267	
Total	59	4.375864		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.011446	0.035501	0.322409	0.748302
X Variable 1	0.138469	0.37316	0.371073	0.711935

R11 ON RM

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.030675
R Square	0.000941
Adjusted R Square	-0.01628
Standard Error	0.342129
Observations	60

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	0.006394	0.006394	0.054628
Residual	58	6.789046	0.117053	
Total	59	6.79544		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.030253	0.044271	0.683353	0.497105
X Variable 1	0.108765	0.465353	0.233725	0.816021

R12 ON RM

Regression Statistics	
Multiple R	0.210522
R Square	0.04432
Adjusted R Square	0.027842
Standard Error	0.084335
Observations	60

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	0.019131	0.019131	2.689753
Residual	58	0.412523	0.007112	
Total	59	0.431654		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0.00429	0.010913	-0.39344	0.695436
X Variable 1	0.18813	0.11471	1.640047	0.106409

R13 ON RM

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.030675
R Square	0.000941
Adjusted R Square	-0.01628
Standard Error	0.342129
Observations	60

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	0.006394	0.006394	0.054628
Residual	58	6.789046	0.117053	
Total	59	6.79544		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.030253	0.044271	0.683353	0.497105
X Variable 1	0.108765	0.465353	0.233725	0.816021

R14 ON RM

Regression Statistics	
Multiple R	0.210522
R Square	0.04432
Adjusted R Square	0.027842
Standard Error	0.084335
Observations	60

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	0.019131	0.019131	2.689753
Residual	58	0.412523	0.007112	
Total	59	0.431654		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0.00429	0.010913	-0.39344	0.695436
X Variable 1	0.18813	0.11471	1.640047	0.106409

R15 ON RM

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.030675
R Square	0.000941
Adjusted R Square	-0.01628
Standard Error	0.342129
Observations	60

ANOVA

	df	*SS*	*MS*
Regression	1	0.006394	0.006394
Residual	58	6.789046	0.117053
Total	59	6.79544	

	Coefficients	*Standard Error*	*t Stat*
Intercept	0.030253	0.044271	0.683353
X Variable 1	0.108765	0.465353	0.233725

R16 ON RM

Regression Statistics	
Multiple R	0.210522
R Square	0.04432
Adjusted R Square	0.027842
Standard Error	0.084335
Observations	60

ANOVA

	df	*SS*	*MS*
Regression	1	0.019131	0.019131
Residual	58	0.412523	0.007112
Total	59	0.431654	

	Coefficients	*Standard Error*	*t Stat*
Intercept	-0.00429	0.010913	-0.39344
X Variable 1	0.18813	0.11471	1.640047

R17 ON RM

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.251852
R Square	0.063429
Adjusted R Square	0.047282
Standard Error	0.396111
Observations	60

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	0.616326	0.616326	3.928056
Residual	58	9.10041	0.156904	
Total	59	9.716736		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.047555	0.051256	0.927789	0.357362
X Variable 1	1.067819	0.538777	1.981932	0.052232

R18 0N RM

Regression Statistics	
Multiple R	0.124349
R Square	0.015463
Adjusted R Square	-0.00151
Standard Error	0.158628
Observations	60

ANOVA

	df	*SS*	*MS*	*F*
Regression	1	0.022921	0.022921	0.910917
Residual	58	1.459439	0.025163	
Total	59	1.48236		

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.007857	0.020526	0.382789	0.703276
X Variable 1	0.205926	0.21576	0.954419	0.343832

APPENDIX D

A REPRODUCTION OF THE COMPUTER PRINTOUTS FOR THE MS-EXEL ANALYSIS FOR THE DIFFERENCES BETWEEN ACTUAL AND PREDICTED PRICES USING THE MARKET MODEL

B/BOND(R1)		G. WILLIAMSON(R2)		KAKUZI(R3)	
Mean	-16.31	Mean	-8.86833	Mean	-13.105
Standard Error	5.445789	Standard Error	3.409998	Standard Error	5.02719189
Median	-21.32	Median	-6.02	Median	-18.595
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	13.3394	Standard Deviation	8.352756	Standard Deviation	12.314055
Sample Variance	177.9397	Sample Variance	69.76854	Sample Variance	151.63595
Kurtosis	-2.15002	Kurtosis	-0.7562	Kurtosis	3.33404419
Skew ness	0.598367	Skew ness	-0.8765	Skew ness	1.8466202
Range	28.7	Range	21.48	Range	32.37
Minimum	-28.39	Minimum	-21.87	Minimum	-22.01
Maximum	0.31	Maximum	-0.39	Maximum	10.36
Sum	-97.86	Sum	-53.21	Sum	-78.63
Count	6	Count	6	Count	6
Confidence Level(95.0%)	13.99882	Confidence Level(95.0%)	8.765666	Confidence Level(95.0%)	12.922787

