The Reliability of Dividend Discount Model in Valuation of Common Stock at the Nairobi Stock Exchange

Tobias Olweny
Department of Commerce and Economics, JKUAT-Kenya
Email: toolweny@yahoo.com

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.

Keywords: Dividend discount model, stock valuation, stock exchange

1.0 Introduction

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

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. 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. 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 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.

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

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:

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

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.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. 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)

Systematic risk = $\frac{\text{Cov (j, m)}}{\delta^2 m}$ …….... (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

Therefore: Bj = $\frac{\text{Cov (j, m)}}{\delta^2}$ …… (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 and 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 sec urity. 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 + $\frac{\text{Cov (Rm,Rj) (E (Rm) – Rf) …}}{\delta^2 m}$ …… (10)

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

E(Rj) = Rf + λCov (Rm,Rj)…….(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:

$E(Rj) = \lambda + BjRm + E_1$……..(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 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 along term is appropriate (Reilly & Brown 2000). Earnings per share can be used when the aggregate market is not either seriously overvalued or under valued, implying that markets are slow or inefficient processors of information.

1.2 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).

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 to others.

1.3 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. In a world of no taxes, Miller and Modigliani (1961) proved that payout 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 dividend 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. 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.

1.4 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 Jafee (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.

2.0 Research Methodology

2.1 Population

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

2.2 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. 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.

2.3 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.

2.4 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 $Ø_{t-1}$ = the set of information available at time t-1, which is relevant for determining security prices at t-1.$Ø^m_{t-1}$ = the set of information that the market uses to determine security prices at t-1. Thus $Ø^m_{t-1}$ is a subset of $Ø_{t-1}$;$Ø^m_{t-1}$ contains at most the information in $Ø_{t-1}$, but it could be less.Pj, 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.fm(P_1t+*T*….Pn, t+*T*/ $Ø^m_{t-1}$) = The joint probability density function for security prices at time t+*T*(*T*>= 0) assessed by market at time t-1 on the basis of the information $Ø^m_{t-1}$.f(P_1 , t+*T*,….,Pn, t+*T*/ $Ø_{t-1}$) = the "true" joint probability density function for the security prices at time t+*T*(*T*>= 0) that is "implied by" the information $Ø_{t-1.}$"
>
> (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/ $Ø_{t-1}$),is also multivariate normal (Fama,1976).If a bivariate normal distribution is obtained from the multivariate function, a linear regression equation results:

$$E(Rjt/Rmt) = a + Bj\ Rmt \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (15)$$

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

$$a = E(Rjt\ Ø_{t-1}) - BjE(Rmt)/ Ø_{t-1} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (16)$$

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 = $(P_jt - P_j,t-1)$……(17)
(Bjt–1)

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

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

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

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

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

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

Therefore $Bj = \frac{Sjm}{S^2(Rmj)}$ ……(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:-

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

Where Rm = monthly market returns at period t,Mt = market index at period t and 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

3.0 Data Analysis and Findings

3.1The 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. I, 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 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

MONTHS / COMPANY		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

MONTHS / COMPANY		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

3.3 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. 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 expectations 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).

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. 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 mispricing, 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 mispricing superior to any single model, an example of such is Franklin Portfolio Associates (FPA) Model, used in Boston.

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		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

4.0 Conclusion

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.

4.1 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.

References

Aharony, J and Swary,I.,"*Quarterly Dividend and Earnings Announcements and Stockholders' Returns: An Empirical Analysis*" Journal of Finance, March 1980 pp.1-12.

Asquith, P. and Mullins, D., "*The Impact of Initiating Dividend Payments on Shareholders' Wealth*" Journal of Business, January 1983 pp.77-96.

Barclay,M. and Smith,C., "*Corporate Payout Policy: Cash Dividends Versus Open-Market Repurchases*" Journal of Financial Economics, October 1988 pp.61-82.

Black, F., "*Capital Market Equilibrium with Restricted Borrowing"* Journal of Business, July 1972, pp. 444 – 455.

……., "*The Dividend Puzzle*" Journal of Portfolio Management,Winter 1976 pp. 5-8.

Black, F and Scholes,M.,"*The Effects of Dividend Yield and Dividend Policy on Common Stock Prices and Returns*".Journal of Financial Economics, May 1974 pp. 1-22.

Brennan,M.J., "*Taxes, Market Valuation and Corporation Financial Policy*" National Tax Journal, December 1970 pp.417-427.

……..…,"*An Approach to The Valuation of Uncertain Streams "* Journal of Finance June 1973 pp.61 – 74.

