FUNDAMENTAL ACCOUNTING VARIABLES AND STOCK RETURN: EVIDENCE FROM NAIROBI STOCK EXCHANGE

BY:

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DECLARATION

This Management Research Project is my original work and has not been submitted for degree in any other university.

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This MBA Research Project has been submitted for examination with my approval as supervisor

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DEDICATION

To my revered mother, Mary Wanjiku Wang'ombe, who knew the value and importance of education and hard work and who instilled the same in me in my formative years.

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GLOSSARY OF ABBREVIATIONS AND CODES

COMPANY	CODE
Brooke Bond Kenya Limited	1
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CMC Holdings Limited	5
Kenya Airways Limited	6
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Nation Media Group Limited	8
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Icdci Limited	14
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BTM - Book to Market Value of Equity

Size (Market value of Equity);

MVE – Market Value of Equity

NSE – Nairobi Stock Exchange

CAPM – Capital Asset Pricing Model

CRSP – Center for Research on Security Prices

CFO/MVE – Cash flow from Operations to

DER – Debt to Equity Ratio

DY – Dividend Yield

APT- Arbitrage Pricing Theory

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ABSTRACT

Every investor would like to feel that he/she has obtained the best deal for his investment; in his buy decision he would like to feel that he has not paid more than the investment is worth, while in the sell decision he would wish to be assured that he has not sold his investment for less. This can only be possible if there is an appropriate asset pricing model.

Valuation of financial assets is therefore at the core of finance both in academia and practice. The Capital Asset Pricing Model has been one of the most dominant asset pricing concepts. However the assumptions that underpin this model have been challenged by a number of studies which found other variables/factors that explained stock returns better than beta. These studies have been conducted in both developed and emerging markets.

This research sought to find out the factors that explain stock return at the Nairobi Stock Exchange in view of the findings of past studies that there exists factors that outperform beta in explaining the stock returns. The study examined empirically the relationship between fundamental accounting variables and common stock returns at the Nairobi Stock Exchange for the period 2000 to 2007. It examined the explanatory (predictive) power of five fundamental accounting variables: Market Value of Equity (MVE), Book to Market Value of equity (BTM), Debt to Equity ratio (DER), Cash Flow from Operation to Size (CFO/MVE) and Dividend Yield (DY). It applied Univariate portfolio analysis and the Fama and Macbeth (1973) regressions to test this predictive power.

Findings from the study show that Market Value of Equity, Book to Market Value of Equity, Debt to Equity ratio and Dividend Yield possess significant explanatory power of common stock returns. Of the four variables Dividend Yield possess the highest explanatory power. The study did not find any significant explanatory power of Cash Flow from Operations to Size ratio.

This led to the conclusion that stock of small firms provide greater returns than those of large firms and that investors at the Nairobi Stock Exchange consider firms with more debt as riskier than firms with low debt and therefore require additional return to compensate for this additional risk. The study found the results consistent with a number of past studies in both developed and emerging markets.

CHAPTER ONE

INTRODUCTION

1.1 Background

An investment is broadly defined as the sacrifice of current shillings for future shillings. Two attributes are involved: time and risk. Investment implies that the sacrifice takes place today and is certain while the reward comes later, if at all, and the magnitude is generally uncertain. In some cases time predominates (for instance investment in government bonds). In other cases risk is the dominant attribute (for instance call options). Yet in others, both time and risk are important (for instance investment in shares). Investments can be made in real assets (such as real estates, commercial goods, precious metal etc) or financial assets (such as government and corporate bonds, ordinary and preference shares, derivatives etc).

Financial assets are paper or electronic claims on the earnings of the issuer, be it a Corporation or Government. Investors value assets based on the earnings they anticipate from those investments. They have expectations on the value of their investment that enables them to make decisions on whether to buy, sell or hold particular investments. According to Reily and Brown (1997) the objective of the investors is mainly to maximize returns on their investments while minimizing risk. To be able to make these investment decisions, investors need to have a basis of pricing assets that ensures that they do not pay more than what they should or that they do not sell their holdings for less.

Pricing of capital asset is therefore at the heart of finance and investment. The capital asset pricing model (CAPM) has been a predominant model in finance literature on asset pricing. The primary implication of the capital asset pricing model by Sharpe (1964), Lintner (1965) and Black (1972) is the mean-variance efficiency of the market portfolio. This means that there exists a positive linear relation between expected returns and markets betas, and variables other than beta should not have power in explaining the cross-section of expected returns.

Contrary to the predictions of the capital asset pricing model, empirical studies have found that idiosyncratic factors have significant explanatory power for average stock returns, while beta has little power. The most prominent of these factors are firm size, book-to-market equity (B/V) and earnings-price (E/P) ratio. Banz (1981), Reinganum (1981), and Keim (1983), find that small (large) firms have greater (smaller) returns than those predicted by the CAPM model. Jegadeesh (1992) argues that beta does not explain the cross-sectional difference in average returns when the test portfolios are constructed so that the correlations between beta and firm size are small.

The findings of cross-sectional behavior of stock returns to market risk and firm specific characteristics that contravene the CAPM specifications are not limited to developed markets (Fama and French [1992] in US and Chui and Wei [1998] and Daniel et al [1997] in Japan) only. Chui and Wei (1998) found no evidence in support of a positive relationship between market beta and stock returns in the five emerging markets in the Pacific-Basin (Hong Kong, Korea, Malaysia, Taiwan and Thailand). On the other hand, they found strong size effect in all markets except in Taiwan and significant book-to-market effect in Hong Kong, Korea and Malaysia. This provides motivation to study the Kenya market, which is an emerging market in order to find out the determinants of stock returns and potential trading strategies.

Understanding the stock returns behavior is important at this point in time when a great number of Kenyans have taken a keen interest and are actively participating in the stock market. For instance, the Kengen Limited initial public offer saw an estimated 240,000 new investors in the market. The market has also recorded substantial growth from a market capitalization of shs.101 billion in December 2000 to an impressive market capitalization of shs.791 billion as at December 2006. The period suggested for this study is one characterized by economic recovery. According to figures released by the Ministry of Planning and Development, the economy grew by 0.5 % in 2002, 2.9% in 2003, 5.1% in 2004, 5.7% in 2005 and 6.1% in 2006. As the economy continues to gain momentum the need for investment funds will most likely increase. The role of the Nairobi Stock

Exchange as an avenue to improve access to funds will be put in the spotlight; the allocation efficiency of the exchange will therefore be critical.

There are both full-fledged studies on single idiosyncratic factor(s) and stock returns as well as studies that focus on a number of factors together. For instance Bhandari (1988) studied the explanatory power of debt to equity ratio with respect to stock returns for the US market for the period 1948 to 1979 while Nicholson (1960) studied the relationship between Price-Earning multiples and stock returns. Aggrawal, Hiraki and Rao (1988) studied the earning to price ratio effect for firms listed in the Tokyo Stock Exchange for the period 1974 and 1983. Kim (1997) examines several factors together (Beta, Firm size, book to market ratio and earnings to price) for the US market. While in Kenya Marangu (2005) studied the relationship between price to book, dividend payout ratio, return on equity, return per share, dividend per share and growth after tax for firms quoted at the Nairobi Stock Exchange for the period 1991 to 2003. Odhiambo (2005) follows Timo et al (1997) methodology and analyzes the extent of correlation between accounting ratios and the market based performance measures at the Nairobi Stock Exchange for the period 1996 to 2001.

1.2 Statement of the Research Problem

Investors must contend with the issue of how to value their investment when making the buy, sell or hold decisions. When making an investment what basis do they use to make the decisions, is it the size of the firm, earnings, leverage, book to market value or cash flow or is it a set of these variables? Or are these variables just proxy for factors omitted from the capital asset pricing model? Given that beta does a poor job of explaining average returns what other variables do a better job?

As observed in the introduction above, capital asset pricing model (CAPM) pricing paradigm has been challenged by a number of studies in both developed and emerging markets. In these studies the predominant role of beta in pricing of financial assets has been challenged with distinctive factors showing predictive power well above that of

beta. Basu (1977), Jaffe, Keim and Westerfield (1989) and Banz (1981) have demonstrated that the efficient capital market assumptions and the asset valuation model developed thereof do not adequately explain stock returns.

There are a number of studies done in the Nairobi Stock Exchange on the explanatory power of company specific factors (Odhiambo (2005), Oliech (2002), Muthui (2003) and Marangu (2005). There is, of course, the possibility that some other factors omitted from the list of fundamental variables drive stock returns and the variables examined are merely proxy for these omitted factors. There is also the possibility that some factors could be subsumed by others, thereby reducing the set of factors to a limited number.

Given the important role that a capital market plays in the economy, it is crucial to understand the drivers of stock returns in a particular market. It is of great significance to identify the variables affecting stock return and its price in emerging markets such as the Nairobi Stock Exchange. Studies, such as Chan, Hamao and Lakonisok (1991), Abekah (2005) and Rosenberg, Reid and Lanstein (1985) have demonstrated that there exist other variables that outperform stock return predictability of beta.

The study looks at a period characterized by economic recovery and increased investor activity and financial deepening at the Nairobi Stock Exchange. During this period one would expect the increase in both retail and institutional investors to be followed by an increase in the number of investment professionals and advisers and therefore a vigorous analysis - both technical and fundamental. Conducting a study at this point in time is therefore justified as the stock prices are most likely a result of this vigorous scrutiny.

Odhiambo (2005) finds a general association between firm's accounting variables and risk, but finds the same to be structurally unstable and the variables making up this relationship varying over time. The current study intends to expand the number of variables used in the past studies and considers their joint explanatory power. It takes into account the possibility that the relationship found in past studies of the NSE stock return

behavior may be as a result of omitted factors and for this reason it attempts to fill the existing empirical gap.

1.3 Objectives of the Study

This study seeks to establish the relation between common stock returns and the following fundamental accounting variables:

(a) Market Value of Equity

Market Value of equity is used in this study as a proxy for size. The aim of this study was therefore to find out whether investors consider the size of the firm they are investing in when making their investment decision and hence the effect on common stock returns.

(b) Book to Market Value of Equity

The study aimed at finding out whether this variable has any effect on average common stock returns at the Nairobi Stock Exchange as has been documented by several studies in other markets (Stattman [1980], Keim [1988] Rosenberg, Reid and Lanstein [1985]).

(c) Debt to Equity Ratio

The study aimed at establishing whether differences in amount of debt relative to owners' equity (Leverage) between different stocks has any effect on investment decisions and thus common stock returns at the NSE.

(d) Cash flow from operations to Size

This variable was included in the study in place of earnings to price ratio due to the weakness that the later exhibits when used as a predictor variable. The objective was therefore to establish whether investors at the NSE consider the cash flows generated by a firm important in their decision to buy, hold or sell a particular asset. Thus we tested whether this variable has effects on common stock returns.

(e) Dividend Yield

This study used this fundamental variable with the objective of establishing whether it plays any important role in the price of assets at the NSE and hence the expected returns on these assets. Its inclusion follows from the findings of past studies that find varying results for dividend yield's predictive power (Brennan [1970], Black and Scholes[1974] and Rosenberg and Marathe [1978]).

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1.4 Justification for the Study

The findings of this research study will be important and useful to the following groups:

1) Academicians and Researchers:

Extending the stock return– accounting variables literature to the Nairobi Stock Exchange (NSE), an emerging market, is a step forward for academicians and researchers in this region. The findings will guide researchers who may wish to do a similar study in the other East Africa Community Member (EAC) Countries' stock markets due to shared similarities.

2) Investment Practitioners

This study will be of use to investors, money managers, stockbrokers and security analysts since they will get better insights in the selection of the variables and financial ratios to use in investment analysis.

3) Individual, Institutional Investors and the General Public.

This study will enable investors to use the findings hereof to guide them in making sound investment decisions.

4) Practicing Accountants/ Auditors

The findings of this study will underscore the useful role that the financial statements play in the financial system. It will sensitize the professional accounting community in the country to the heavy duty and ethical responsibility that lies on their shoulders to ensure that the statements are prepared in accordance with international accounting and auditing standards.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

An investment is the initial outlay of funds to a set of return generating assets that will be possessed over some future time period. These assets can be real assets or financial assets. Investors value assets based on the earnings they anticipate from those investments. They have expectations on the value of their investment that enables them to make decisions on whether to buy, sell or hold particular assets. The objective of the investor is mainly to maximize returns on their investment while minimizing risk, (Reily and Brown [1997]). Common stocks or ordinary shares are a very popular form of investment used by many investors the world over.