DIAMOND TRUST(R5)		*NATION MEDIA(R6))*		*STANDARD NEWSPAPER(R7)*	
Mean	-0.32667	Mean	-22.64	Mean	-3.1483333
Standard Error	1.112914	Standard Error	4.715402	Standard Error	1.34747521
Median	-0.045	Median	-23.54	Median	-2.855
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	2.726072	Standard Deviation	11.55033	Standard Deviation	3.30062671
Sample Variance	7.431467	Sample Variance	133.4101	Sample Variance	10.8941367
Kurtosis	-1.28372	Kurtosis	-2.62353	Kurtosis	0.58328247
Skew ness	-0.32904	Skew ness	0.133001	Skew ness	-0.9392986
Range	7.09	Range	26.55	Range	8.98
Minimum	-4.19	Minimum	-35.05	Minimum	-8.72
Maximum	2.9	Maximum	-8.5	Maximum	0.26
Sum	-1.96	Sum	-135.84	Sum	-18.89
Count	6	Count	6	Count	6
Confidence Level(95.0%)	2.860832	Confidence Level(95.0%)	12.12131	Confidence Level(95.0%)	3.46378964

SASINI(R4)		C.F.C BANK(R9)		B.A.T (R10)	
Mean	-6.80833	Mean	-0.675	Mean	-11.9967
Standard Error	1.579011	Standard Error	0.748446	Standard Error	6.13698
Median	-7.905	Median	-0.57	Median	-17.045
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	3.867772	Standard Deviation	1.833311	Standard Deviation	15.03247
Sample Variance	14.95966	Sample Variance	3.36103	Sample Variance	225.9751
Kurtosis	2.976856	Kurtosis	1.748548	Kurtosis	1.951817
Skew ness	1.502411	Skew ness	-1.09723	Skew ness	1.383961
Range	11.32	Range	5.28	Range	42.31
Minimum	-10.96	Minimum	-3.9	Minimum	-27.25
Maximum	0.36	Maximum	1.38	Maximum	15.06
Sum	-40.85	Sum	-4.05	Sum	-71.98
Count	6	Count	6	Count	6
Confidence Level(95.0%)	4.058971	Confidence Level(95.0%)	1.923939	Confidence Level(95.0%)	15.77558

BARCLAYS BANK(R8)		*K.P.L.C(R13)*		*TOTAL KENYA(R14)*	
Mean	-6.20833	Mean	6.253333	Mean	-24.4233
Standard Error	4.423467	Standard Error	2.513361	Standard Error	9.145212
Median	-10.235	Median	4.345	Median	-16.61
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	10.83524	Standard Deviation	6.156452	Standard Deviation	22.4011
Sample Variance	117.4024	Sample Variance	37.90191	Sample Variance	501.8095
Kurtosis	2.215025	Kurtosis	4.666211	Kurtosis	-2.00234
Skew ness	1.518874	Skew ness	2.084739	Skew ness	-0.64633
Range	29.93	Range	16.97	Range	49.36
Minimum	-16.34	Minimum	1.42	Minimum	-52.67
Maximum	13.59	Maximum	18.39	Maximum	-3.31
Sum	-37.25	Sum	37.52	Sum	-146.54
Count	6	Count	6	Count	6
Confidence Level(95.0%)	11.37087	Confidence Level(95.0%)	6.46079	Confidence Level(95.0%)	23.50848

BAMBURI(R11)	
Mean	-1.79833
Standard Error	0.322102
Median	-1.77
Mode	-1.77
Standard Deviation	0.788985
Sample Variance	0.622497
Kurtosis	-1.32773
Skew ness	-0.10575
Range	2.05
Minimum	-2.85
Maximum	-0.8
Sum	-10.79
Count	6
Confidence Level(95.0%)	0.827987

E.A.B.L(R12)	
Mean	-0.875
Standard Error	0.989447
Median	-0.125
Mode	#N/A
Standard Deviation	2.42364
Sample Variance	5.87403
Kurtosis	-2.04617
Skew ness	-0.52222
Range	5.56
Minimum	-4.19
Maximum	1.37
Sum	-5.25
Count	6
Confidence Level(95.0%)	2.54345

