AN EMPIRICAL STUDY INTO THE APPLICABILITY OF THE DIVIDEND SIGNALLING THEORY AT THE NAIROBI STOCK EXCHANGE

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DECLARATION

This research project proposal is my original work and has never been presented in any other University or College for the award of degree or diploma or certificate.

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This research project proposal has been submitted for examination with my approval as the University supervisor.

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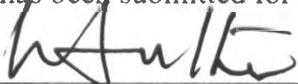**UNIVERSITY OF NAIROBI**

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DEDICATION

To my dear mother Jedline Mbaka, my sisters and my friends who were my best friends and supporters, who have enriched my life and encouraged me through all my 'projects'. I also dedicate this to all those who encouraged and supported in prayers during the difficult moments as I did the project.

ABSTRACT

This research project sought to establish whether there was any relationship between the announcements of dividends on the share price of these companies. A sample of the twenty firms that are used to calculate the NSE 20 share index was taken and all their final dividends analyzed. In total eighty announcements were studied in categories of increase, where the cash dividend announced was higher than the previous one, no change where the dividend announce was similar to the last and decrease where the current dividend was lower than the previous one.

In the analysis, an estimation window of sixty days before the event window (eighty days before the announcement) and an event window of forty one days including the event day were established and the actual return over this period calculated using the holding period return. The alpha and beta of each announcement were then calculated using simple linear regression over the estimation window. The alpha and beta so calculated were then used to calculate the normal return over the event period. The abnormal return was then calculated by deducting the normal return from the actual return which was the cumulated over the event window and across all the cases that fell in a particular category and analysed.

The results from the analysis did indicate that there was indeed some impact on the share price of the firms on announcement of dividends. With those with decreasing dividends showing drops in returns after announcement in most years, those with no change dividend announcement indicating mixed reactions with some having decreasing returns and others increasing on the event day and with the increasing dividends leading to increasing returns after announcement. An analysis of all announcements for the entire period yielded results that indicated that despite returns

declining before the event day they begun climbing again on the announcement day and sustained this trend throughout the post event period. This cumulative trend was attributed to the fact that most of the announcements in the study period (54%) were of an increasing nature. T-tests carried out on the five year data indicated that CAR was significant (at the 5% significance level) from the sixth days before the announcement all the way to seventh day after the announcement. On testing, the null hypothesis was rejected indicating that dividend change affected share price following financial performance and dividend announcement.

The results therefore indicated that the dividend signalling theory was applicable at the Nairobi Stock exchange over the period sampled.

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CHAPTER ONE

INTRODUCTION

1.1 Background

One of the key challenges most, if not all investors face is determination of when to invest or divest from stocks held at the stock market. While the ideal situation as elaborated by various authors is to buy when the stocks are under-valued and sell when they are over-valued, knowing when these points has been reached has been a challenge to most investors.

In an effort to simplify the process of making these decisions various theories has been developed to gauge the performance of companies and consequently make key investment decisions.

A fact that is agreed upon by most investors however is that company management hold some private information that the public is not privy to. This is more prevalent in markets that operate in weak or semi-strong forms of efficiency such as those in developing countries including Kenya. This is the basis upon which the dividend signalling model is developed.

Various dividend theories have been advanced during the last five decades, almost all using the logic of the economic person. Unfortunately, all these models suffer from either a lack of verifiability or contradicting empirical evidence (Frankfurter, G., Kosedag, A., Schmidt, H., & Topalov, M., 2002). These theories are;

The bird-in-the-hand dividend theory, that argues that the sole purpose for the existence of the corporation is to pay dividends. It states that the value of a share, like any other asset, is the present value of its payment expectations, which are its expected future dividends. Under certain conditions, that expectation can be represented by the current dividend and its expected growth rate. Shareholders will

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therefore prefer to have an immediate benefit in the form of dividends as opposed to an uncertain future benefit.

The tax effect and the clientele effect theories are closely related and state that shareholders become "clients" of firms according to whether receiving dividends would expose them to tax liabilities. So high-tax bracket individuals would invest in lower no-dividend-paying firms, while low-tax bracket individuals would invest in higher dividend paying firms.

The agency theory is based on the notion that the market will oversee otherwise not perfectly enforceable contracts. Therefore, taking "excess cash" out of the firm will force management to go to the market place and compete for funds. The idea is then to pay out as much cash as possible in the form of dividends and force management to borrow from the market which will be stricter and regulate the use of these funds.

The signalling model assumes that everything management (largely due to the private information they hold) does turns into signals, because signals have more credibility than the spoken word or publicly available information. Increasing dividends is therefore seen as a positive signal, communicating to the financial world that the firm had a strong future and could afford the necessary increase in cash outflows.

Finally, the psychological/sociological explanation which is based on the psychology that cash has more power than anything else. Thus will be more preferred by the stockholders. It also presumes that the dividend payment is a ritual meant to strengthen the bond between the owners and the stewards of the firm, reinforcement necessary because of the separation of ownership from management.

In their seminal paper, Modigliani and Miller (1961) suggested that dividend payment does not have any relationship with firm's stock valuation. Their theory was based on assumptions that the market was perfect with no tax; there were no agency problems

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among participants and no asymmetric information between firms and market. These market setting conditions are further relaxed and result in many theoretical models.

Prior to the proposed irrelevance theory of Modigliani and Miller, Lintner in 1956 had proposed another approach of dividend theory which became a key model on the dividend theory and asymmetric information. His model suggests that dividend payment is relevant to earning performance of firms. Firms will increase dividend payment when managers' are confident about the firms' future performance but they will reluctant to decrease dividend payment unless they have information of permanent decline in the firms' future performance. Lintner's model further suggested that firms cannot disguise the signal by increasing the payout when they do not have evidence of 'true' increase in the firms' performance.

However, prior researches cannot find strong support over the signalling dividend theory. Specifically, research results cannot agreeably show that dividend changes are indicative of future firms' profit.

In an effort to shed more light on the dividend signalling area, Ross (1977) and Bhattacharya (1979) integrated the information content hypothesis with the signalling theory. Their hypothesis assumed that managers possess private information about the firm's attributes not known to the market. This information is valuable if the investments in place or opportunities to invest can have positive effect on the firm's future cash flows. In these circumstances, managers must use expensive but credible, dividends to communicate this private information to the market.

Williams & John (1985), Rock & Miller (1985) also concur that managers know more about the real value of the firm than investors and they direct the information in the market for dividend policy. Thus, their model suggests a direct relationship between asymmetric information and dividend.