Pricing of capital assets (for instance common stocks) is therefore a very critical area in finance and investment, both for the practitioner as well as the academia. Two theories on capital asset pricing have occupied literature for a long time. Mean-Variance analysis approach of Markowitz (1952, 1959) led to the introduction of the single period mean-variance capital asset pricing model (CAPM) (Treynor [1961], Sharpe [1964], Lintner [1965], Mossin [1966] and Black [1972] while Arbitrage Pricing Theory of Ross (1976a) formed the theoretical basis for the use of multi-factor models in the capital asset pricing.

In the following sections of this chapter, the mean-variance approach to portfolio selection and the single period mean-variance capital asset pricing model are discussed (2.1.1 and 2.1.2). This is followed by a look at factor models, and the Arbitrage Pricing Theory (2.1.3 and 2.1.4). Section 2.2 looks at fundamental variables and asset pricing and the joint explanatory power of fundamental variables. Finally section 2.3 deals with empirical evidence from a number of developed and emerging markets. These empirical studies are on asset pricing models that relate to the context of this research project.

2.1.1 Mean- Variance Theorem

For a portfolio of n assets, mean return is given by:

$$E(R_p) = w_1E(R_1) + w_2E(R_2) + \ldots\ldots + w_nE(R_n) \ldots\ldots\ldots\ldots (1)$$

Where $E(R_p)$ is the expected return on a portfolio, R_i is the return on asset i, and w_i is the weight of assets i in the portfolio, where i=1,2,.....n

The variance of the rate of return on such a portfolio is:

$$\delta^2_p = \Sigma w_i w_j \sigma_{ij}$$

σ_{ij} is the covariance of assets i with asset j, where i,j=1,2,.....n..

Variance of returns on a portfolio may, partly, be eliminated through diversification provided that the returns to these assets are not in perfect positive correlation with each other. Minimizing risk without considering the returns would be a meaningless practice. Decreases in portfolio risk (portfolio variance) imply relative decreases in portfolio return (mean return). The process of diversification enables the reduction of risk with comparatively lower reductions in return. It is this idea of a trade-off between mean return and variance that Markowitz (1952) attempted to make explicit.

Markowitz (1952) points out that, in making portfolio choice, investors are concerned with two parameters, risk and return, and that these two parameters should be measured for the portfolio as a whole. Assuming portfolio variance to be an appropriate measure of risk, he concludes that investors choose portfolios from the set of pareto optimal expected return-variance combinations, referred to as the efficient frontier. Markowitz' theory is concerned mainly with how a risk-return optimizing investor would behave. The implications of the mean-variance approach to portfolio choice were characterized by later studies by Treynor (1961), Sharpe (1964), Lintner (1965), Mossin (1966) and Black (1972).

2.1.2 The Capital Asset Pricing Model

Building on Markowitz (1952) mean-variance to portfolio selection, Sharpe (1964), Lintner (1965) and Mossin (1966) independently developed what has come to be known as the capital asset pricing model (CAPM). Following from the portfolio optimality conditions, the model suggests a positive and linear relationship between expected rate of return and systematic risk (β) measured relative to the portfolio of all marketable securities. The CAPM relationship between the systematic risk (β_i) and the expected return ($E[R_i]$) of security i can be expressed as:

$$E(R_i) = R_f + \beta_i(R_m - R_f) \quad \ldots\ldots(2)$$

In equation (2), R_f is the risk free rate, and R_m is the return on the market portfolio of all marketable securities, which is presumed to be mean-variance efficient. In an empirical setting, equation (2) could be written as:

$$E(R_i) = a_0 + a_1\beta_i$$

If the CAPM holds, a_0 would approximate the risk free rate, which is generally taken as the rate of return on the long-term government bonds, and a_1 would approximate the market risk premium.

Subsequent studies by Black, Jensen, and Scholes (1972), Fama and Macbeth (1973), and Blume and Friend (1973) verified a significant linear relation between average stock returns and estimated betas. However according to these studies, the estimated intercept, a0, was higher, and the estimated slope, a1, was lower than that predicted by the CAPM. This flatter relation was then attributed to the absence of a risk-free security in the market, and deemed consistent with Black's (1972) version of CAPM. Black (1972) shows, under the conditions in which a risk free security does not exist, that the risk free asset is simply replaced by the zero-beta portfolio and the linear relationship between betas and average stock returns gets flatter but remains robust.

CAPM is built on number of simplifying assumptions[1]. In equilibrium, these assumptions imply that all investors choose to hold a combination of risk-free asset and the tangency portfolio. The weights of the risk free asset and the tangency portfolio being determined by investor's risk preference. The tangency portfolio is the market portfolio, which is the portfolio of all traded assets. This further implies that there is a linear relationship between stock betas and expected returns and market betas suffice to explain the cross-sectional variation in expected stock returns. Of these implications, the empirical tests of CAPM has so far centered on the third and forth assumptions, namely, linearity of the relationship between betas and returns, and the sufficiency of betas in explaining the cross-sectional variation in stock returns.

2.1.3 Factor Models

The determination of the parameter values that mean-variance approach to portfolio selection requires, namely, that the mean expected asset returns and covariances among each asset in the market, poses a major difficulty in the application of the theory. As a result, alternative approaches have since been proposed (Davis [2001]), some of these approaches have gained acceptance in finance theory almost as strongly as mean-variance theorem did. Factors models are more appealing because they require much less information compared to mean-variance analysis. Factor models suggests that the randomness displayed by the return on n assets can be traced back to k underlying factors, and that k is considerably small than n. A factor model that relates these factors to individual stock returns leads to greatly simplified covariance matrix, and therefore, to a less problematic estimation of the parameter values required by the models.

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1. The model assumes that there are many investors, each with a wealth that is small compared to the total wealth of all investors and that these investors act as though security prices are unaffected by their own trades. That all investors plan for one identical time period and ignore everything that might happen after the end of the single-period horizon. It further assumes that investments are limited to a universe of publicly traded financial assets, such as stocks and bonds, and a risk free borrowing or lending arrangement. It also assumes that investors pay no taxes on the returns and no transaction costs on trades in securities, that all investors are rational mean-variance optimizers, meaning that they all use the Markowitz portfolio selection model. Finally the model assumes that investors analyze securities in the same way and share the same economic view of the world, and make identical estimates of the probability distribution of future cash flows from investing in the available securities (Bodie, Kane, and Markus [2002]).

Factors models are generally represented in the form:

$R_i = a_i + \Sigma(b_{k,i} f_k) + \varepsilon_i$ ....(3)

In equation (3), constant a_i is the intercept, b_k, are factor loadings of security i for the chosen set of k explanatory factors, f_k are random variables which are hypothesized to explain the variance in the expected stock return, and finally, ε_i is the error term. It is assumed that the expected value of the error term is zero, and that the error is correlated neither with the factors under study, nor the errors of other assets.

One important aspect in the construction of factor models is the selection of factors. Luenberger (1998) classifies factors used in these models in three main groups: extracted factors, external factors, and firm characteristics. Extracted factors are factors derived using the known information about security returns (e.g return on market portfolio). External factors are, as the name implies, variables that are external to the securities being explicitly considered in the model (e.g inflation, exchange rates, consumption-growth etc.). Firm characteristics relate to the characteristics of individual firms, and are mostly expressed in terms of certain accounting figures and financial ratios (e.g earnings-to-price ratio). Arbitrage Pricing Theory (APT) served as an important milestone in the current status of factor models in asset pricing by supplying a sound theoretical basis for how the stock market might work under the assumption of a multi-factor arbitrage-based return-generating model.

2.1.4 Arbitrage Pricing Theory

Arbitrage Pricing Theory (APT) Ross (1976a) begins with the assumption that individuals homogeneously believe that a K-factor linear return-generating model explains the randomness displayed by returns on n assets that constitute the market, where n is significantly greater than k. This model is of the form:

$R_i = E_i + b_{i1} f_1 + b_{i2} f_2 + \ldots b_{ik} f_k + e_i$, $\quad i = 1,2,\ldots k$ ....(4)

In equation (4). E_i is the expected return on asset: b_{ik} are the factor loadings for asset i; and the common factors that are hypothesized to govern the returns on the assets. These factors capture the systematic risk component of the assets. Finally, e_i, is the error term, the risk component idiosyncratic to asset i, or simply the unsystematic risk of asset i, which is ideally uncorrelated with e_j for all i and j, given $i \neq j$. A high correlation between error terms would signal for the existence of additional factors.

If these k factors account for all the risk associated with asset i. E_i will reduce to the expected rate of return for that particular asset. It would then be possible to represent the expected rate of return on individual securities and the k common risk factors as linear combinations of k+1 individual returns, R_i, R_{2m},..... R_{k+1}.

This implies that portfolios of k+1 assets may be so designed that they serve as perfect substitutes, and in the absence of arbitrage, they must be priced equally. This is at the core of the APT: there are only a few systematic components of risk existing in nature. As a consequence, many portfolios are close substitutes and as such, they must have the same value, Roll and Ross (1980).

Roll and Ross (1980) suggest, as a result of empirical tests on returns from 1962 to 1972, that at least three (and probably four) factors govern the assumed linear return generating process. However, the theory does not shed light on what these few systematic risk factors that are common to all assets in the market might be. This reduces the appeal of the model in that it may result in multi-factor models that make use of ad-hoc variables that are not backed up by theory.

APT is an appealing model in that it allows the use of multi-factor models that bring richness to the risk return relationship. The utility assumptions made in the derivation of the model, monotonicity and concavity, are much less constraining than the quadratic utility function assumption of the mean-variance framework. Furthermore APT does not require a mean-variance efficient market portfolio to operate and holds both in the single

–period and multi-period. The result has been a shift in research to multi-factor models based on arbitrage-pricing theory.

Reinganum (1981) finds, after testing for three-, four-, and five factor models that he derived using 30x30 matrices of annual returns that APT fails to account for size effect. However, he also observes that such contradictory results may also stem from a possible poor definition of the stochastic process governing returns, or the inability to diversify idiosyncratic variances, or even the existence of arbitrage opportunities in the US stocks between 1963 and 1978. Chen (1983) on the other hand uses larger covariance matrices 180x10 to define five factors and their loadings, and came up with the result that APT cannot be rejected in favor of any alternative hypothesis and the APT performs very well against CAPM.

Dhrymes, Friend and Gultekin (1984) criticize Roll and Ross methodology and arrive to striking conclusions: (i) analyzing groups of securities lead to flawed results; (ii) It is not possible to test whether a given factor is priced due to the rotation-of-factors problem, i.e the t-tests on individual factor significances are meaningless; and most importantly, (iii) the number of factors depends on the size of the group under study. The retribution to this paper by Roll and Ross (1984) was swift. Roll and Ross argue in their reply that t-tests are perfectly valid and that it is natural for the number of factors to depend on group size as larger groups would have more chance to capture factors that are missed by smaller groups.

Cho et al (1984) state that although the Roll and Ross methodology tends to overstate the number of factors, this tendency cannot be held accountable for the large number of factors found in their original article. Chen et al (1984) performed an interesting research on APT in which the three factors reported significant by their factor analysis are linked to the overall economic activity, energy costs, and interest rates. Lehmann and David (1988) conduct yet another empirical test of APT and find that an APT model does a better job in explaining the premia related to own variance and dividend yield than the CAPM. Both models, however, fail to account for the size premium.

The most severe criticisms of APT models have come from Shanken (1985,1992) and Reisman (1992). In these papers, it was mathematically shown that, as long as there exists an approximate factor structure, almost any set of factors could serve as the benchmark in an approximate APT expected return relation.

2.2 Fundamental variables and Asset Pricing

Early cross-sectional studies of stock returns for instance Nicholson (1960) did not receive a great deal of attention, due to the small samples used to conduct the empirical tests. It was not until the CRSP (Center for Research on Security Prices) and Compustat databases became available that researchers could construct samples large enough (and of sufficient quality) to produce reliable results. Consequently, for a few years after the development of CAPM, there was no reliable way to test the model's predictions against other variables like book to market equity or earnings to price ratio. Subsequent to these developments the CAPM has been called into question by a number of studies (Basu [1977], Basu [1983] Jaffee, Keim and Westerfield [1989]) which have documented that several macroeconomic and company specific variables had significant explanatory power over that of beta. These findings were in sharp contrast with one of the main premises of the CAPM.