K.C.B(R16)	
Mean	-6.93
Standard Error	2.236438
Median	-9.74
Mode	#N/A
Standard Deviation	5.478131
Sample Variance	30.00992
Kurtosis	1.847966
Skew ness	1.582878
Range	14.06
Minimum	-11.03
Maximum	3.03
Sum	-41.58
Count	6
Confidence Level(95.0%)	5.748937

STANDARD BANK(R15)	
Mean	-0.41
Standard Error	4.302646
Median	-4.485
Mode	#N/A
Standard Deviation	10.53929
Sample Variance	111.0766
Kurtosis	4.091661
Skew ness	1.987239
Range	27.49
Minimum	-7.4
Maximum	20.09
Sum	-2.46
Count	6
Confidence Level(95.0%)	11.06028

CAR&GENERAL(R17)		*I.C.D.C(R18)*	
Mean	-1.61	Mean	-4.86833
Standard Error	**0.619279**	**Standard Error**	**1.308512**
Median	-1.135	Median	-4.26
Mode	**#N/A**	**Mode**	**#N/A**
Standard Deviation	1.516918	Standard Deviation	3.205186
Sample Variance	**2.30104**	**Sample Variance**	**10.27322**
Kurtosis	4.626794	Kurtosis	2.123005
Skew ness	-2.09182	Skew ness	-0.69451
Range	**4.06**	**Range**	**9.86**
Minimum	-4.6	Minimum	-10.32
Maximum	**-0.54**	**Maximum**	**-0.46**
Sum	-9.66	Sum	-29.21
Count	6	Count	6
Confidence Level(95.0%)	**1.591905**	Confidence Level(95.0%)	**3.363631**

APPENDIX E

A REPRODUCTION OF THE COMPUTER PRINTOUTS FOR THE MS-EXEL ANALYSIS FOR THE DIFFERENCES BETWEEN ACTUAL PRICES AND THOSE PREDICTED USING THE DIVIDEND DISCOUNT MODEL

BROOKE BOND(R1)		*G.WILLIAMSON(R2)*		*KAKUZI(R3)*	
Mean	**18.805**	**Mean**	**32.83333**	**Mean**	**23.29333**
Standard Error	1.893436	Standard Error	4.782551	Standard Error	2.733987
Median	**18.3**	**Median**	**36.055**	**Median**	**22.925**
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	**4.637951**	**Standard Deviation**	**11.71481**	**Standard Deviation**	**6.696873**
Sample Variance	21.51059	Sample Variance	137.2368	Sample Variance	44.84811
Kurtosis	-1.92304	Kurtosis	-1.15016	Kurtosis	-1.22557
Skew ness	**0.192225**	**Skew ness**	**-0.67498**	**Skew ness**	**0.253304**
Range	11.15	Range	29.9	Range	17.44
Minimum	**13.31**	**Minimum**	**15.3**	**Minimum**	**15.29**
Maximum	24.46	Maximum	45.2	Maximum	32.73
Sum	112.83	Sum	197	Sum	139.76
Count	**6**	**Count**	**6**	**Count**	**6**
Confidence Level(95.0%)	4.867223	Confidence Level(95.0%)	12.29392	Confidence Level(95.0%)	7.027926

SASINI(R4)		*DIAMOND TRUST(R5)*		*NATION MEDIA(R6)*	
Mean	23.29333	Mean	9.115	Mean	21.25333
Standard Error	**2.733987**	**Standard Error**	**1.23765**	**Standard Error**	**3.375549**
Median	22.925	Median	9.685	Median	22.595
Mode	**#N/A**	**Mode**	**#N/A**	**Mode**	**#N/A**
Standard Deviation	6.696873	Standard Deviation	3.031612	Standard Deviation	8.268373
Sample Variance	44.84811	Sample Variance	9.19067	Sample Variance	68.36599
Kurtosis	**-1.22557**	**Kurtosis**	**4.681117**	**Kurtosis**	**0.942808**
Skew ness	0.253304	Skew ness	-2.07296	Skew ness	-0.89171
Range	**17.44**	**Range**	**8.27**	**Range**	**23.67**
Minimum	15.29	Minimum	3.14	Minimum	7.29
Maximum	32.73	Maximum	11.41	Maximum	30.96
Sum	**139.76**	**Sum**	**54.69**	**Sum**	**127.52**
Count	6	Count	6	Count	6
Confidence Level(95.0%)	7.027926	Confidence Level(95.0%)	3.181476	Confidence Level(95.0%)	8.677111