Under the dividend signalling hypothesis, dividend initiations and omissions are generally considered to be important events. When a firm initiates a dividend payment, it creates a benchmark against which investors can clearly measure subsequent performance.

The excess-cash hypothesis suggests that since managers cannot credibly pre-commit not to invest excess cash in negative-NPV projects, dividend changes can convey information about how the firm will use future cash flows.

Moreover, it can be argued that information will eventually be revealed whether or not the dividend signal is sent; hence the dividend impact on prices is only temporary. Thus the theory is based on the idea of information asymmetries between the different participants in the market and in particular between managers and investors.

The theory suggests that company announcements of an increase in dividend payouts act as an indicator of the firm possessing strong future prospects. The rationale behind dividend signalling models stems from game theory (investopedia). A manager who has good investment opportunities is more likely to "signal" than one who doesn't because it is in his or her best interest to do so. While the concept is not in doubt, it tends to cut both ways, on the one hand increases in dividends will signal expectations of better earnings in the future but on the other hand failure to pay dividends should also be considered as an indication of limited growth prospect, difficult times in business or even cash flow problems.

Overtime and with rapidly growing firms, failure to pay dividends can be as a result of having better projects (positive NPV projects) to utilize the funds which will provide the investor with better (higher) returns in the future. A key question therefore is how do you differentiate between the poor performance/limited growth prospects and retention for good projects and if the market players can differentiate it.

In Kenya listing is done at the Nairobi stock exchange which having been established in 1952 is comparatively a young market. In fact prior to the listing of the Kenya Electricity Generating Company (KENGEN) in the market in 2006 the market was not very well known by most investors.

While previous work has been done on the efficient market hypothesis looking at the applicability of the signalling theory, none of it has focused on the effect of decreases in dividend payout or failure to pay at all. It is with this background that I propose to not only look at the effects of increases in dividends but also on the decrease of dividends and more importantly cover a more current period encompassing the period when the NSE has been most vibrant i.e. 2003 to 2007.

1.2 Statement of the Problem

The signalling theory has often been written off as being irrelevant and not in compliance with market fundamentals. While this maybe theoretically accurate, practically this is not the case. Many an investor often depends on signals provided by the management of companies to evaluate the firm's stock. The Nairobi stock exchange and other developing markets should not be an exception.

With the background of Lintner (1956), Ross (1977) and Bhattacharya (1979) defining works, this project seeks to investigate the relevance of the signalling theory in the Kenya context through the operations and modalities of the Nairobi Stock Exchange. In addition to examining the effects of increases in cash dividends as done by Kiptoo (2006) and Kiio (2006) it will investigate the effects of decreases in the cash dividends paid as well as paid a similar dividend or no dividend at all.

The findings will therefore comprehensively prove the relevance of the theory and largely help understand the behaviour of investors in the Nairobi Stock Exchange.

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1.3 Objectives of the Study

The primary objective of the study will be to assess the impact of payment of cash dividends on the market price of stocks of the companies comprising the NSE 20 share index.

Secondary to this and as a consequence of the primary objective, determine the direction of the change in share prices and its consistency in the Nairobi Stock Exchange.

For the purpose of this study the hypothesis are stated as:-

H_0: Dividend movements have no effect on the share price following financial performance and dividend announcements.

H_1: Dividend change (increase, decrease, or no change) affects share price following financial performance and dividend announcement.

1.4 Significance of the Study

A key significance of the study is to help investors know how to treat information contained in dividend announcements and make informed investment and divestment decisions.

Secondary to this it will help academicians gain a greater understanding on the relevance of dividends in investment decision making and extend current knowledge on Kenya investor behaviour.

The government and regulators can also gain an understanding of the efficiency of the stock market with an aim of improving it if need be, to meet international standards.

Company management may use the findings to make informed dividend decisions that not only do not negatively impact their stock prices but are reflective of the firms' prospects and challenges.

Finally it will enable investment advisors provide informed advice based on the realities in the Kenyan context and other similar developing markets.

CHAPTER TWO

LITERATURE REVIEW

2.1 Dividend Theories And Models

Several theories exist as to why firms pay dividends. These theories can be based on the market imperfection invoked to provide a rationale for dividends.

The Modigliani and Miller (1961) model shows that dividend is irrelevant. Their model suggests that dividend policy has nothing to do with the firm's value. Firms can pay dividend as much as they need without considering the firms valuation. They can also use external sources of funds to finance the debt without affecting the firms' value. Their model relies on ideal assumptions such as a perfect market with no taxes; no friction on the trading; no information difference between firms and investors about market setting and investor's characteristics. Later dividend theories relax the assumptions of this model which result in differences in their findings.

In 1988 while Miller was reviewing the MM irrelevance theory he does clarify a key assumption thus;

> "...... Our instincts as economists led us to discount the possibility that firms could hope to fool the investing public systematically; but at the time, we could offer little more support than a declaration of faith in Lincoln's Law— that you can't fool all of the people all of the time."

He however concludes that despite efforts by other scholars since then, evidence provided has not convincingly established the relevance of dividends.

Prior to the Modigliani and Miller (1961) dividend theory, Lintner (1956) proposed a dividend policy based on facts about dividend payment. Lintner suggested that firms are reluctant to increase dividend payment since increase dividend payment can lead investors to interpret that future firms' performances are 'prosperous'. However, they reverse their belief on good performance as soon as firms mark a decrease in payment.

Dividend payout behaviour is also thought to be highly influenced by informational asymmetries between firms and investors (Bhattacharya, 1979). Dividends are used to communicate information about firm performance and this is one of the strongest reasons firms are purported to pay dividends.

Ross (1977) proposed that investors form their expectation about future value of firm based on changes in capital structure and dividend policy. When firms change their policy on capital structure or dividend policy, investors will adjust their perception on the future values of firms. Ross therefore the formally accepts the signalling information of dividend.

The market imperfection of asymmetric information is the basis for three distinct efforts to explain corporate dividend policy. In summary the models under the information asymmetries are;

2.1.1   Signalling Models

The removal of the information asymmetries between managers and owners via unexpected changes in dividend policy is the basis of dividend signalling models. Agency cost theory uses dividend policy to better align the interests of shareholders and corporate managers. Bhattacharya (1979), John and Williams (1985), Miller and Rock (1985) amongst others offer signalling models of corporate dividend policy.

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These proponents of signalling theories believe that a corporate dividend policy used as a means of putting the message of quality across has a lower cost than other alternatives. The use of dividends as signals implies that alternative methods of signalling are not perfect substitutes (Asquith and Mullins, 1986).