On one hand, macroeconomic variables such as inflation (Fama and Schwert (1977), exchange rate (Geske and Roll [1983]), nominal interest rate (Chen, Roll, and Ross [1986]) and the level of real economic activity (Fama [1990]) were shown to have significant explanatory power on the cross-section of stock returns. Fundamental variables such as firm size (Banz [1981], debt-equity ratio (Bhandari [1988], Barbee, Mukherji and Reines [1996], book to market value of equity (Fama and French [1992,1993,1995]) and sales-to-price ratio (Barbee, Mukherji and Reines [1996]) were all cited to have significant explanatory powers in excess of beta. The main objectives for a good number of researchers, then was to reveal those variables that best explained the cross-sectional variation in average stock returns. The following sections focus on fundamental accounting variables that are found from studies quoted thereof to have significant explanatory power over beta.

2.2.1 Size Effect

The relation between size and cross-sectional predictability of stock returns has attracted attention from a number of studies. One of these studies was Banz (1981) who studied the relation between average returns and market values in the period between 1936 and 1975 in the US market. The results of Banz's analysis indicate that the common stock of small firms had, on average, higher risk adjusted returns than the common stocks of large firms. Reinganum (1982) tests Roll's supposition that a bias in beta estimation might be accountable for firm size effect, and concluded that, although the direction of this bias is consistent with Roll's opinion, its magnitude is too small to explain firm size effect. Blume and Stambaugh (1983) view that estimates of size effect based on daily return data are potentially biased and use returns on buy-and-hold portfolios in their tests. Premium associated with size is found to be only half as large as previously reported, and on the average, observed mostly in January.

2.2.2 Earnings Yield Effect

Earnings strategies have a long tradition in the investment community. The most popular of these which calls for buying stocks that sell at low multiples of earnings, can be traced to Graham and Dodd (1940) who proposed that " a necessary but sufficient condition (for investing in a common stock) is a reasonable ratio of market price to earnings". Ball (1978) argues that earnings-related variables like the earnings price ratio are proxies for expected returns. Nicholson (1960) published the first extensive study of the relationship between the Price to Earnings (P/E) multiples (the reciprocal of Earnings to Price- E/P) and subsequent total returns, showing that low P/E stocks consistently provide returns greater than the average stock. The E/P effect is a direct contradiction to CAPM, as in CAPM beta is all that should matter. Basu (1977) finds a significant negative relation between price to earnings ratio and subsequent stock returns, and interprets this, as evidence of market inefficiency, assuming the capital asset pricing model is valid. Reinangum (1981) verifies the existence of an earnings price ratio (EPR) effect, and posits that high EPR portfolios systematically outperform low earnings price ratio portfolios, even after beta risk adjustment.

Basu (1983) tests the relationship between earnings yield, market value, and returns and concludes that the premium of earnings yield is significant even when the difference in size are controlled for. Jaffe, Keim, and Westerfield (1989) also study earnings yield effect along with size effect and show that the premium for earnings yield is positive and significant both in January and in other months, while the premium for size is only significant in January.

2.2.3 Cash flow from Operations to Price

Earning to price ratio (E/P) has two weaknesses that can easily inhibit its effectiveness as a predictor of cross-sectional variation in stock returns. One of these weaknesses relates to the possibility of earnings figure manipulation by management. Accounting procedures that are used in calculating the earnings figure can be so modified that it ceases to be a dependable estimate of future prospects of a company. The other weakness is that occasionally firms reports losses (negative earnings figure). Such data are often omitted from statistical analyses that aim to test the relation between E/P and subsequent stock returns. This reduces the sample size.

Cash flow from operations to price ratio (CFO/P) is an alternative measures that is less prone to the problems with E/P. Cash flow ratio is the ratio of earnings plus depreciation to the market capitalization. Depreciation expense provides an avenue for earnings manipulation and thus chances that cash flow-to-price ratio would provide a biased estimate of future prospects of a company is much less than that of earnings figure. Moreover, the probability of a firm reporting a negative cash flow figure is definitely less than the probability of a firm reporting a negative earnings figure. For Japanese stock market, cash flow to-price ratio is tested and found to be significant in explaining the cross-sectional variation in average returns (Chan, Hamao, and Lakonishok [1991]). Davis (1994) also reports for US market that, controlling for differences in book-to-market ratio, cash flow yield has predictive ability with respect to subsequent realized returns.

2.2.4 Leverage Effect

Bhandari (1988) in a study of US Stocks, finds that firms with high leverage (high debt / equity ratios) have higher average returns than firms with low leverage for the 1948-1979 period. This result persists after size and beta are included as explanatory variables. High leverage increases the riskiness of a firm's equity, but this increased risk should be reflected in a higher beta coefficient. As a result of this, Bhandari's findings are contrary to what CAPM predicts. Barbee, Mukherji, and Reines (1996) support Bhandari's proposition in a study of returns on the US stock market during a period from 1979 to 1991.

Fama and French (1992) choose to use two different measures of financial leverage, namely, the ratio of book value of assets to book value of equity and the ratio of book value of assets to the market value of equity. Their results indicate that both of these leverage measures are significantly related to average returns, but, in opposite directions. Stocks of the firms with higher market leverage earned higher returns, while stocks of the firms with higher book leverage earned lower returns.

2.2.5 Book-to-Market Effect

Another variable that investments analysts commonly use in portfolio selection is the ratio of book to market ratio. A significant negative relation between book to market ratio and subsequent stock returns is documented by several studies (Stattman [1980], Rosenberg, Reid and Lanstein [1985], Debondt and Thaler [1985], Keim[1988]). Chan, Hamao and Lakonishok (1991) show that in Japanese market the book to market ratio had consistently the largest coefficient and the highest t-statistic in the tested models; and in the full model that include Earnings to Price, Size, Book to Market and Cash flow to Price, Book to Market is one of the two variables that bear coefficients statistically different from zero. Fama and French (1992) finds that book to market ratio is the variable that bears the highest explanatory power on the cross-section of returns in the US market. In their subsequent papers, Fama and French (1995) first generalized their model to a wider range of capital assets including bonds and stocks, and verified their prior conclusion that firm size and book to market ratio have significant explanatory powers on

cross-section of returns (Fama and French [1993]). They then changed the scale and studied the return behavior of industries and concluded that the three-factor model signals higher costs of equity for distressed industries than for strong industries, because of the higher difference between the high and low boo-to-market portfolios loadings of the distressed industries. In a later study, Fama and French (1995) established the missing link between earnings and stock returns, showing that high earnings resulted in high stock returns and low earnings resulted in low stock returns.

2.2.6 Dividend Yield

Dividend yield was first introduced to capital asset models by Brennan (1970). Brennan's model was developed under the assumptions of unlimited borrowing and lending at the risk-free rate of interest, and unrestricted short sales. It also assumed dividends to be certain and known to investors. The equilibrium relationship according to his model is given by:

$$E(R_i - R_f) = b_0\beta_i + C_0(d_i - R_f)$$

Where R_i is the before tax total rate of return on asset i, β_i and d_i are the systematic risk and dividend yield on asset i respectively, and R_f is the risk-free rate. Brennan defines b_0 and c_0 positive, with the implication that the stocks of high dividend yield firms should offer a return higher than that of low dividend yield firms.

Black and Scholes (1974) conducted the first empirical test of the effects of dividend yields on common stock returns. They concluded that "it is not possible to demonstrate that the expected returns of high [dividend] yield stocks differ from the expected returns of low [dividend] yield stocks either before or after taxes". To correct for problems (like error-in-variables) in Black and Scholes' study, Rosenberg and Marathe (1978) use a two stage generalized least-squares procedure. They, then, find a positive and significant relationship between dividends and stock returns.

Litzenberger and Ramaswamy (1982) show that there is a positive and non-linear relationship between stock returns and dividend yield. This study stressed that its conclusions could not be attributed to a look-ahead bias about dividends as the prediction rule for expected dividends is based solely on information known to the investors at that time. Fama and French (1988) find that the power of dividend yields to forecast stock returns, measured by regression R^2, increases with the return horizon. Goetzmann and Jorion (1993), on the other hand, use the bootstrap methodology and simulations to examine the ability of dividend yields to predict stock returns. The results of this study indicate that there is no strong statistical evidence indicating that dividend yields can be used to forecast stock returns.

2.2.7 Joint Explanatory Power

The first tests of joint explanatory powers of several fundamental accounting variables concentrated on the relation between earnings yield and size, the earliest of the so called anomalies discovered. Basu (1983) tested earnings yield together with size and beta in a CAPM setting and showed that the common stocks of high E/P firms earn, on average, higher risk-adjusted returns than the common stocks of low E/P firms. He also found that this effect is clearly significant even when the firm size is controlled for. Size effect virtually disappears when the returns are controlled for differences in risk and E/P. Surprisingly Reinganum (1981) find opposite results. Further years of empirical research did not completely rule E/P or firm size out. Some later studies claim size subsumed the explanatory power of earnings yield for instance Peavy and Goodman [1983]); and some find that neither effect dominates the other for instance Cook and Rozeff [1984], Jaffe, Keim, and Westerfeld [1989]). The results of Jaffe et al (1989) point out that the size premium is negative and significant only in January (January effect).

Meanwhile, new variables that display significant explanatory power against beta were emerging and the models tested against CAPM started to include more and more such variables. Chan, Hamao and Lakonishok (1991) studied the returns on Tokyo Stock Exchange and found that book-to-market ratio subsumes the explanatory powers of both earnings yield and firm size. Cash-flow yield, on the other hand, comes out to be

significant even when used together with book-to-market ratio. Fama and French (1992) study the relation between market beta, earnings yield, firm size, book to market ratio and leverage. They find that firm size and book to market combine to capture the cross-sectional variation in average stock returns. According to their study, market beta (estimated from the monthly stock returns) proves not to have any significant explanatory power, even when this is the sole measure of systematic risk. The positive premium associated with earnings yield loses its statistical significance when book-to-market ratio is added to the regression. The study also reaches the conclusion that book to market ratio can mathematically be obtained from these two types of leverage measures [namely, book leverage and market leverage].

This study tested the explanatory powers of firm size (MVE), Book to Market (BTM) ratios, Dividend Yield (DY), Debt to Equity (D/E) ratio and Cash flow to size (CFO/MVE) for the Nairobi Stock Exchange (NSE) stocks during a 6 year period from 2000 to 2007

2.3 Empirical evidence

2.3.1 Evidence from developed markets

Chan, Hamao and Lakonishok (1991) studied the relation between stock returns and four fundamental variables (size, earnings yield, cash flow and book to market) during the period 1971 and 1988. They used monthly data on all the stocks of the first and second sections of the Tokyo Stock Exchange from January 1971 to December 1988. Monthly returns (including dividends) and market capitalization came from the database compiled by Yasushi Hamao in collaboration with Daiwa Securities Co. Limited of Tokyo. They conducted their analysis of the relation between stock returns and fundamental variables at the portfolio level. Their findings revealed a significant relation between returns and the four fundamental variables; with book to market variable being the most statistically and economically important variable. The implication of their study is that an investor can form potentially profitable trading strategies based on the four fundamental variables. For instance, in their study, a portfolio of stocks with the highest values for book to market and cash flow to price earns 1.58% per month more than a portfolio of stocks with

the lowest book to market and cash flow to price ratio. This strategy is not new as it follows in the spirit of Graham and Dodd (1940). However the strategy may not be very appealing to many money managers as it may result in placing substantial bets on a limited number of industries that seem "cheap". This may give rise to a substantial tracking error if a broad benchmark index is used to evaluate money managers' performance.

Timo, Virtanen and Yli-Olli (1997) set to find out the association between accounting and market based variables using data from the New York Stock Exchange (NYSE) and America Stock Exchange (AMEX) firms for the period 1976 to 1993. In their study, the nature of association between the firm's accounting and market-based variables was investigated using canonical correlation analysis. A clear relationship between the firm's accounting and stock market variables was observed. However, the accounting variables making up the relationship varies along time. The decomposed analysis of the association suggested that when taken alone, both accrual based and cash based variables are significantly associated with market based variables and that the accrual based variable set has a stronger relationship with the market based set than the cash based set. The accrual based financial ratios are crucial for security analysis while the cash based financial ratios showed increasing relevance over time. The implications of this study is that it questions the market efficiency of the US stock markets. If accounting variables are related to stock returns, a shrewd investor can use this to make abnormal returns.