STANDARD N.PAPER(R7)		BARCLAYS BANK(R8)		C.F.C(R9)	
Mean	2.941667	Mean	18.70333	Mean	3.79
Standard Error	0.367082	Standard Error	3.204499	Standard Error	0.780893
Median	2.94	Median	19.34	Median	3.65
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	0.899164	Standard Deviation	7.849386	Standard Deviation	1.912789
Sample Variance	0.808497	Sample Variance	61.61287	Sample Variance	3.65876
Kurtosis	-1.56209	Kurtosis	0.509312	Kurtosis	-1.31814
Skew ness	-0.05623	Skew ness	0.30368	Skew ness	0.218246
Range	2.32	Range	22.88	Range	5.11
Minimum	1.75	Minimum	8.11	Minimum	1.39
Maximum	4.07	Maximum	30.99	Maximum	6.5
Sum	17.65	Sum	112.22	Sum	22.74
Count	6	Count	6	Count	6
Confidence Level(95.0%)	0.943614	Confidence Level(95.0%)	8.237412	Confidence Level(95.0%)	2.007345

B.A.T(R10)		BAMBURI(R11)		E.A.B.L(R12)	
Mean	-6.96667	Mean	8.695	Mean	12.95333
Standard Error	5.398001	Standard Error	1.805833	Standard Error	2.373682
Median	-12.18	Median	8.85	Median	15.575
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	13.22235	Standard Deviation	4.423369	Standard Deviation	5.814309
Sample Variance	174.8305	Sample Variance	19.56619	Sample Variance	33.80619
Kurtosis	3.629319	Kurtosis	-1.03221	Kurtosis	2.524743
Skew ness	1.862282	Skew ness	-0.05868	Skew ness	-1.67309
Range	36.35	Range	11.88	Range	14.86
Minimum	-17.97	Minimum	2.72	Minimum	2.15
Maximum	18.38	Maximum	14.6	Maximum	17.01
Sum	-41.8	Sum	52.17	Sum	77 72
Count	6	Count	6	Count	6
Confidence Level(95.0%)	13.87598	Confidence Level(95.0%)	4.642033	Confidence Level(95.0%)	6.101733

K.P.L.C(R13)		*TOTAL KENYA(R14)*		*STANDARD BANK(R15)*	
Mean	10.815	Mean	18.63333	Mean	2.093333
Standard Error	**3.213095**	**Standard Error**	**3.028663**	**Standard Error**	**5.180585**
Median	7.445	Median	19.41	Median	-2.715
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	**7.870443**	**Standard Deviation**	**7.418678**	**Standard Deviation**	**12.68979**
Sample Variance	61.94387	Sample Variance	55.03679	Sample Variance	161.0307
Kurtosis	**-1.72027**	**Kurtosis**	**0.436566**	**Kurtosis**	**4.873797**
Skew ness	0.674947	Skew ness	-0.74204	Skew ness	2.168402
Range	**18.65**	**Range**	**20.83**	**Range**	**32.96**
Minimum	2.24	Minimum	6.46	Minimum	-5.67
Maximum	20.89	Maximum	27.29	Maximum	27.29
Sum	**64.89**	**Sum**	**111.8**	**Sum**	**12.56**
Count	6	Count	6	Count	6
Confidence Level(95.0%)	8.25951	Confidence Level(95.0%)	7.785413	Confidence Level(95.0%)	13.3171

K.C.B(R16)		*CAR&GENERAL(R17)*		*I.C.D.C(R18)*	
Mean	9.668333	Mean	4.678333	Mean	14.51
Standard Error	**1.711242**	**Standard Error**	**0.786602**	**Standard Error**	**3.390638**
Median	8.825	Median	5.015	Median	12.82
Mode	#N/A	Mode	#N/A	Mode	#N/A
Standard Deviation	**4.19167**	**Standard Deviation**	**1.926774**	**Standard Deviation**	**8.305822**
Sample Variance	17.5701	Sample Variance	3.712457	Sample Variance	68.98668
Kurtosis	**-0.36047**	**Kurtosis**	**-0.67579**	**Kurtosis**	**-2.20984**
Skew ness	0.514247	Skew ness	-0.69728	Skew ness	0.363645
Range	**11.66**	**Range**	**4.91**	**Range**	**19.24**
Minimum	4.39	Minimum	1.66	Minimum	6.66
Maximum	16.05	Maximum	6.57	Maximum	25.9
Sum	**58.01**	**Sum**	**28.07**	**Sum**	**87.06**
Count	6	Count	6	Count	6
Confidence Level(95.0%)	4.398881	Confidence Level(95.0%)	2.022022	Confidence Level(95.0%)	8.716411

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