2.1.2   Agency Cost

The recognition of potential agency costs associated with the separation of management and ownership is not new; differences in managerial and shareholder priorities have been recognized for a long time by many authors and scholars. Adam Smith stated that the management of early joint stock companies to be negligent in many of their activities thus justifying use of agency costs.

Modern agency theory seeks to explain corporate capital structure as the result of attempts to minimize the costs associated with the separation of corporate ownership and control. Agency costs are lower in firms with high managerial ownership stakes because of the better alignment of shareholder and manager goals (Jensen and Meckling, 1976) and in firms with large block shareholders that are better able to monitor managerial activities

2.1.3   The Free Cash Flow Hypothesis

Prudent managers working in the shareholders' best interests should invest in all profitable opportunities. Management and owner separation affords corporate managers the temptation, however, to consume or otherwise waste surplus funds.

Jensen's (1986) free cash flow hypothesis combines market information asymmetries with agency theory. The funds remaining after financing all positive net present value projects cause conflicts of interest between managers and shareholders. Jensen states

that managers waste all free cash flow under their discretion thus dividend payments enhance share value by preventing managers from wasting money on negative net-present-value projects

Easterbrook (1984) and Lang and Litzenberger (1989) suggest that increasing dividends ensures a reduction in the potential waste of free cash flow. The empirical implication from both hypotheses is that increasing (decreasing) dividends should evoke a positive (negative) stock-price reaction.

2.2 The Dividend Signalling Theory

The signalling hypothesis is based on the notion of asymmetric information particularly between managers and investors. Under this assumption dividend changes are valuable in that they convey information about the firm's prospects. Lintner (1956) observes that managers are more willing to raise rather than reduce dividend levels, and this has been widely interpreted as indicating that dividend decreases are associated with negative signals while dividend increases signal positive news. The risk-information hypothesis claims that dividend increases signal risk reduction. Alternatively, according to the cash flow signalling hypothesis, dividend changes contain information about future cash flows.

Another opinion is that dividend changes signal permanent shifts in current earnings. In any event, as noted by Allen and Michaely (1995), regardless of the precise information contained in the dividend signal, the hypothesis has been found to be valid.

Miller and Rock (1985) develop a model in which higher dividends are associated with higher earnings. In their model, information asymmetry pertains to current

earnings and the level of investment. Earnings are assumed to be correlated through time and once current earnings are revealed, future earnings can be inferred by the investors. Therefore, dividends indirectly serve as a signal of future earnings of the firm.

It has been known for a long time that unanticipated announcements of dividend increases are associated with contemporaneous increases in stock prices; a linkage often termed the information content of dividends (Miller, 1987). In equilibrium, a firm with higher current earnings pays a level of dividends that is high enough to separate itself from a firm with lower current earnings. In addition, the dividend payout under asymmetric information is higher relative to that under full information. Thus, the cost of signalling is underinvestment relative to the full information case.

These arguments imply that, other things equal, a firm with a higher level of asymmetric information will have to pay a higher level of dividends to signal the same level of earnings as a firm with a lower level of asymmetric information. Therefore, the signalling argument predicts that the higher the level of asymmetric information, the higher the dividends.

Signalling theory therefore implies that only the manager of a firm with good opportunities will "signal", because only then is it in the rational manager's best interest to do so. Bhattacharya (1979) formalizes this intuition into a dividend signalling theoretical model. The theory implies that a dividend increase is a credible signal that the firm's prospects have improved.

The dividend signalling model as with other asymmetric information models predicts a relationship between unanticipated changes, announcement period stock returns, and future earnings. Bhattacharya (1988) further brings to our attention the fact that his 1979 model as well as that of John and Williams (1985) and Miller and Rock (1985)

models focus on circumstances in which current earnings of firms are asymmetrically known by insiders who serve current shareholders' interests, shareholders who need to sell either now or in the future and care about the firms' valuation for their overall returns and finally that dividends paid have deadweight costs such as personal taxes, corporate transaction costs of refinancing cash flow shortfalls or cost of underinvestment.

He further notes that the reason dividends work as a signal is that the expected marginal cost of some component of deadweight cost of dividends is negatively related to expected earnings resulting in only firms with higher earnings prospects paying higher dividends in a separating equilibrium.

Two types of signalling inside information have been suggested: one is the costly signalling equilibrium discussed by Leland and Pyle (1977) and Ross (1977) amongst others and the other is the costless signalling equilibrium as proposed by Bhattacharya and Heinkel (1982), Rennan and Kraus (1984). It can therefore be reasonably concluded that a signal is costly if the production of the signal consumes resource or if the signal is associated with a loss in welfare generated by deviations from allocation or distribution of claims in perfect markets. A salient feature of most costly signalling models of dividends is their assumption that current earnings cannot be communicated to outsiders through accounting disclosure. Bhattacharya (1988) however terms this unreasonable and instead proposes that despite some managerial discretion regarding accounting rules, some coarse indicators of true economic earnings do emerge through the accounting process and these serve to discipline insiders' incentives to overstate the firms' prospects to raise its value. As a result it leads insiders to pick dividend levels as signals in line with their true earning prospects leading to informed valuation.

He further notes that the general order of the signalling process would be, first, unanticipated increases in dividends are followed by stock price increases, then higher differential personal taxation of dividends, relative to capital gains, leads to lower dividend payouts because of increased deadweight costs of dividend signal then finally higher-risk firms pay lower dividends relative to average earnings because their likelihood of costly cash flow shortfalls is higher (Bhattacharya, 1988)

Empirically, numerous studies provide evidence that the market interprets the initiations of (or increases in) cash dividends as good news and the omissions of (or decreases in) cash dividends as bad news. Among these are Aharony and Swary (1980) Asquith and Mullins (1983) that show a positive relation between the market response and dividend surprises. Nissim and Ziv (2001) consider a particular model of earnings expectations and find a positive association between current dividend changes and future earnings changes. They argue that previous studies failed to uncover the true relation between dividends and future earnings because researchers used the wrong model to control for the expected changes in earnings. Specifically, they report that, when using a regression analysis that controls for a particular (linear) form of mean reversion in earnings, dividend changes are positively correlated with future earnings changes.

It is however worth noting that dividends increase firm value through signalling and agency cost effects and decrease firm value through the tax effect (Bernheim and Wantz, 1995).