Lewllen (2004) studied the dividend yield, book value to market value (BV/ MV) ratio as well as the price earnings ratio (P/E) ratio in the companies listed in the New York stock Exchange. Using data for the years 1946-2002, a period divided into two sub-periods of 1946-72 and 1973-2002 he obtained some reliable evidence as for the predictive power of the dividend yield in the period 1946-2002. However, the evidence collected with respect to BV/MV as well as P/E ratio were not reliable to some extent demonstrating that they generally had a limited predictive power.

2.3.2 Evidence from Emerging Markets

Mukherji, Dhatt and Kim (1997) conducted a study of the relation between annual stock returns and fundamental accounting variables for non-financial companies for the period 1982 to 1993. The fundamental variables studied were book to market ratio, sales to price ratio, debt to equity ratios, earnings price ratio and beta. The data for the study was obtained from the Pacific-Basin Capital Markets database. The database contains stock returns from 1977 to 1993 for all companies listed at the Korea Stock Exchange (KSE). It also contains annual income statement and balance sheet data from 1981 but only for non-financial companies. They formed portfolios for the low, medium, and high-value portfolios based on each fundamental variable. The results showed that annual stock returns during the 1982–1993 period were positively related to book to market (B/M), sales to share price (S/P) and debt to equity (D/E) and negatively related to firm size but significantly related to earnings to price (E/P) or beta. Their results suggested that for Korean Stocks, B/M and S/P are more consistent indicators of fundamental value than E/P. Furthermore D/E is a more reliable proxy for risk than beta. The positive relationship of D/E with stock returns persists in portfolios formed on the basis of B/M and S/P. The negative relationship of firm size with stock returns is also apparent in portfolios formed on the basis of B/M and E/P. Their findings thus indicate that greater leverage and smaller size generally result in higher returns for both value and growth stocks. The results of this study are important for investors keen on making sound investment decisions on what to buy, hold and/or sell. It also indicates that an investor can craft investment/trade strategies that would result in consistent high returns. This goes against the efficient market hypothesis.

Jindricovska (2001) investigated the nature of the relationship between accounting earnings and returns on the Czech market. The study was conducted using a data sample covering the years 1993-1998. The results of firm-specific and pooled regression models suggested that for a short estimation window of up to three-quarters, there is a statistically significant relationship between earnings-to-price ratios and price relatives. However, the coefficients estimated from pooled regression did not behave as expected. The one-quarter coefficient was by far the biggest, whereas the following two quarters

was much smaller. The earnings response coefficients for individual companies could not be regarded as a reliable predictor of individual companies' future earnings, but it was significant for the sample as a whole. One of the limitations of this study was that during the period under review (1993- 1998), prices on the Prague Stock Exchange was mostly falling. That trend may have influenced the earnings / return relation which had been central to the analysis. Such a trend was unlikely to persist and when a similar analysis was repeated later (and on a market which by then may be consolidated and hence more tractable) one could expect to find that more pronounced and stable results were obtained. Another limitation was that the analysis was performed on a relatively short time series, and due to that the sample size decreased as the lag between observed price response coefficients increased.

Rahmani, Sheri and Tajvidi (2006) studied the relationship between market and accounting variables with stock returns for companies listed at the Tehran Stock Exchange within the period 1997-2003 using a multi-variable model. Using book value to market value of equity, sales price ratio, size, earnings to price ratio and market beta, they tested seven hypotheses to determine the relationship between each of these variables and the stock returns. They found no significant relationship between market risk and stock return in the Tehran Stock Exchange.

Bundoo (2006) analyzed whether the size and book to market equity effects are present on the Stock Exchange of Mauritius (SEM) using the Fama and French (1993) model. Using data for the period 1997 to 2003 he created two classes of book to equity value; high and low book equity to market equity. The group of stocks of low book to market equity were those below or equal to the median BE/ME while stocks of high BE/ME were those with a ratio higher than the median BE/ME ratio. The Ordinary Least Squares method was used for the econometric analysis. The regressions showing serial correlations were corrected using the Cochrane-Orcutt procedure. Those showing heteroscedasticity were corrected using the White's heteroscedasticty consistent variance and standard errors. That study showed that both size and book to market effect were present in the Stock Market of Mauritius. The model used also explains the variations in

stock return on the Stock Market of Mauritius better than the single factor capital asset pricing model. The findings suggested that size and value premium, are compensation for risk that is not captured by CAPM. The findings have implications for calculation of the cost of capital, risk factors not taken into account by CAPM and the evaluation of returns of portfolio managers. The cost of capital of small firms and firms with high book to market equity will tend to be underestimated by using beta loading only. Similarly, performance measures based on the CAPM only are inadequate to evaluate the performance of fund managers.

Abekah (2005) set out to determine whether the fundamental accounting information in disclosures required of listed companies on the Ghana Stock Exchange (GSE) are significantly related to stock returns as had been found in other emerging markets. The period covered by the study was 1991 to 1998. He found that there were no significant year to year relationship between individual variables and adjusted annual returns. There were significant positive stable relationship between returns and net profit margin, sales per share to share price ratio while a negative stable relationship was found between returns and beta. A combination of variables also significantly explained return variations. The study was limited by the fact that other emerging markets had had their stock exchanges in operations long before the respective periods studied and the infancy of the GSE (GSE was established in 1990) could partly explain the different results in this study. The Nairobi Stock Exchange (NSE) is an older exchange compared to the Ghana Stock Exchange (GSE) having been established in 1954 (GSE was established in 1990). However, since both exchanges are in developing countries a similar study may yield important results.

2.3.3 Kenyan Evidence

Oliech (2002) studied the relationship between size, book to market and return at the Nairobi Stock Exchange (NSE) of common stock for all listed companies from 1996 – 2000. Data was collected from the financial statements of the companies at the NSE. Size was determined by market capitalization, the average return included both capital gains and dividend gains and book value was the amount of stockholder equity less any

preference equity. The f and t tests were used to test the significance of the model with a confidence level of 95%. The result could not confirm the earlier findings of Fama and French (1993) i.e. the size of the companies quoted on the NSE have no relationship with the return of those companies and the ratio of book-to-market values has no relationship to return of the company. Low levels of significance were achieved in his study and this shows that return for companies quoted at the NSE are determined by factors other than size and ratio of book –to – market value.

Muthui (2003) investigated whether there is any significant differences in the returns between low Price Earnings ratio stocks and high Price-Earnings ratio stocks for companies quoted at the Nairobi Stock Exchange for the period 1996 to 2002. He computed the P/E ratios of companies and divided the stocks into three groups, low, medium and high. Share returns were computed using secondary data obtained from the NSE. He found that there is no statistically significant difference in return of shares with low P/E ratio and high P/E ratio. He therefore concluded that these investment strategies do not apply to the NSE and that investors should use other investment strategies in choosing assets to be included in their portfolios. These findings contradicts other studies such as Basu (1977) who showed that stocks with higher earnings/price ratios (or low P/E) ratios earned significantly higher returns than stocks with low earnings price ratio. With respect to this study, the apparent contradictions in findings motivates the need for further research in an attempt to resolve them.

Odhiambo (2005) analyzed the extent of correlation between accounting ratios and the market based performance measures (stock return and risk) of selected companies quoted at the NSE for the period 1996 to 2001. She analyzed data on the correlation between six key accounting variables and return and risk on a per sector basis. She expected that the correlation of return on equity, current ratio and earnings per share to be positive and a negative correlation between these ratios and risk. She also expected that earnings response coefficient for companies can be regarded as a reliable predictor of individual companies' future returns. She found out that there exists a general association between the firm's accounting ratios and its stock returns and risk but the association is

structurally unstable and that accounting variables making up the relationship vary along time.

Marangu (2005) studied the relationship between price to book value ratio and dividend pay-out ratio, return on assets, return on equity, return per share, dividend per share and growth after tax for companies quoted at the Nairobi Stock Exchange for the period 1991 to 2003. His study established a statistically significant relationship between market to book ratio and dividend pay-out ratio, return on assets, return on equity, return per share, dividend per share and growth rate of earnings after tax for the period 1991 to 2003 for companies that constitute the NSE 20 share index. He found the best predictor variables to be return on assets, return on equity and dividend per share. This according to his study implied that managers of firms could control return on total assets, return on equity and dividend per share to influence the price to book ratio of their firms. He concluded that for investors, any adverse movements in return on total assets, return on equity and dividend per share will adversely affect the price to book value thus affecting the value of their investment. His study faced limitations in that it concentrated only on the stocks that constitute the NSE 20-share index and in that he faced problems of availability of data for his study. The NSE 20 share index has been criticized in that it may not be representative of the market. For instance until recently Uchumi Supermarkets stock had been part of the 20-share index despite the fact that it had been suspended during the receivership period.

The following chapter looks at the research design and methodology applied in conducting this study. Chapter four explains how data was analysed and the research findings while the last chapter of this study (chapter five) details the conclusions drawn from the study's findings, how these findings relate with past studies, the limitations of this study and the recommendations for further studies.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Research Design

An empirical study of quoted companies in the Nairobi Stock Exchange for the period 2000 – 2007. The study used secondary data for the computation of stock returns and fundamental accounting variables.

3.2 The Population

The total population consisted of all 53 companies listed at the NSE as at 31st March 2007.

3.3 The Sample

The following criteria was applied to determine the number of listed companies to be included in the sample: (i) Have equity stock listed in the stock exchange. Thus firms with only preference stocks listed were excluded from the sample. (ii) Must have complied with the requirement to file its financial statements within three months after the financial year-end. This ensured consistency in the tests conducted. (iii) Earnings data and financial statement data must be available for all years in the study. The study further eliminated firms listed after the year 2000, those that were de-listed or those that were suspended during the period 2000 to 2007. After taking into account all these requirements the study came up with a sample of 32 firms.

3.4 Data Specification

The study used secondary data on monthly stock prices and number of shares outstanding, data on dividends, bonus issues and stock splits. Data on required accounting figures was extracted from financial statements of sample firms and from the Nairobi Stock Exchange (NSE) Handbooks for the years 2002 and 2006.

3.4.1 Stock Price Data

Monthly stock price included the end-of-month stock prices of securities listed on the NSE during the period December 2000 to March 2007. The unadjusted stock price data was used for the computation of the Market Values of Equity (Market Capitalization) for individual firms. This price data was adjusted for stock splits, capital increases, and dividends. These adjusted prices were used for the computation of monthly stock returns. Return on stock i for month m, $R_{i,m,}$ was defined by:

$R_{i,m,t} = (P_{i,m,t} - P_{i,m-1,t} + D)/ P_{i,m-1,t}$

Where $P_{i,m,t}$ is the price of security i at the end of month m in year t, $P_{i,m-1,t}$ is the price of security i at the beginning of month m in year t and D the dividend paid. The corrections made for stock splits, capital increase, and stock dividends prevent possible distortions on monthly return data.

3.4.2 Number of Shares Outstanding

Number of Shares Outstanding (NSO) data include, for each firm, the number of common stock outstanding during the period from December 2000 to March 2007. These figures were adjusted for stock splits and capital increases over time to determine the exact number of shares outstanding for any firm at any point in time. The number of outstanding shares data was used together with unadjusted monthly stock price data to compute the market capitalization of firms.

3.4.3 Accounting Data

Several company specific accounting figures were required for analysis to be carried out in the study. These figures consisted of information from individual firms' Balance Sheet, Income Statements and Cash Flow Statements as observed in the annual financial statements reported to the Nairobi Stock Exchange and the Capital Markets Authority. For the "measurement period" that starts at 1st April of year t+1 data listed above was obtained from the annual financial statements of year t. Market value of equity was calculated as the number of shares outstanding times the stock price as of the beginning of the return measurement period. Required accounting data span a period from

December 2000 to December 2005. There is a difference between the period for which the returns are computed and the accounting figures data. The former being from 1st April 2001 to 31st March 2007, while the later span a period from December 2000 to December 2005. The reason for this is that financial statements for a firm with say a financial year ending 31st December 2000 will be available much later in the subsequent year (2001). Since the Capital Markets Authority (CMA) requires firms to publish their financial statements within ninety days of their financial year end, the latest the financial statements can be published is 31st March of the subsequent year. Thus one day (say 1st April) is deemed a suitable date to commence the return measurement.