Brickley, J "*Shareholder Wealth, Information Signaling and the Specially Designated Dividend : An. Empirical study* " Journal of Financial Economics, June 1983 pp.187-210

Brigham,E.F. and Gapenski L.C. ,Intermediate Financial management 5th Edition, Dryden Press, 1996.

Chen,N.,Roll,R.,&Ross,A.S, *"Economic Forces and the Stock Market* Journal of Business July 1986 pp.383-403.

Craig, D. Johnson G. and Joy M. "*Accounting Methods and P/E Ratios* Financial Analysts Journal, March April 1987 pp. 41-45.

Elton, B.J. & Grubber, M.J., "*Marginal Stockholder Tax Rates and the Clientele Effect*" Review of Economics and Statistics June 1970 pp.68-74.

……., Modern Portfolio Theory and Investment Analysis 5th edition John Wiley & Sons,1995.

Fama, E.F., "*Efficient Capital Markets: A Review of Theory and Empirical Work* " Journal Of Finance May 1970 pp. 383 – 417.

……., ". *Efficient Capital Markets: II*" Journal of Finance December 1991 pp. 1575-1617.

……, Foundations of Finance, Basic Books Inc. 1976.

Fuller, R.J. and Chi-Cheng H., "*A Simplified Common Stock Valuation Model*" Financial Analysts Journal September – October 1984. pp. 49-56.

Gordon, M "*Optimal Investment and Financing Policy*" Journal of Finance May 1963 pp. 264 – 272.

Harmbuger,M.J.& Kochin L.A., *"Money and Stock Prices: The Channels of Influence.* Journal of Finance May 1972 pp.231-249.

Healy.P.M, and K.G, Palepu "*Earnings Information Conveyed by Dividend Initiations and Omissions*" Journal of Financial Economics September 1988 pp.149-175.

Homa,K.E & Jaffee,D.M.,"*The Supply of Money and Common Stock Prices"* Journal of Finance ,December 1971 pp.1045-1066.

Jensen, M & Bennington G.A.," *Random Walks and Technical Theories*: *Some Additional Evidence*". Journal of Finance May 1970 pp. 469 – 481.

Kwan, C.,"*Efficient Market Tests of the Information Content of Dividend Announcements:Critique and Extensions*" Journal of Financial and Quantitative Analysis June 1981 pp.193-206.

Kerandi, A.M., "Testing the Predictive Ability of the Dividend Valuation Model on Ordinary Shares" Unpublished MBA Project,University of Nairobi, 1993

Lewellen, W., Stanley.K, Lease.R. & Schlarbaum,G., *"Some Direct Evidence on Dividend Clientele Phenomenon"* Journal of Finance December 1978pp.1385-99.

Lintner, J. "*Optimal Dividends and Corporate Growth Under Uncertainty "* Quarterly Journal of Economics, Feb. 1964 pp .49-95.

Long,J., *"The Market Valuation of Cash Dividends: A Case to Consider"* Journal of Financial Economics June 1978 pp.235-264

Michaud, R.O., &Davis, P.L., "*Valuation Model Bias and the Scale Structure of Dividend Discount Returns*" Journal of Finance, May 1982 pp.563-573.

Miller,M.H& Modigiliani, F.,"*Dividend Policy,Growth and the Valuation of Shares"* Journal of Business October 1961 pp.411-33.

Pettit,R.R., *"Dividend Announcements, Security Performance, and Capital Market Efficiency"* Journal of Finance December 1972 pp.993-100

Reilly,F.K&Brown,K.C, Investment Analysis and Portfolio Management 6th Edition 2000 Dryden Press Philadelphia.

Sawaya,A.N,"Beta Coefficients as a Measure of Risk of the Common Shares Listed at the Nairobi Stock Exchange.", Unpublished MBA Project, University of Nairobi,2000.

Sharpe,W.F,Gordon,J.A&Jeffery,V.B ,Investments 6th Edition 1999 Prentice Hall

Sorensen, E.H & Williamson P.A. ,"*Some Evidence on The Values of Dividends Discount Models*" Financial Analysts JournalNov.-Dec.1985 pp. 60-69

Van Horne ,J.C., Financial Management and Policy 11th Edition. Prentice Hall 2001.

Watts,R.*,"The Information Content of Dividends"* Journal of Business, April 1973pp.191-211.

Weston, J.F., &Copeland, T.E, Managerial Finance 9th Edition. Dryden Press 1992.

Wilkes, F.M.*,"Dividend Policy and Investment Appraisal in Imperfect Markets"*
Journal of Business Finance and Accounting, Summer 1977 pp.187-199.