2.3 Efficient Market Hypothesis

Fama (1970) uses the phrase "Efficient Market" to describe the market price that fully reflects all available information. Fama classified the market efficiency into three levels on the basis of information availability i.e. Weak form efficiency where stock

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price fully reflects historical information of past prices and returns; Semi-strong form efficiency where stock prices fully reflect all information known to all market participants, i.e. public information; and Strong form efficiency where stock prices fully reflect all information including public and private, known to any market participant.

After twenty years of market efficiency literature published in 1970, Fama (1991) proposed to change the categories of market efficiency, as follows

- Using tests for return predictability instead of weak-form tests, which are only concerned with forecast power of past returns, i.e., how well do past returns predict future returns?

- Using event studies instead of semi-strong-form tests of the adjustment of prices to public announcements, i.e., how quickly do prices reflect public information announcements? and

- Using test for private information instead of strong-form tests of whether specific investors have information on market prices or not, i.e., do any investors have private information that is not fully reflected in market prices?

2.3.1   Weak Form Of Market Efficiency

The weak form efficient market hypothesis stipulates that current asset prices already reflect past price and volume information. The information contained in the past sequence of prices of a security is fully reflected in the current market price of that security. It is named weak form because the security prices are the most publicly and easily accessible information.

It implies that no one should be able to outperform the market using something that "everybody else knows".

Technical analysis is the process by which financial researchers study past stock price series and trading volume data in an attempt to generate profit. According to EMH however the technique is useless for predicting future price changes. Technical analysis techniques will not be able to consistently produce excess returns, even though some forms of fundamental analysis may still provide excess returns.

In ideal conditions share prices must follow a random walk pattern consequently, efficient market hypothesis does not require that prices remain at or near equilibrium, but only that market participants not be able to systematically profit from market 'inefficiencies'.

2.3.2 Semi Strong Form of Market Efficiency

The semi strong form efficient market hypothesis states that all publicly available information is already incorporated into asset prices. The public information should provide not only past prices but also data reported in a company's financial statements, company's announcement, economic factors and others. It, as with the weak form also implies that no one should be able to outperform the market using something that "everybody else knows". This indicates that a company's financial statements are of no help in forecasting future price movements and securing high investment returns.

In semi-strong-form efficiency, it is implied that share prices adjust to publicly available new information very rapidly and in an unbiased fashion, such that no excess returns can be earned by trading on that information. Under semi-strong-form efficiency neither fundamental analysis nor technical analysis techniques will be able to reliably produce excess returns. To test for semi-strong-form efficiency, the adjustments to previously unknown news must be of a reasonable size and must be

instantaneous. To test for this, consistent upward or downward adjustments after the initial change must be looked for. If there are any such adjustments it would suggest that investors had interpreted the information in a biased fashion and hence in an inefficient manner.

2.3.3 Strong Form of Market Efficiency

The strong form efficient market hypothesis stipulates that private information or insider information is quickly incorporated by market prices and therefore cannot be used to reap abnormal trading profits. Thus, all information, whether public or private, is fully reflected in a security's current market price. This means that even the company's management (insiders) are not able to make gains from the information they hold. The rationale to support this form of efficiency is that the market anticipates in an unbiased manner, future development and therefore information has been incorporated and evaluated into market price in much more objective and informative way than insiders.

If there are legal barriers to private information becoming public as with insider trading laws, strong-form efficiency is impossible, except in the case where the laws are universally ignored. To test for strong-form efficiency, a market needs to exist where investors cannot consistently earn excess returns over a long period of time.

The efficient market hypothesis (EMH) therefore states that changes in current share prices are based on an investors' assessment of new information and that past news has already been fully incorporated in past share prices and thus has no bearing on current price changes. Aside from the impact on supply and demand brought about by

changes in available information by which investors can revise their opinion of a share's value, changes in share price should follow a random walk.

2.4 Market Model and Event Studies

Fama, Fisher, Jensen and Roll (1969) were the first researchers to make use of an 'event' period over which price data measurements could be compared with and distinguished from averaged data collected over a longer prior period. Observations of many share-split 'events' and their associated uniform-length prior-period data adjuncts could be standardized as multiple observations of one event phenomenon at time zero (t_0) to be analyzed in terms of the averaged data from the matched prior-period observations. This was the first use of what has come to be known as the Market Model.

This relationship is sometimes called the single-index model. The market model states that the return on a security depends on the return on the market portfolio and the extent of the security's responsiveness as measured by beta. In addition, the return will also depend on conditions that are unique to the firm. Graphically, the market model can be depicted as a line fitted to a plot of asset returns against returns on the market portfolio.

Binder (1998) notes that the event study methodology has become the standard method of measuring security price reaction to some announcement or event. He further notes that in practice, event studies have been used for two major reasons namely, to test the null hypothesis that the market efficiently incorporates information and to examine the impact of some event on the wealth of the firm's security holders under the maintained hypothesis of market efficiency, at least with respect to publicly available information.

Event studies examine the relationship between variables in a single group. The methodology has two variables namely the dependant and the independent. The independent variable is the event that introduces information into the market causing a change in the other 'dependant' variable. This allows a researcher to use the dependant variable as a measure of the effect of the independent variable thus making it possible to infer if the event is responsible for the changes in the dependent variable.

The independent variable is operationalized by specifying the date when the information of the event first becomes available to the market. It is also important to establish the relevant period over which the event is expected to impact on stocks returns. The dependent variable on the other hand is operationalized as the day to day changes resulting from the event. The change is measured as a percentage, e.g. in the case of stock price changes resulting from an event, the difference of the opening price and the closing price as a fraction of the opening price.

Mckinlay (1997), McWilliams et al. (1997) and Wells (2004) set out the steps for carrying out an event study.

First, the event of interest is defined and identifies the period over which the security prices of the firms involved in this event will be examined (event window).

Determination of the selection criteria for the inclusion of a given firm in the study is the next step. The criteria may involve restrictions imposed by data availability such as listing on the Nairobi Stock Exchange and summarize some sample characteristics (e.g., firm market capitalization, industry the representation, distribution of events through time). It may also be necessary to note any biases introduced through the sample selection.

The estimation window is then defined. The most common choice, when feasible, is using the period prior to the event window for the estimation window. For example, in an event study using daily data and the market model, the market model parameters could be constituted over the several days prior to the event.

The abnormal returns are then calculated with the parameter estimates for normal performance model, followed by the design of the testing framework for the abnormal returns is then done. Important considerations at this stage are defining the null hypothesis and determining the techniques for aggregating the individual firm abnormal returns.

Presentation of the empirical results is the final step. Ideally the empirical results will lead to insights relating to understanding the sources and causes of the effects (or lack of effects) of the event under study. Concluding comments then complete the study.