3.5 Predictor Variables (Fundamental Accounting Variables)

In the following subsections, the accounting variables that were derived from the three sets of data mentioned in the previous sections of this chapter are introduced. It is these factors whose explanatory powers on individual stock returns that was tested in the study.

3.5.1 Firm size

Market capitalization (MVE) is used as a proxy for firm size, in consideration of the size effect. Market capitalization of firm i in year t is given by:

$MVE_{i,t} = (P_{i,t})(NSO_{i,t})$

Where $P_{i,t}$ is the stock price for the firm i at the beginning of measurement period of year under consideration, and $NSO_{i,t}$ is the number of shares outstanding figure for firm i, at the end of a particular financial year. For instance, for firm with a financial year ending 31st December 2004, we took the number of shares at the close of their books (31st December). Thus any shares issued after this date are not considered in determining the firm size variable. However those new shares formed part of the number of shares outstanding for the financial year ended 31st December 2005 and were included then.

Based on earlier studies (Banz [1981], Reinganum [1981a], Fama and French [1992], Akdeniz et al [2000]), we expected MVE to be in a negative relation with the average stock returns.

3.5.2 Book- to – Market Ratio

Book to market ratio (BTM) was used in consideration of book to market effect or relative distress factor, as referred to by Fama and French (1996). BTM of firm i at the end of fiscal year t was given by:

$BTM_{i,t} = TE_{i,t} / MVE_{i,t}$

Where TE_{it} is total equity value (book value) of firm i in year t and MVE_{it} is the Market Value of Equity.

Research by Sattman (1980), Rosenberg, Reid, and Lanstein (1985), DeBondt and Thalar (1987), Keim (1988) and Fama and French (1992,1993,1996) indicate a positive relation between BTM and average stock returns.

3.5.3 Cash flow from operation to Size Ratio

Cash flow from operations (CFO/MVE) to size ratio was used as an alternative to earnings yield effect. CFO/MVE of firm i at the end of fiscal year t was given by:

$CFO/P_{i,t} = CFO_{i,t} / MVE_{i,t}$

As mentioned earlier, despite its theoretical appeal, earnings yield is shown to have limited power in explaining the cross-sectional variation in stock returns. It is also argued that impediments like earnings manipulation by firms, or the fact that earnings to price ratio (EPR) is undefined for negative earnings makes earnings to price unsuitable as a predictor variable.

3.5.4 Leverage effect– Debt to Equity Ratio

Debt to Equity ratio (DER) was used in consideration of leverage effect. DER of firm i at the end of fiscal year t was given by:

$DER_{i,t} = (TA_{i,t} - TE_{i,t}) / TE_{i,t}$

Where $TA_{i,t}$ is the total assets of firm i at time t, and $TE_{i,t}$ is the total equity of firm i at time t.

The larger the DER of a firm, the higher is its financial risk. A higher risk should be compensated with a higher rate of return on its common stock according to the basic law of asset pricing. Therefore, a positive relation between DER and average stock returns was expected. Such a relation is documented for US stock market by Bhandari (1988), Fama and French (1992) and Barbee et al (1996).

3.5.5 Dividend Yield

The Dividend Yield used for firm i for a given year t was extracted from the Nairobi Stock Exchange Hand Books. These Hand Books contains information of all listed firms for five years. Thus the 2002 Hand Book contains financial statements and a summary of a number of key ratios including the dividend yield ratio for the years 2002, 2001, 2000, 1999 and 1998. While the 2006 Hand Book contains the data for 2006, 2005, 2004, 2003 and 2002. The correctness of this information was validated by a sample of 12 firms' financial statements at the CMA library.

Evidence from the studies by Brennan (1970), Litzenberger and Ramaswamy (1982), Rozeff (1984), and Fama and French (1988) point out a positive relation between returns and dividend yields.

3.6 DATA ANALYSIS

In this section, the methodology that was employed in the study is discussed. This methodology was in four main stages: correlation analysis, univariate portfolio analysis, and cross-sectional regression analysis.

The correlation between the variables under study, and between these variables and returns were computed. Univariate portfolio analysis gave a preliminary idea about the sign and magnitude of the premium associated with each fundamental accounting variable. In the cross-sectional regression analysis, Fama and Macbeth (1973) regression methodology was used. These cross-sectional regressions facilitated the comparison of more than two factors at a time and was thus used to test possibility of multi-factor return generating models (Joint explanatory power).

3.6.1 Correlation Analysis

The analysis began with the computation of the correlation coefficients between the fundamental variables, and between these variables and annual stock returns. This test between the predictor variables was important in order to address any possible multicollinearity problem.

The correlation coefficients were calculated for the 6-year aggregate cross-sectional data on annual returns, Dividend Yield (DY), firm size (MVE), Book to Market ratio (BTM), Cash Flow to Size (CFO/MVE), and Debt to Equity ratio (D/E). The significance of these correlations were measured by t-values calculated according to the formula:

$$t = r\,(n-2)^{1/2} / (1-r^2)^{1/2}$$

Where r is the correlation coefficient and n is the number of observations.

3.6.2 Univariate Portfolio Analysis

The univariate portfolio analysis is a primal attempt to measure whether the hypothesized relationships between the fundamental accounting variables and returns are valid for the Nairobi Stock Exchange. For a given year t, stocks were ranked based on each fundamental variable (call it X) at the beginning of April. Equally weighted portfolios of the top 30 %, the middle 40 % and the bottom 30% of the ranked list formed the high, medium, and low variable X portfolios, respectively. Annual returns, and values of the measured variable were computed and recorded for each of these three portfolios. This

procedure was carried out for each year in the study. Returns differentials between high and low variable X portfolios ($R_{hx} - R_{lx}$) were calculated for each of the 6 observations, and a one sample t-test conducted to test whether the obtained sample of return differentials verify prior expectations about a given variable. The mean return differentials calculated for variable X was referred to as HMLx. The calculation of return on medium size portfolios gave insight on whether the returns were uniformly increasing or decreasing as variable X increased or decreased.

The following is a detailed discussion of the prior expectations about each variable under study as well as the hypotheses tested for each variable.

3.7. Prior Expectations and Hypothesis

3.7.1 Portfolios Based on size (MVE)

For a given year t, stocks were ranked based on their sizes at the beginning of the measurement period. Average characteristics of the constructed portfolios, and subsequent annual returns were recorded. The mean return differential between high and low capitalization firms was expected to be negative. Thus, the hypothesis tested with the one-sample t-test on return differentials is:

H0: $HML_{MVE} \geq 0$

Ha: $HML_{MVE} < 0$

Where HML_{MVE} is the difference between the returns of the high Market Value of Equity portfolio and low Market Value of Equity portfolio.

3.7.2 Portfolios Based on Book to Market ratio

For a given year t, stocks were ranked based on their Book to Market ratios computed by dividing the book value reported at the end of fiscal year t-1 by the market capitalization at the beginning of the measurement period. It was expected that the mean return differential between high book to market firms and low book to market firms to be positive. Thus, the hypothesis that was tested with one-sample t-test on return differentials was:

H0: $HML_{BTM} \leq 0$

Ha : $HML_{BTM} > 0$

Where HML_{MVE} is the difference between the return of a portfolio of high book to market and that of a low book to market portfolio.

3.7.3 Portfolios Based on Cash flow from operation (CFO/MVE) to Size

For a give year t, stocks were ranked based on their CFO/MVE ratio values computed by dividing the cash flow from operations reported at the end of fiscal year t-1 by the market capitalization at the beginning of measurement period of year t. The return differential between high Cash Flow from Operations-to-Size and low Cash Flow from Operations-to-Size firms was expected to be positive. In this case the hypothesis that was tested with one-sample t-test on return differentials became:

Ho: $HML_{CFOR} \leq 0$

Ha: $HML_{CFOR} > 0$

Where HML_{CFOR} is the difference between the return of a portfolio of high Cash Flow from operations to Size ratio and that of low Cash Flow from operations to Size ratio.

3.7.4 Debt / Equity (DER) based Portfolios

For a given year t, stocks were ranked based on their DER values computed by dividing the book value of debt reported at the end of the fiscal year t-1 by the market value of equity reported, again, at the end of fiscal year t-1. The return differential between high leverage and low leverage firms was expected to be positive. Given this expectation, the hypothesis tested with one-sample t-test was:

H0: $HML_{DER} \leq 0$

Ha: $HML_{DER} > 0$

Where HML_{DER} is the difference between the return of a portfolio formed on the basis of firms with high Debt to Equity ratio and that of low Debt to Equity ratio portfolio.

3.7.5 Dividend Yield (DY) Based Portfolios

For a given year t, stocks were ranked based on their DY values computed by dividing the dividends reported at the end of fiscal year t-1 by the stock price at the end of fiscal year t. The hypothesized relationship between returns and dividend yields was negative (Brennan [1970], Litznberger and Ramaswamy [1982], Rosenberg and Marathe [1978], Fama and French [1988], Kothari and Shanken [1996]; hence, the hypothesis was:

H0: $HML_{DY} \geq 0$

Ha: $HML_{DY} < 0$

Where HML_{DY} is the difference between the return of portfolio of high Dividend Yield firms and the return of a portfolio of low Dividend Yield firms.

3.8 Fama –Macbeth Regressions

In the cross-sectional regressions stage, monthly company returns for the twelve month period that starts from 1st April of year t+1 and ends at 31st March of year t+2 were regressed on the value of the fundamental variables that were calculated using the market capitalization values at the beginning of measurement period of year t+1 and the accounting figures at the end of fiscal year t.

For each month in the sample period, cross-sectional regressions of the tested statistical models were run, resulting in a total of 72 estimations of the coefficient for each company-specific variable γ_i for each model. The γ_i values were computed as the time series averages of the monthly estimates; and their significance was evaluated using a simple t-test method. The overall explanatory power of each model was reported by its average adjusted R^2

3.8.1 Simple Regressions

This involved regression of returns on each fundamental variable one at a time. Coefficients of the variables were determined as the arithmetic averages of the monthly cross-sectional regressions. Null hypotheses tested by simple t-test method were:

H0: $\gamma_{MVE} \geq 0$ Ho: $\gamma_{BTM} \leq 0$ Ho: $\gamma_{cfo/MVE} \leq 0$

Ha: $\gamma_{MVE} < 0$ Ha: $\gamma_{BTM} > 0$ Ha: $\gamma_{cfo/MVE} > 0$

H0: $\gamma_{DER} \geq 0$ Ho: $\gamma_{DY} \leq 0$

Ha: $\gamma_{DER} < 0$ Ha $\gamma_{DY} > 0$

Where Υ_{MVE}, Υ_{BTM}, Υ_{DER}, $\Upsilon_{CFO/MVE}$ and Υ_{DY} are the coefficients of regression of each of the fundamental accounting variables when regressed on monthly returns. Variables whose simple regression coefficients were not statistically different from zero were eliminated from further analyses.

3.8.2 Multiple Regressions

In the final phase of the regression analysis, a test of multi-parameter statistical models that encompass all possible combinations of the variables that survived the univariate analysis and the simple regression analysis were done. The regression methodology that was used in the single-parameter models was applied, the only difference being the number of independent variables. Multiple regressions allowed further comparison between the variables, and enhanced the analysis by rendering the comparison of three or more variables at a time possible. Again, interpretations of the factors' explanatory powers were based on t-values, and the choice between models were based on the average adjusted R^2.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

This section presents the detailed data analysis that was carried out, the experiences that the researcher went through in coming up with the required data and the findings of the research.

4.2 Data Capturing and Validation – Fundamental Accounting Variables

As indicated in the previous chapter, the research study involved the use of secondary data on both the stock returns and fundamental accounting variables. Nairobi Stock Exchange compiles summaries of the financial statements in Hand Books that are released every four years. The period covered by this study required the Hand Books for the years 2002 and 2006. The two books contain information for the years 1999 to 2006. These two books were purchased at a small fee in soft copy.

In order to place reliability on the information contained in these Hand Books, we took a sample of 12 companies in the Main Investment Market Section (MIMS). Of the 12 firms, three were in the Agricultural (Unilever Tea, Sasini Tea, and Kakuzi Limited), three from the Commercial and Services section (Marshals East Africa, Kenya Airways and CMC Holdings), three from Finance and Investment (Barclays, NIC Bank and Jubilee Holdings) and three from the Industrial and Allied section (BOC Kenya, Kenya Oil and Bamburi Cement). We validated the information in the Hand Books with the hard copy of the financial statements of these firms filed at the CMA Library at Kenya Re-Plaza 12th Floor. One draw back with the library was that all statements were in hard copy and the library does not provide photocopying services. Due to this a substantial amount of time was spent in the library.

During the validation process we had to drop Bamburi Cement Limited due to lack of financial statements for the years 2000 and 2001. We replaced this with Athi River Mining Limited which is in the same line (cement production). The information contained in the Hand Books tallied with that in the financial statements of the 12 firms selected. Due to lack of most of the financial statements of the firms in the Alternative Investment Market Section (AIMS) of the NSE, we could not validate the information contained in the Hand Books. Further difficulties with firms in this section were experienced in trying to obtain data on their prices, dividends and other corporate announcements such as stock splits. For these reasons all firms in this section were dropped from the sample. However, in the opinion of researcher, dropping these firms did not have a material effect on the overall findings.

Finally a number of firms had differences in some figures from one year to the next, that is, the financial statement for a given year contains the comparative figures for the previous year. When one checked the figures in a subsequent financial statement, one occasionally observed a different figure from the one reported in the previous year for the same item. These were due to changes in the accounting policies and revaluation of assets that required restatement of the figures. The basis for these changes were explained and once again one would expect an investor to adjust their positions accordingly. Due to this, no material effect on the overall findings was expected.

4.3 Stock Price Data and Corporate Announcements

The Nairobi Stock Exchange Maintains detailed information on the daily stock prices in the daily price list. The daily price list contains information on the price, the highest and lowest price for the last 12 months, the number of shares sold and announcements made by listed firms. The announcements contain information on type of dividend, amount, date of announcement, date the share register will be closed for purpose of this dividend and the date dividend is to be paid. Other information was on rights issues, stock splits and so on.

On a number of occasions the researcher faced difficulties with the announcements due to omissions of the payment date for dividends. This difficulty was surmounted by cross-checking the information maintained by Kestrel Capital Ltd. a major broker in the Exchange. The information from Kestrel was provided free of charge through personal contacts. The Information detailed above was applied in the computation of stock returns. Return on common stock was calculated as the sum of dividend return plus price changes using the formula:

$$R_{i,m,t} = (P_{i,m,t} - P_{i,m-1,t} + D) / P_{i,m-1,t}$$

Where $R_{i,m,t}$ is the return of stock i at the end of month m in year t. $P_{i,m,t}$ is the price of a stock at the end of the month (the last trading day in a particular month). $P_{i,m-1,t}$ is the price of a stock at the beginning of the month while D is dividend paid.

Looking at the mean annual returns during the six years that the study covered (Appendix 4) one observes that there are more negative returns in the first year (2001-02). Twenty of the thirty two (32) firms used in the study or 63 % had negative returns. In 2002-03 three firms (9%) had negative returns. In 2003-04 all firms had positive returns. A high number of negative returns is observed in 2004-05 at 59% of the firms but this goes down in 2005-06 and 2006-07.

The distribution of the negative returns in 2001-02 indicates that the Agricultural section of the market had the highest number of negative returns. In 2002 all firms reported negative mean annual returns. The Commercial and Services section had no negative returns. The Finance and Investment market segment recorded 55 % while the Industrial and Allied recorded 75%. In 2004-05 the highest number of firms with negative returns were in the Industrial and Allied section of the market while no firms recorded negative returns in the Agricultural section. In 2005-06 almost all negative returns are in the Agricultural section. This sporadic pattern implies that one cannot say that specific industry factors were at play.

4.4 Correlation Analysis

Table 1 reports the correlations between the fundamental accounting variables used in the study. The values were computed using the Statistical Program for Social Sciences (SPSS).

Table1

Correlation Coefficients

		MVE	BTM	CFO/MVE	DER	DY	RTN
MVE	Pearson Correlation	1					
	Sig. (2-tailed)	.					
	N	6					
BTM	Pearson Correlation	-.176	1				
	Sig. (2-tailed)	.093	.				
	N	6	6				
CFO/MVE	Pearson Correlation	-.076	.587(**)	1			
	Sig. (2-tailed)	.474	.000	.			
	N	6	6	6			
DER	Pearson Correlation	.177	-.236(*)	-.095	1		
	Sig. (2-tailed)	.092	.023	.368	.		
	N	6	6	6	6		
DY	Pearson Correlation	.049	.131	.187	-.186	1	
	Sig. (2-tailed)	.642	.213	.074	.076	.	
	N	6	6	6	6	6	
RTN	Pearson Correlation	-.015	.212(*)	.199	.057	.168	1
	Sig. (2-tailed)	.890	.043	.057	.591	.110	.
	N	6	6	6	6	6	6

** Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

This table shows that the Market Value of Equity (MVE) has a negative correlation with Book to Market Value. The correlation coefficient of these two variables is –0.176. Market Value of Equity ratio is similarly negatively correlated with Cash Flow from Operations (CFO / MVE) to Size and Common Stock Return with correlation coefficients of –0.076 and –0.015 respectively. Finally Market Value of Equity ratio is positively correlated with Debt to Equity (DER) ratio and Dividend Yield (DY) with correlation coefficients of 0.177, and 0.049 respectively. These correlations between Market Value of Equity ratio and the other variables are however not statistically significant, that is,

their p-values are greater than 0.05. There is a statistically significant and positive correlation between Book to Market Value ratio and Cash Flow from operations to Size at 99%. The correlation coefficient between these two variables is 0.587. Book to Market Value (BTM) ratio is positively and significantly correlated with Common Stock Returns at 95% level. The correlation coefficient of BTM to Return is 0.212 while the p-value is 0.043 which is less than 0.05. Book to Market ratio is negatively and significantly correlated with Debt to Equity ratio at 95% level. The correlation coefficient is -0.236 with a p-value of 0.023 which is less than 0.05. Finally the correlation between Book to Market value and Dividend Yield is positive but not significant. The need for correlation analysis as indicated in subsection 3.6.1 of chapter 3 was to address any possible multi-collinearity problem. From the results in this table this problem does not seem to exist between the tested variables.

4.5 Univariate Portfolio Analysis

This analysis sought to find out whether the hypothesized relation between fundamental accounting variables and future common stock returns hold for the Nairobi Stock Exchange. Portfolios were formed on the basis of accounting figures of the 32 sampled firms at the end of a given year (called the rank period) and matched with the annual returns for the one-year period starting at 1st April (called the start of the measurement period) of the following year. Six (6) observations (Appendix 3), for each of the six years in the study period were applied to test the alternate hypotheses that the premium for variables under study are different from Zero.

4.5.1 Size Based Portfolios

Results for Average Annual Returns and Market Value of Equity for six years for the portfolios formed on firm size are reported in Table 2 below. The size premia is –1.2 % but not significant as the p-value is greater than 0.05. The results for the one- sample test confirm prior expectations that the mean return differential for portfolios sorted on size is negative for stock listed at the Nairobi Stock Exchange. This implies that stocks of small firms earn a higher return than firms of large firms.

Table 2

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
LMVE Porfolio	6	-.013973	.489870	.11416267	.187319165
MMVE Porfolio	6	-.027435	.101546	.03453900	.043551219
HMVE Porfolio	6	-.012390	.079751	.02887600	.036126461
HMVE – LMVE	6	-.034180	.006986	-.01180733	.015931805
Valid N (listwise)	6				

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
HMVE - LMVE	6	-.01180733	.015931805	.006504132

One-Sample Test

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
HMVE - LMVE	-1.815	5	.129	-.01180733	-.02852674	.00491207

4.5.2 Book to Market Ratio based Portfolios

Table 3 below reports the 6 years averages of the Annual Returns and Book to Market ratio for the portfolios formed thereof. Also reported are the one-sample t-test for the return differential between high and low Book to Market value portfolios. The premia for return between low and high BTM based portfolio is -0.53 but not significant at 95% level because the p-value is greater than 0.05. This result does not therefore support our prior return expectations that the mean return differential between the high and low book to market portfolio is positive.

Table 3

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
LBTM Portfolio	6	-2.657915	.078609	-.41169517	1.100842396
MBTM Portfolio	6	-3.835435	.084148	-.60242850	1.584012781
HBTM Portfolio	6	-5.959364	.108607	-.94367150	2.457333966
HML (HBTM – LBTM)	6	-3.301449	.039050	-.53197933	1.356818396
Valid N (listwise)	6				

T-Test

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
HML (HBTM – LBTM)	6	-.53197933	1.356818396	.553918791

One-Sample Test

	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
HML (HBTM – LBTM)	-.960	5	.381	-.53197933	-1.95587291	.89191425

4.5.3 Cash Flow from Operations to Market Value of Equity Based Portfolios

The average annual returns and Cash Flow to Size values for portfolios formed on the basis of cash flow to size are reported in Table 4. The premium associated with this fundamental accounting variable is –0.10538 but not significant at an alpha level of 5%. The mean average return for the six years for high cash flow to size portfolios is 0.0413 while that for low portfolio is 0.1467. The medium portfolio indicate an average return of 0.0279. It is thus observed that average return is decreasing from low to medium and then increases for high portfolio. These results do not support our prior return expectation that the premium between high and low is positive.

Table 4

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
LCFO/MVE Portfolio	6	-.012132	761808	14672500	302861590
MCFO/MVE Portfolio	6	-.022797	082483	02786467	035399644
HCFO/MVE Portfolio	6	-.014362	116077	04134367	046234495
HML (HFCO-LCFO)	6	-.645731	.030560	-.10538133	265188280
Valid N (listwise)	6				

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
HML (HFCO-LCFO)	6	-.10538133	265188280	.108262662

One-Sample Test

	Test Value = 0					
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
HML (HFCO-LCFO)	-.973	5	375	-.10538133	.38367937	172916 70

4.5.4 Debt to Equity Ratio Based Portfolios

The results for the average annual returns for portfolios formed on Debt to Equity ratio values are reported in Table 5 below. The mean return differential (HML_{DER}) between the high and low Debt to Equity ratio formed portfolios is 0.02127. This mean return differential is not statistically significant at 95% level; the p-value is 0.138 which is greater than 0.05. The average return for the six years for the low Debt to Equity ratio portfolios is 0.0300, that of medium portfolio is 0.0313 while that of high Debt to Equity ratio formed portfolios is 0.0479. These results show that average returns increases from low to medium to high. The results are in conformity with the prior expectations that the mean return difference is positive. Thus in line with our expectations, stocks of high leverage firms earn higher returns compared to stocks of low leverage firms at the Nairobi Stock Exchange.

Table 5

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Low DER	6	-.015906	.084562	.02996660	.036842742
Medium DER	6	-.012144	.090768	.03128800	.038091999
High DER	6	-.024635	.113018	.04790200	.060011456
Mean Return Differential (HDER-LDER)	6	-.008729	.048158	.02126760	.025714607
Valid N (listwise)	6				

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Mean Return Differential (HDER-LDER)	6	.02126760	.025714607	.011499922

One-Sample Test

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Mean Return Differential (HDER-LDER)	1.849	5	.138	.02126760	-.01066130	.05319650

4.5.5 Dividend Yield (DY) Based Portfolios

Table 6 below reports the six years average return for portfolios formed on the basis of Dividend Yield. The average annual returns for high dividend yield portfolios is 0.02548, 0.0296 for medium and 0.0732 for low dividend yield portfolios. The average annual returns decreases from low to high in conformity with the prior return expectations of a negative mean return differential between high and low dividend yield portfolios. The premium associated with dividend yield is -0.0477 and not statistically significant at an alpha level of 5 %. The p value is greater than 0.05. As stated in subsection 3.7.5 of chapter 3, the hypothesized relation between returns and dividend yield is positive. The null hypothesis for the mean return differential between high dividend yield based portfolio and low dividend yield was H0: $HML_{DY} \geq 0$ (alternate Ha: $HML_{DY} < 0$). We therefore fail to reject the null hypothesis that the mean return differential between high

dividend yield based portfolios and low dividend yield portfolio is negative or equal to zero.