2.5 Nairobi Stock Exchange

In Kenya, dealing in shares and stocks started in the 1920s when the country was still a British colony. There was, however, no formal market, nor rules or regulations to govern stock broking activities. Trading took place on gentleman's agreement, in which standard commissions were charged with clients being obligated to honour their contractual commitments of making good delivery and settling relevant costs.

The Nairobi Stock Exchange (NSE) was constituted in 1954 as a voluntary association of stockbrokers registered under the Societies Act. This was made possible after clearance was obtained from the London Stock Exchange which recognized the NSE as an Overseas Stock Exchange lending it some level of credibility. The business of dealing in shares was then confined to the resident European community, since Africans and Asians were not permitted to trade in securities until after the attainment of independence in 1963.

In the 1980s the Kenyan Government realized the need to design and implement policy reforms to foster sustainable economic development with an efficient and stable financial system. In particular, it set out to enhance the role of the private sector in the economy, reduce the demands of public enterprises on the exchequer, rationalise the operations of the public enterprise sector to broaden the base of ownership and enhance capital market development. In 1984 an IFC/CBK study, Development of Money and Capital Markets in Kenya, became a blueprint for structural reforms in the financial markets, culminating in the formation of the Capital Markets Authority (CMA) in 1989, to assist in the creation of an environment conducive to the growth and development of the country's capital markets.

In 1991, the NSE was registered under the Companies Act and phased out the "Call Over" trading system in favour of the floor-based "Open Outcry System". Subsequently the stock exchange embarked on an extensive modernization exercise, including a move to more spacious premises at the Nation Centre in July 1994. The facilities include a modern Information Centre. Computerization has also been enhanced, and with increasing trading volumes electronic trading has become feasible.

In 1995 the Kenyan Government also relaxed exchange control for locally controlled companies subject to an aggregate limit of 20% and an individual limit of 2.5%. These were doubled to 40% and 5% respectively in the June 1995 to encourage foreign portfolio investments. A series of incentives have been put in place to encourage investments in the Nairobi Stock Exchange. These include a favourable tax regime that exempts listed securities from stamp duty, capital gains tax and value added tax and low withholding taxes on dividends at 5% for residents and 10% for non-residents.

The Exchange is sub-Saharan Africa's fourth-largest bourse. Twenty brokers are licensed to operate, and there are over 50 companies listed. Several improvements have greatly aided the steady growth of the bourse more so in the last ten years. Key amongst these have been the introduction of a central depository system to speed up clearing and settlement, introduction of real time settlement with the phasing out of the open outcry system and currently a concerted demutualization process which is expected to greatly improve the management of the bourse.

An often sited good period for the market was experienced after the Initial Public Offer (IPO) by the Kenya electricity generating company (KENGEN) which offered its subscribers good capital returns with them making up to three times the amount of investment. This prompted many new investors (mostly speculators out to make a quick kill on capital gains) to venture into the stock market greatly improving turnovers and leading to massive over-subscriptions of subsequent public offers. This was however greatly affected by the post election violence

that brought down share prices to their lowest levels ever and reduced turnover to similarly low levels. The situation was not helped much by the collapse of two major stock brokers; Nyaga and discount stockbrokers which went under with large amounts owed to many investors.

It is with this background and motivation in mind that I propose to conduct my study covering comparatively vibrant period running from 2003 to the month before the onset of the post election violence.

2.6 Other Empirical Studies

Gordon and Linter (1962) in their basic dividend model concluded that if a company pays out more cash dividend the price of its shares would increase.

Bhattacharya (1979), Kalay (1980), Miller and Rock (1982) each assuming information asymmetries exist developed models for cash dividend signalling. In each model, security prices adjust to new equilibrium levels in response to the information which managers convey to investors in their dividend decisions.

Atmaja, L.S., Balachandran B., and Skully M (n.d.) examining the role of ownership structure in validating the credibility of dividend signal by investigating the relationship between ownership structure and special dividend announcement effects in an imputation environment concluded that in an imputation environment where a double taxation of dividends does not exist, ownership concentration and composition lends the credibility of special dividend signal, resulting in stronger announcement effects.

Bhana (1997) examining the Johannesburg Stock Exchange for the period 1970 to 1988 to examine the share market response to substantial changes in dividend policy found that dividend announcements are indeed considered to be signals from managers and that the upward movement in value of stocks with increase in dividends cannot be attributed to contemporaneous earnings announcements.

Benartzi, Michaely and Thaler (1997) investigating the temporal relation between earnings and dividends for a sample of New York Stock Exchange and American Stock Exchange firms between 1979 and 1991 document that dividend changes provide little information about future earnings but appear to be significantly related to concurrent unexpected earnings.

Bernhardt, Douglas and Robertson (2005) exploit the monotonicity property that the signalling theory predicts. Using nonparametric techniques, they find that the information content in dividends is not positively related to the marginal cost of dividends. They also find that excess returns, rather than excess returns per dollar of dividend are more strongly related to the tax regime. Bernhardt, Douglas and Robertson argue that signalling theories do not fully explain dividends.

Asimakopoulos P, Lambrinoudakis C, Tsangarakis N & Tsiritakis E (2007) explore the effect of dividend announcements on stock market at the Athens stock exchange where dividend payment is mandatory. They found that unexpected dividend increases convey negative information to the public and announcements when minimum dividend is paid have no signalling effect, even for unexpected increases, providing prima facie evidence that dividends contain new information not embedded in contemporaneous earnings announcements.

Sakov (2006), studying German companies concludes thus

> "Our results do not provide much evidence in support of the signalling theory. The operating performance of the companies that raise the payout does not improve significantly, compared to companies with unchanged dividends or to the pre-announcement period. However, if we use regression techniques to control for the expectations of the market, we do not find any evidence of dividend signalling".

Li K and Zhao X (2008) analyze the relation between firm dividend policy and the quality of its information environment based on analyst earnings forecast errors and forecast dispersion and conjecturing that if the signalling theory of dividends is an accurate description of reality, and then firms' dividend policies should be positively associated with analyst earnings forecast errors and forecast dispersion. They find that, ceteris paribus, firms more subject to the problem of information asymmetry are less likely to make dividend payments, to initiate dividends, and to increase dividends, and that these firms also distribute smaller amounts. They conclude that their evidence casts doubt on the validity of the dividend signalling models and find a weak negative relation between repurchases and measures of information asymmetry.

Garrett I and Priestley R (2000) analyze the dividend behaviour of the aggregate stock market. Proposing a model that assumes managers minimize the costs of adjustment associated with being away from their target dividend payout. The target is expressed as a function of lagged stock prices and permanent earnings, generalizing previous models of dividend behaviour.

Using various versions of the model over various time periods, they find very strong evidence that dividends convey information about positive shocks to current permanent earnings. They also find evidence to support the hypothesis that information about expected changes in permanent earnings is already captured in lagged stock price changes and, thus, find no evidence to support the notion that dividends signal future permanent earnings. They also find significant evidence of dividend smoothing and dividends conveying information regarding unexpected positive changes in current permanent earnings.

Grullon G, Michaely R, Benartzi S & Thaler R (2005) show that dividend changes are uncorrelated with future earnings changes when one controls for the well-known nonlinearities in the earnings process. They also find that, regardless of the model of earnings expectations, models that include dividend changes do not outperform those that do not include dividend changes in out-of- sample tests. They conclude that changes in dividends are not useful in predicting future changes in earnings. Using several different estimation methods and various measures of profitability, they find that the association between dividend changes and future profitability is not consistent with the predictions of the signalling hypothesis.

Gillet R, Lapointe M and Raimbourg P (2008) examine the role of reputation when firms use dividends to signal their profitability. They analyze a signalling model in which reputation plays no role in equilibrium. They then show that taking reputation into account as a link between sequential dividend decisions makes it possible to endogenize signalling costs and obtain a separating equilibrium. They find that in most cases, the signalling equilibrium becomes unstable, causing any dividend signalling policy to become difficult to implement.

In Kenya several relevant studies have been carried out. Key amongst these are;

Iminza (1997) investigating whether dividend payments do affect stock prices, found that dividend payment has a significant impact on share prices. She also deduced that the impact is much greater when there is a reduction in dividend paid than when an increase is recorded.

Mbugua (2003) studying the impact on share price of stock dividend announcements on share price in the NSE revealed that stock dividends do have a significant impact on stock returns.

Muriithi (2001) studying whether interim dividends could be used in predicting final earnings in the NSE using regression analysis found that there is no relationship between interim earnings and eventual year end earnings.

Onyangoh (2004) Studying stock price responses to earnings announcements at the NSE for the period 1998 to 2003 concluded that earnings announcements contain relevant information which are fully impounded in stock prices prior to or almost instantaneously at the time of announcement.

Kiptoo (2006) looking at the information content of cash dividend increment announcements of thirteen NSE listed companies for the period 1998 to 2002 found that majority of the companies stock returns experienced a significant reaction to dividend announcement.

This research project therefore seeks to build upon these prior findings by looking at all dividend announcements at the Nairobi Stock Exchange covering a more current period i.e. 2003 to 2007 when the market was comparatively more active.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

An event study has been used for the research. The research examines the effect of payment of dividends on the value of listed firms.

3.2 Population

The population of interest is all the firms listed at the NSE at the end of December 2007 (see appendix A). This will be limited to listed companies because of the availability of data.

3.3 Sample

The sample consists of all the companies making up the 20 NSE share index as at 31 July 2007 (See appendix B). This cut off date is used since the index constituent companies were revised on August 2007. Including the newly included companies will not enable adequate analysis as some of these new entrants will not have adequate data. It is worth noting that prior to the revision of the index constituents in August 2007 the previous revision had been in May 2003 therefore the sampled companies will have been consistently in the index for most of the sample period.

The index constituents are considered to be sufficient in number to generalize the findings for the entire stock market and also adequately representative since they cut across the segments of the Nairobi Stock Exchange.

A period of 5 years running from January 2003 to December 2007 is analysed. This five year period was selected since it includes the period when the market was most vibrant following the successful initial public offer by KENGEN up to the period of

the post election violence when investor confidence was eroded and market activity drastically reduced.

3.4 Data Source And Specification

For the event study to be successful data on two variables were required. These variables are;

a. Data on the announcement of dividends (independent variable). The announcement dates on the notice boards to dealing members will be used. Additionally, publicly available information from annual reports, press releases, newspaper and magazine articles and company websites was also used especially when explicit information on the announcement date of dividends and financial performance could not be sourced from the NSE database.

b. Daily stock prices sourced from the NSE database were used as the dependent variable. Daily data is used since it provides more observations thus improving the efficiency of the estimation model.

Other event study methodology requirements used were;

An estimation window of 60 days preceding the event window is used. This period was considered to be long enough to provide adequate observations and short enough to eliminate any discrepancies that may be noted from using a very long period with many external influences.

A 41 day event period consisting of the date of making the dividend announcement and 20 days prior to the event and another 20 days after the event. The event period was considered since a longer period may have firms making structural changes resulting in data that may not reflect the current situation of the firm.

The market model is used as the normal performance return model. This is informed by works by Mckinlay (1997) who proposes this model to be an improvement over the constant mean return model since it removes that portion of the return that is related to variation in the market's return thus reducing the abnormal return. Fama (1991) also believes that the market model can be used for market efficiency when the phenomena being studied are firm specific as is the case with dividend announcements.

The standard market model is stated as;

$E\ (R_{jt}) = \alpha_j + \beta_j\ R_{mt}$

Where: R_{jt} is the period t return on security j

R_{mt} is the period t return on the market

α_j & β_j are the intercept and the slope of the regression respectively

3.5 Data Analysis

In order to capture association, the dividend announcements are assigned to one of three categories namely increase, decrease or no change.

The categorization will be based on the value of the dividend announcement in comparison to the previous announcement. Consequently if the dividend announced is higher than that of the previous period it will be categorised as being increased, if similar it will be no change and if lower it will be categorized as decreased.

Based on methodology used by Mckinlay (1997) and Kiptoo (2006) the testing methodology stated below is used.

Actual adjusted returns of the sampled firms over the estimation window were calculated using the holding period return encompassing both share prices and dividends.

$$R_{jt} \quad = \underline{P_{jt} + D_{jt}} - 1 \text{ X } 100\%$$

$$P_{j(t-1)}$$

Where P_{jt} is the share price of firm j in period t

D_{jt} is the cash dividend paid on the share of firm j in the period t

$P_{j(t-1)}$ is the share price of firm j in the previous period t-1

Return on the market portfolio over the estimation window was obtained as the average actual adjusted return of the 20 NSE index companies on the day in question

Assuming a stable linear relation between the market return and security return, alpha and beta for each stock was estimated by performing a simple regression of the results obtained in step a and b.

Based on the market model, the slope (α_j) and the intercept (β_j) of the regression were then obtained.