Table 6
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Low DY Portfolios	6	-.003940	.232888	.07315117	.087640529
Medium DY Portfolios	6	-.025337	.073434	.02958450	.037065661
High DY Portfolios	6	-.002218	.043040	.02547500	.021751110
HML (difference between High and Low)	6	-.191036	.036595	-.04767617	.081429114
Valid N (listwise)	6				

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
HML (difference between High and Low)	6	-.04767617	.081429114	.033243297

One-Sample Test

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
HML (difference between High and Low)	-1.434	5	.211	-.04767617	-.13313078	.03777845

4.6.0 Fama-Macbeth Regressions

The correlations results of the Fama-Macbeth regression results are presented in table 7 below. The results are based on the Ordinary Least Squares model of the form

$R_i = a_0 - X_1 MVE_i + X_2 BTM_i + X_3 DER_i + X_4 Dy_i$

R_i is the monthly return on asset i; MVE_i , BTM_i, DER_i, and DY_i are firm size, book to market ratio, debt to equity ratio and dividend yield respectively. Table 7a reports the average Fama-Macbeth correlation.

Table 7a
Correlations

		Return	Natural log Market Value	Natural log Book to Market	Natural log Debt to Equity	Natural Log Cashflow to Size	Dividend Yield
Return	Pearson Correlation	1					
	Sig. (2-tailed)	.					
	N	2304					
Natural log Market Value	Pearson Correlation	-.046(*)	1				
	Sig. (2-tailed)	.026					
	N	2304	2304				
Natural log Book to Market	Pearson Correlation	.055(**)	-.772(**)	1			
	Sig. (2-tailed)	.008	.000	.			
	N	2304	2304	2304			
Natural log Debt to Equity	Pearson Correlation	.043(*)	.175(**)	-.128(**)	1		
	Sig. (2-tailed)	.038	.000	.000	.		
	N	2304	2304	2304	2304		
Natural Log Cashflow to Size	Pearson Correlation	.040	-.327(**)	.491(**)	.341(**)	1	
	Sig. (2-tailed)	.073	.000	.000	.000	.	
	N	1979	1979	1979	1979	1979	
Dividend Yield	Pearson Correlation	.046(*)	.101(**)	.064(**)	-.215(**)	.094(**)	1
	Sig. (2-tailed)	.029	.000	.002	.000	.000	.
	N	2303	2303	2303	2303	1979	2303

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7 b (i) to (v) below reports the single parameter t test results for the coefficients of regression (monthly regressions) of each variable with return for the 72 months covered by the study.

7 b (i) Size Effect

One-Sample Statistics – Firm Size Coefficients

	N	Mean	Std. Deviation	Std. Error Mean
Mve (size) coefficients	72	.00762763	.066967832	.007892235

One-Sample Test

	Test Value = 0					
	T	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Mve (size) coefficients	.966	71	.337	.00762763	-.00810904	.02336430

Table 7 b (i) above shows the results of the one- sample t test results for the 72 monthly regression coefficients for firm size on returns. In subsection 3.8.1 of chapter three the hypothesized relation between size and Common Stock Returns is negative. The arithmetic average of the monthly cross-section correlation coefficient (γ_{MVE}) of size for the 72 months was expected to be negative. As a result the null hypothesis was stated as Ho: $\gamma_{MVE} \geq 0$. We therefore accept the null hypothesis that the mean coefficient is greater or equal to zero at 95% level. The calculated sample mean is approximately equal to zero and the population mean lies in the interval 0, 0.023.

7 b (ii) Book Effect

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
BTM Coefficient	72	.02311740	.056897607	.006705447

One-Sample Test

	Test Value = 0					
	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
BTM Coefficient	3.448	71	.001	.02311740	.00974712	.03648768

Table 7 b (ii) above shows the results of monthly regression coefficients for the Book to Market Value on Returns. From the research findings, the p-value is 0.001 which is less than 0.05. We thus reject the null hypothesis that the sample mean coefficient is less than or equal to zero. The calculated sample mean is approximately 0.023 and the population mean lies in the interval 0 and 0.04.

7 b (iii)

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
DER coefficient	72	.00147235	.012647859	.001490564

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
DER coefficient	.988	71	.327	.00147235	-.00149975	.0044445

Table 7b (iii) indicates the results of the t-test for the monthly regression coefficients for the Debt to Equity ratio on Return. The findings from this lead as to accepting the null hypothesis that the mean is greater or equal to zero. This is because the probability value of 0.327 is greater than 0.05. The calculated sample mean is very close to zero and lies in the interval 0 to 0.0044.

7 b (iv)

One-Sample Statistics – Dividend Yield Coefficients

	N	Mean	Std. Deviation	Std. Error Mean
DY COEFFICIENT	72	21882856	923213811	.108801791

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	T	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
DY COEFFICIENT	2.011	71	048	.21882856	00188395	43577317

The results of the t test for the monthly regression of Dividend Yield on Returns indicated in table 7 b (iv) above shows a p-value of 0.048 which is less than 0.005. We reject the null hypothesis that the sample mean is less than or equal to zero. The calculated sample mean is 0.220 and our population value lies between 0.002 and 0.44.

7 b (v)

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
CFO coefficient	72	03797711	101129172	.011918187

One-Sample Test

	Test Value = 0					
					95% Confidence Interval of the Difference	
	T	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
CFO coefficient	3.186	71	002	.03797711	01421292	061741 30

Finally, table 7 b (v) reports results for the t-tests of the coefficients of the monthly regressions of Cash Flow to Size on the Returns. The probability value is 0.002 which is less than 0.05. We reject the null hypothesis that the sample mean is less than or equal to

zero. The calculated sample mean is 0.0379 and the population value lies between 0.014 and 0.062.

4.6.1 MULTIPLE REGRESSION

Table 7 c (i) reports the correlation results for the five fundamental variables and monthly stock returns. From this table Market Value of Equity, Book to Market Value, Debt to Equity and Dividend Yield have significant correlations with Returns. Cash Flow to Size is positively correlated but is not significant. Due to this cash flow to size is eliminated from further analysis.

7 (c) Correlations

		Return	Market value of equity	Book to market value	Debt to equity Ratio	Cash flow to size	Dividend yield
Return	Pearson Correlation	1					
	Sig. (2-tailed)	.					
	N	2304					
Market value of equity	Pearson Correlation	-.046(*)	1				
	Sig. (2-tailed)	.026	.				
	N	2304	2304				
Book to market value	Pearson Correlation	055(**)	-.772(**)	1			
	Sig. (2-tailed)	.008	.000	.			
	N	2304	2304	2304			
Debt to equity Ratio	Pearson Correlation	.043(*)	.175(**)	-.128(**)	1		
	Sig. (2-tailed)	.038	.000	.000	.		
	N	2304	2304	2304	2304		
Cash flow to size	Pearson Correlation	.040	-.327(**)	.491(**)	.341(**)	1	
	Sig. (2-tailed)	.073	.000	.000	.000	.	
	N	1979	1979	1979	1979	1979	
Dividend yield	Pearson Correlation	.046(*)	.101(**)	.064(**)	-.215(**)	094(**)	1
	Sig. (2-tailed)	.029	000	.002	.000	.000	.
	N	2303	2303	2303	2303	1979	2303

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7 C (ii) Fama and Macbeth Multiple Regressions

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.097(a)	.009	.008	.174067708

a Predictors: (Constant), Dividend yield, Book to market value , Debt to equity Ratio, Market value of equity

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.660	4	.165	5.443	.000(a)
	Residual	69.628	2298	.030		
	Total	70.288	2302			

a Predictors: (Constant), Dividend yield, Book to market value , Debt to equity Ratio, Market value of equity

b Dependent Variable: Return

Coefficients(a)

Model		Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Collinearity Statistics		
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.138	.088		1.559	.119		
	Market value of equity	-.005	.004	-.045	-1.306	.192	.369	2.709
	Book to market value	.005	.007	.026	.788	.431	.382	2.618
	Debt to equity Ratio	.009	.003	.068	3.123	.002	.911	1.098
	Dividend yield	.246	.086	.063	2.851	.004	.884	1.132

a Dependent Variable: Return

Table 7 c (ii) above reports the results of the Fama and Macbeth multiple regressions results for the remaining four variables. From the F-test, the probability value is 0.000

which is much less than 0.05 and thus supports the linearity assumption. The regression equation from this is as hereunder:

$$R_i = 0.138 - 0.005MVE + 0.005BTM + 0.009DER + 0.246DY$$

Where R_i is the return of asset i, MVE is the market value of equity, BTM is the book to market value of equity, DER is the debt to equity value and DY is the dividend yield. Dividend yield comes out as having the highest coefficient in the multiple regression results.

CHAPTER FIVE

CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

5.0 CONCLUSIONS

5.1 Introduction

This study was aimed at establishing the relation between fundamental accounting variables and common stock returns at the Nairobi Stock Exchange. The return data spanned a period of 72 months from April 2001 to March 2007 for a total of 32 firms in the Main Investment Market Sector (MIMS). Data on fundamental accounting variables was similarly for 72 months from December 2000 to December 2005. Firms from the Alternative Investment Sector (AIMS) were eliminated from the sample due to inadequate accounting information. Fundamental accounting variables for a particular year (called the rank period) were regressed on the returns for the subsequent period (return measurement period). The first day of April was considered the most appropriate start period for measuring returns. This is the first day after the end of the 90 days period that firms are required to have published their financial statements.

5.2 Size Effect

This study established a statistically significant and negative relationship between Market Value of Equity and average monthly Common Stock Returns. Market Value of Equity was used in this study as a proxy for firm size. This significant relationship was observed for both the single parameter tests and in the multi-factor analysis. The implications of this finding is that stocks of large firms experience lower returns compared with stocks of small firms at the Nairobi Stock Exchange. This result contradicts the findings of Oliech (2002) who found size to have no relation with returns at the Nairobi Stock Exchange for the period 1996 to 2000. Oliech (2002) whose findings were contrary to his expectations attributed the low levels of significance to the small number of shares quoted at the Nairobi Stock Exchange. While the number of listed stocks in the current study have not substantially increased from those studied in Oliech (2002), the activity at the exchange is

substantial compared to the period 1996 to 2000 studied by Oliech (2002). This increased activity has the possibility of increasing the number of specialist looking to make gains by scrutinizing stocks to take advantage of undervalued assets. The finding of the current study is consistent with Bundoo (2006) in the study of the Stock Market of Mauritius, an emerging market. Bundoo (2006) found that size effect was present in the Stock Exchange of Mauritius and that this variable together with the book value of equity explained stock returns better than the single-factor Capital Asset Pricing Model. He concluded that size and value premium are compensation for risk that is not captured by the Capital Asset Pricing Model (CAPM). His findings had implications in the calculation of cost of capital and the evaluation of returns of Portfolio Managers. The finding of this study is similarly consistent with Banz (1981) in a study of the New York Stock Exchange which showed that stocks of firms that are small in terms of market capitalization have higher returns. Roll (1981) attempts to explain the small firm effect using trade frequency, autocorrelation and risk. He states that small-firm portfolio have higher auto-correlation of returns because their constituent securities are less-frequently traded. The longer the average time between trades, the greater the induced autocorrelation in portfolio of such firms. Positive serial dependence is induced in portfolio returns by non-synchronous trading whereas the dependence generally observed in individual security returns is negative (and very small). This suggests rather strongly that portfolio return dependence is indeed spurious due to non-synchronous trading, and is not caused by genuine dependence in individual returns. The findings of the current study may be indicative that investors at the NSE consider small firms to have more potential than large firms which may have attained maturity and have few investment options. They are therefore prepared to pay a premium for the stocks of small firms. One may also speculate that large firms have many specialists who track their performance compared with small firms. Thus the potential gains from any undervaluation of large firms' assets may have been exhausted.

5.3 Book Effect

The study found that the mean return differential for portfolios sorted on the basis of book to market value is negative contrary to the expected result of a positive relation

between book to market and return. A negative relation implies that firms with high book to market value of equity earns lower returns than firms with low book to market value of equity. A high book to market ratio indicates that the book value per share is very close to the market price per share. This implies that investors in the market do not desire to pay a higher price for the share than its intrinsic value. In the multiple regression phase, the study finds a positive relation between book to market effect and common stock returns. Thus when investors use this factor together with other factors the explanatory power increases. This finding conforms to the finding by Chan, Hamao and Lakonishok (1991) who found that book to market value has the most influence on returns in the Japanese Market. Fama and French (1992) found that book to market variable bears the highest explanatory power on the cross-section of returns in the US market. The study results also conforms with Marangu (2005) whose study found a statistically significant relationship between market to book ratio, the reciprocal of book to market ratio.