The return on the market portfolio (R_{mt}) over the event window was then obtained using the average adjusted return of the 20 NSE index companies.

The expected return of each security for each day over the event window was then calculated by introducing the results of step d into the estimation model using the α_1 and β_j earlier obtained.

$$E\ (R_{jt}) = \alpha_j + \beta_j\ R_{mt}$$

Where $E(R_{jt})$ is the expected return of security j for day t in the event window.

The actual return of each firm over the event window was then calculated using the holding period return.
The abnormal return (AR) was then calculated, being the difference between the actual return calculated in step f and the expected return calculated in step e for each security and each event day.

$$AR_{jt} = R_{jt} - E\ (R_{jt})$$

Where; AR_{jt} is the abnormal return for time period t

R_{jt} is the actual return from time period t

$E\ (R_{jt})$ is the normal returns for time period t

Based on the categorization previously established the abnormal returns obtained were aggregated for each day in the event window for each category.

$$\overline{AR}_t = \frac{1}{N} \sum_{j=1}^{N} AR_{jt}$$

Where $\overline{AR}_t$ is the sample average abnormal return for the specified day

N is the number of announcements falling in the category.

Due to the difficulty in pinpointing the exact day when the dividend announcement becomes public knowledge it was necessary to obtain cumulative abnormal returns (CAR) which was calculated by summing the average abnormal returns obtained across the event window.

$$\overline{CAR}_{(t1,t2)} = \sum_{j=1}^{N} \overline{AR}_t$$

Where $\overline{CAR}_{(t1,t2)}$ is the cumulative abnormal return for time periods 1 and 2

Data Presentation

Data obtained from the NSE database at the point of categorization is presented in a table showing the date of dividend announcement, the type and amount of dividend, its categorization and the calculated alpha and beta as presented in appendix C.

Analysed data is presented on an annual basis in graphical form indicating the trends across each category and average date for the overall event window, before announcement and after announcement is also presented. Cumulative five year data analysed annual and indicating the mean, standard deviation and t-test results is also presented and graphed.

Results of ANOVAs test to test the null hypothesis are also presented.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents the data, analysis, interpretation and discussion on the study of the target 20 companies that form NSE 20 share index , the study found 80 dividend announcement that were analyzed by the study . Regression analysis was carried out on the data over the estimation widow to estimate the expected return for various stocks over the event window, abnormal return and cumulative return were calculated and tested and their means established for comparison purposes. T- tests and standard deviations were also established for the summary data.

4.2 Market Reaction toward Dividend Announcement

The cumulative abnormal return during the event window were graphed in order to observe the effects of dividend announcement on the return of various companies that form the NSE 20 share index . The study obtained the averages for each year from year 2003 to 2007; the companies were grouped as increasing dividend, no change and decreasing dividend.

4.2.1 Reaction to Dividend Announcement by Companies in Year 2003

On calculating the estimated and actual return for each company in each category the differences between the two returns was computed for each security, for each event day to establish the abnormal return. The cumulative abnormal return was then calculated with references to the date of announcement. The study obtained the average of abnormal return for specific category in specific and represented the data in a graph and mean analysed for the event period.

Figure 1 Cumulative abnormal return for year 2003 dividend announcement
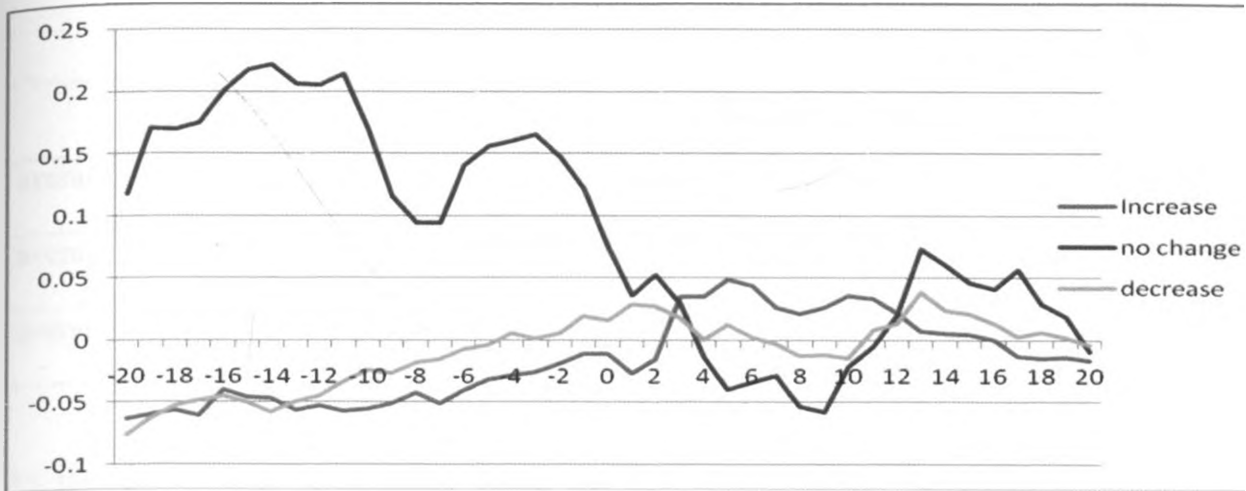
From figure 1 the study found that from the of companies with decreasing dividend the value of cumulative abnormal return was increasing up to the event day when it started decreasing again up to the 10th day after dividend announcement when it started rising again showing that dividend announcement had a negative effect on the value of companies with decreasing dividend. from the graphs of the companies with no change in dividend the study found that on the 4th day before dividend announcement the value of CAR started decreasing up to the 9th day after dividend announcement when it started rising from the negative value of CAR. this shows that dividend announcement had effect on market value for companies with no change in dividend probably due to the fact that investors has expected increases in value. Companies with increasing dividend showed positive trend whereby the value of CAR rose from the negative to positive culminating in the 2nd day after dividend announcement. From the information presented in the table above the study found that the dividend announcement had affects on CAR value thus affects on stock return.

Table 1   Average summary for 2003

2003	Increase	No change	Decrease
average for 41 days	0.0007	0.0864	-0.0094
average for +20 day	0.0189	0.0101	0.0088
average for -20	-0.0172	0.1632	-0.0289

As shown in the table, the study found that the mean CAR for companies with increasing dividend was higher after dividend announcement having a value of - 0.0172 which rose to 0.0189 for post event period thus a positive reaction to dividend announcement , the value for companies with no change in dividend was found negatively react to dividend announcement while that for companies with decreasing dividend had a positive reaction .This shows that there was a reaction to dividend announcement by companies forming NSE 20 index in year 2003.