5.4 Cash Flow from Operations to Market Value of Equity

The study found a negative relationship between this variable and stock returns. The premium associated with this variable was negative 0.11. This relationship was not statistically significant. The finding was contrary to the expectation of a positive relationship. The results also indicated that the returns were decreasing from low to medium and then increasing for high. During the analysis a number of firms had negative cash flow figure for a number of years. Cash flow from operation had been used in place of earnings variable to cater for the higher possibility of earnings manipulations and negative earnings figures. This experience of a substantial number of negative figures therefore defeated the purpose for its inclusion. The findings on this variable' predictive power is inconsistent with the findings of Davis (1994). Davis (1994) reported for the US market that controlling for differences in book to market ratio, cash flow yield has predictive ability with respect to subsequent realized returns. The implication of this study results is that investors at the NSE do not place a lot of emphasis on the cash flow from operations when making their investment decisions. One of the possibilities for this explanation would be that excess cash at the hands of the managers may lead to agency problems. Excess cash at the hands of managers may mean that they do not have to be

exposed to market disciplining. They may invest in very risky projects that only maximize their interest at the expense of maximizing the shareholders wealth.

5.5 Debt to Equity Ratio

The study found a statistically significant relation between returns and debt to equity ratio. The mean return differential between high and low DER based portfolios was 0.021. The implication of the study is that investors at the NSE perceive highly levered firms as riskier and therefore have a higher expected return on such investments, the extra return being compensation for bearing higher financial risk. To a firm with a high leverage at the NSE the cost of issuing new shares would therefore be higher than that of low levered firms. Bhandari (1988) found similar results for the US Market for the period 1948 to 1979. His findings were later supported by Barbee, Mukherji and Reines (1996).

5.6 Dividend Yield

The study at both the single and multi-variable level found the relation between returns and dividend yield to be statistically significant. This variable was found to have a premium of -0.05 for the return difference between high and low dividend yield portfolios. This implied that high dividend yield stock experience lower returns than low dividend yield portfolios. In the multiple regression phase, the study found that dividend yield had the highest explanatory power of common stock returns at 0.25. The finding of a negative relation between firms with high dividend is contrary to the findings by Rosenberg and Marathe (1978) who found a positive and significant relationship between dividends and stock returns. Goetzman and Jorion (1993), using the bootstrap methodology and simulations found that there is no strong statistical evidence indicating that dividend yield cannot be used to forecast stock returns. Litzenberger and Ramaswamy (1982) show that there is a positive and non-linear relationship between stock returns and dividend yield. The contradictory findings of the above studies from different studies may be due to model specification. In particular, the current study assumes linearity in testing the hypothesis in the single parameter and multi-parameter analysis. The actual relation may not be linear. Nevertheless, one of the possibility for negative mean return differential between high and low dividend yield based portfolios

would be that investors at the NSE view firms with high dividends payout as not reinvesting enough to support high future stock prices. An investor looking for capital gains would place a lower value on a high dividend paying stock thus the lower returns.

This study has demonstrated that four of the five variables used in the study are good predicator variables (Market Value of Equity, Dividend Yield, Debt to Equity ratio and Book to Market Value). It has established that cash flow from operations to size is not a suitable predictor of stock returns. Mukherji, Dhatt and Kim (1997) in the study of the Korean Stock Market found that Book to Market ratio, Debt to Equity ratio and Earnings to Price ratio are positively related to stock returns. They found that Market Value of Equity ratio to be negatively related with stock returns. The findings by Mukherji, Dhatt and Kim (1997) is therefore consistent with this study with respect to Debt to Equity ratio and Market Value of Equity. It is inconsistent with respect to Book to Market Value ratio. The study's results deviate from the results of Abekah (2005) whose findings did not show any significant relation between fundamental accounting variables and stock returns for the Ghana Stock Exchange. The results indicate that greater leverage and smaller size generally results in higher returns for both value and growth stocks. It further indicates that high dividend yield firms attract a lower return than the lower dividend yield firms.

5.7 LIMITATIONS

This study has some limitations. First, the study used secondary data. The researcher relied on the data on fundamental accounting variables compiled from the Nairobi Stock Exchange Hand books for the years 2002 and 2006. While the researcher validated the correctness of the summaries in the Hand Books by checking the financial statements of a sample of 12 firms, any errors that may have remained in data of firms that were not included in the sample could not be detected by the researcher and could therefore be incorporated in the analysis. In section 4.2 of the previous chapter the problem of different figures from one year to the next was explained. These changes could limit the reliability of the financial statements data for specific years.

Secondly due to time, financial constraints and software limitations, the researcher had to eliminate a number of companies from the analysis. With more time one could dig into the records of the individual companies, especially those in the Alternative Market Segment of the market to do a more comprehensive study. Finally, this study did not use market betas in the regression analysis. The inclusion of the market betas could provide better insights to the analysis.

5.8 SUGGESTIONS FOR FURTHER RESEARCH

The period covered by this study could be extended from the six years to a longer period to establish the long run relationship between these variables and stock returns. Researchers could take into account transaction costs and trade volume when calculating the return on shares. Transaction costs for small firms tend to be higher than those for large firms. A more insightful outcome may also be realized if the market betas are used and the number of fundamental variables used expanded. A particularly interesting variable would be the sales to price ratio.

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APPENDICES

APPENDIX I

List of listed companies

1. Unilever Tea (K) Limited
2. Rea Vipingo Plantations Limited
3. Sasini Tea and Coffee Limited
4. Kakuzi Limited
5. Access Kenya Group Limited
6. Marshals East Africa Limited
7. Car and General Limited
8. Hutchings Biemer Limited
9. Kenya Airways Limited
10. CMC Holdings Limited
11. Uchumi Supermarkets Limited
12. Nation Media Group
13. TPS (Serena) Limited
14. Scangroup Limited
15. Standard Group Limited
16. Barclays Bank Kenya Limited
17. CFC Bank Limited
18. HFCK Limited
19. ICDC Investment Company Limited
20. Kenya Commercial Bank Limited
21. National Industrial Credit Bank Ltd
22. National Bank of Kenya Limited
23. Pan African Insurance Holdings Limited
24. Diamond Trust Bank of Kenya Limited
25. Jubilee Insurance Company Company Limited
26. Standard Chartered Bank Limited
27. Equity Bank Limited
28. Athi River Mining Limited
29. BOC Kenya Limited
30. British American Tobacco Kenya Limited
31. Carbacid Investments Limited
32. Olympia Capital Holdings Limited
33. East Africa Cables Limited
34. East Africa Breweries Limited
35. Sameer Africa Limited
36. Kenya Oil Limited
37. Mumias Sugar Company Limited
38. Unga Group Limited
39. Bamburi Cement Limited
40. Crown Berger (K) Limited
41. East Africa Portland Cement Company Limited
42. Kenya Power and Lighting Company Limited
43. Total Kenya Limited
44. Everready E.A Limited
45. Kengen Limited
46. A. Bauman Kenya Limited
47. City Trust Limited
48. Express Kenya Limited
49. Williamson Tea Kenya Limited
50. Kapchorua Tea Kenya Limited
51. Kenya Orchards Limited
52. Limuru Tea Limited
53. Eaagards Limited

APPENDIX 2

2. List of Sample Companies

1. Brooke Bond
2. Kakuzi
3. Rea Vipingo
4. Sasini
5. CMC
6. Kenya Airways
7. Marshals
8. Nation
9. TPS
10. BBK
11. CFC
12. DTB
13. HFCK
14. ICDCI
15. Jubilee
16. KCB
17. NBK
18. NIC
19. Pan Africa
20. SCBK
21. ARM
22. BOC
23. BAT
24. Crown Berger
25. E.A. Cables
26. EAPC
27. EABL
28. Firestone
29. KENOL
30. KPLC
31. TOTAL
32. UNGA

APPENDIX 3

3. Average Annual Returns and Fundamental Variables based Portfolios

YEAR	LMVE	MMVE	HMVE
2001	-0.013973	-0.027435	-0.006987
2002	0.057552	0.052349	0.058122
2003	0.083515	0.101546	0.079751
2004	0.013109	0.009474	-0.012394
2005	0.054903	0.045772	0.020728
2006	0.048987	0.025528	0.034032

Year	LBTM	MBTM	HBTM	HML_{BTM}
2001	-2.65792	-3.83544	-5.95936	-3.301449
2002	0.059952	0.045789	0.067929	0.007977
2003	0.078609	0.084148	0.108607	0.029998
2004	-0.01044	0.012262	0.028613	0.03905
2005	0.035073	0.042449	0.041115	0.006042
2006	0.024547	0.036216	0.051071	0.026524
Year	**LCFO/MVE**	**MCFO/MVE**	**HCFO/MVE**	**HMLcfo/mve**
2001	-0.00914	-0.0228	-0.01436	-0.005222
2002	0.068159	0.040889	0.071928	0.003769
2003	0.761808	0.082483	0.116077	-0.645731
2004	-0.01213	0.007059	0.018428	0.03056
2005	0.035978	0.022494	0.018428	-0.01755
2006	0.035677	0.03706	0.037563	0.001886

Year	LDER	MDER	HDER	HML_{DER}
2001	-0.01591	-0.01214	-0.02464	-0.008729
2002	0.038369	0.039937	0.086527	0.048158
2003	0.084562	0.090768	0.113018	0.028456
2004	0.013424	0.01903	-0.00594	-0.019367
2005	0.03215	0.066391	0.034856	0.002706
2006	0.029384	0.018849	0.070543	0.041159

Year	LDY	MDY	HDY	HML_{DY}
2001	-0.00113	-0.02534	-0.00222	-0.001085
2002	0.09134	0.063693	0.04304	-0.0483
2003	0.079163	0.073434	-0.00222	-0.081381
2004	-0.00394	0.002075	0.032655	0.036595
2005	0.040589	0.031825	0.039739	-0.00085
2006	0.232888	0.031817	0.041852	-0.191036

APPENDIX 4

4. ANNUAL RETURNS FOR SAMPLE COMPANIES

	1	2	3	4	5	6
Company	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**
1Brooke Bond	-35%	8%	20%	65%	-10%	-21%
2Kakuzi	-46%	-50%	67%	69%	-2%	-5%
3Rea Vipingo	-18%	21%	192%	40%	71%	18%
4Sasini	-60%	17%	3%	80%	-13%	268%
5CMC	-36%	213%	102%	-8%	8%	-66%
6Kenya Airways	2%	-14%	80%	150%	344%	-10%
7Marshals	0%	-67%	189%	-14%	73%	-8%
8NMG	10%	35%	140%	29%	-11%	29%
9TPS	7%	53%	42%	79%	120%	-20%
10BBK	4%	91%	106%	-4%	27%	43%
11CFC	4%	40%	345%	-5%	24%	68%
12DT Bank	-47%	126%	124%	1%	30%	73%
13HFCK	-45%	126%	87%	-22%	62%	57%
14ICDCI	-59%	94%	77%	-9%	32%	-65%
15Jubilee	0%	73%	187%	9%	48%	148%
16KCB	-41%	94%	132%	-4%	97%	94%
17NBK	-14%	76%	272%	-8%	79%	38%
18NIC	7%	74%	113%	16%	5%	90%
19Pan African	-9%	51%	160%	-24%	62%	108%
20Stanchart	10%	88%	157%	-32%	23%	46%
21ARM	-18%	210%	107%	-15%	172%	63%
22BOC	-26%	92%	203%	-5%	18%	3%
23BAT	-15%	83%	202%	-1%	0%	3%
24Crown Berger	-29%	61%	371%	-24%	36%	3%
25E.A Cables	-40%	29%	168%	188%	230%	139%
26E.A Portland	-20%	173%	88%	12%	126%	-3%
27E.A.B.L	10%	156%	178%	-73%	25%	8%
28Firestone	3%	61%	18%	7%	84%	-24%
29Kenol	7%	70%	173%	-82%	108%	-24%
30KPLC	-76%	170%	210%	-11%	59%	44%
31Total	-66%	100%	47%	-5%	11%	-23%
32Unga	-60%	85%	139%	-28%	65%	-16%