4.2.2 Reaction to Dividend Announcement by Companies in Year 2004

Table 2 Cumulative abnormal return for year 2004 dividend announcement

37
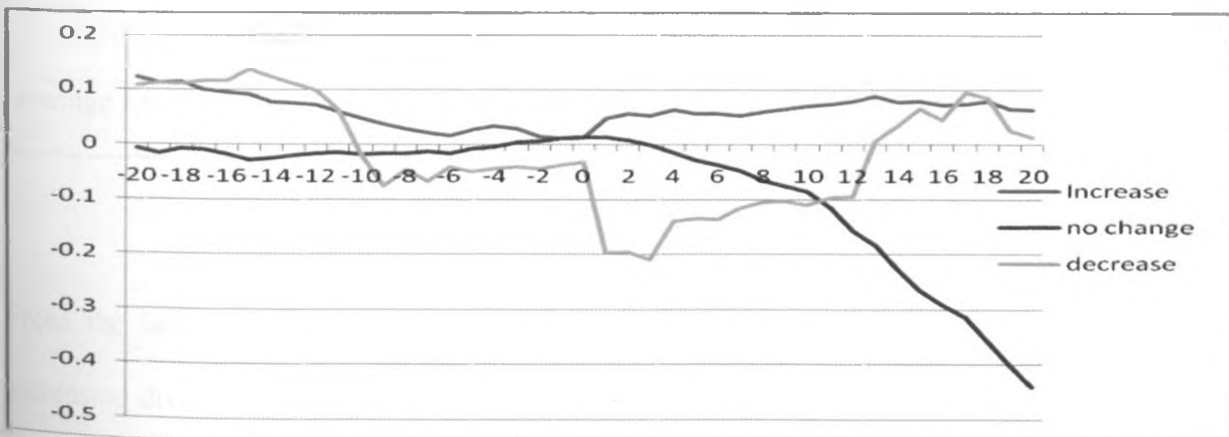
In the graph for year 2004 the study found that the companies which had decreasing dividend the value of CAR declined both twelve days before the announcement and on the event day both showing a negative trend, it only started rising in the +12 day where it rose to the positive value of CAR, thus showing presences of an effects on CAR by dividend announcement. From the graph of Companies with no change in dividend the study found that the graph changed direction to the negative on the event day which continually decreased which probably can be related to market efficiency where data on the impending announcement filtered into the market which generally expected increases. For companies with increasing dividend the value of CAR was seen to slightly decrease up to the event day when it changed direction and started increasing as the good news reached investors. From the above information the study found that dividend announcement had an effect on the value of CAR for each category of company in 2004.

Table 2   Average summaries for 2004

2004	Increase	No change	Decrease
average for 41 days	0.0614	-0.0802	-0.0096
average for +20 day	0.0663	-0.1539	-0.0489
average for -20	0.0590	-0.0111	0.0308

From the table above the study found that the mean CAR for companies with increasing dividend was higher after dividend announcement having a value of 0.0590 which rose to 0.0663 after the event day thus a positive reaction to dividend announcement , the value for companies with no change in dividend was found

negatively react to dividend announcement while that for companies with decreasing dividend had a negative reaction .This shows that there was a reaction to dividend announcement by companies forming NSE 20 index in year 2004.

4.2.3 Reaction to Dividend Announcement by Companies in Year 2005

Figure 3 Cumulative abnormal returns for year 2005 dividend announcement
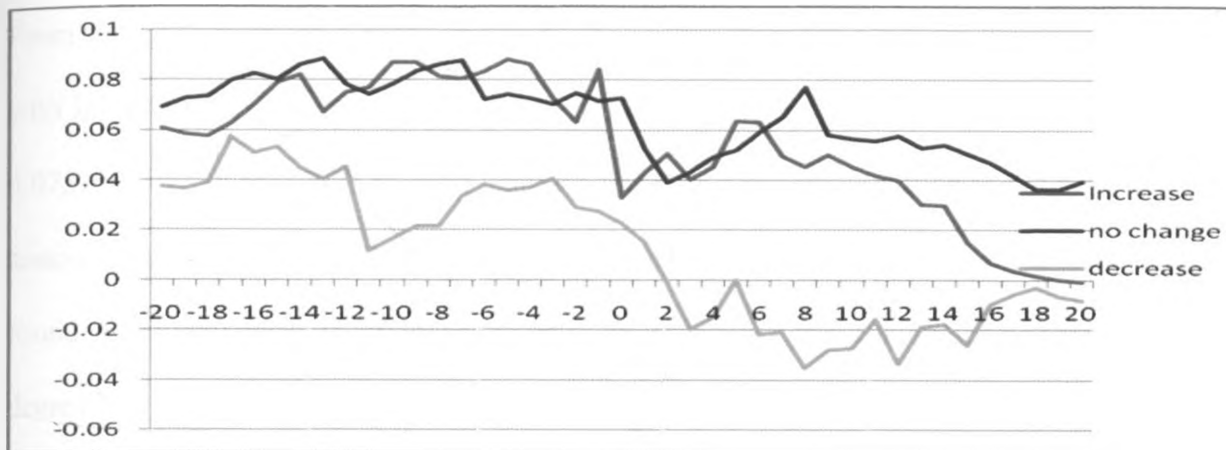
From the graph of companies with decreasing dividend, the study found that their value of CAR change direction two days before the event, where it started to decrease and after the dividend announcement it had both positive and negative fluctuation in the value of CAR, the same trend was observed for companies with no change in their dividend although their value was higher than that of decreasing dividend. The companies with increasing dividend showed a marked change in direction in the event day with an increase noted on day zero which began declining two days later, a trend that was sustained through out the rest of the event period up to day +20 day when a nil return was noted. This information confirms that dividend announcement by companies has effects on the value of firm even though the reaction to increases was not as favourable as would be expected.

Table 3   Average summary for 2005

2005	Increase	No change	Decrease
average for 41 days	0.0537	0.0648	0.0106
average for +20 day	0.0332	0.0513	0.0163
average for -20	0.0751	0.0779	0.0048

From the findings in table above the study found that the mean CAR for companies with increasing dividend was lower after dividend announcement having a value of 0.0751 which fell to 0.0332 for post vent window thus a negative reaction to dividend announcement , the value for CAR for companies with no change in dividend was found negatively react to dividend announcement while that for companies with decreasing dividend had a positive reaction .This shows that there was a reaction to dividend announcement by companies forming NSE 20 index in year 2005. The fact that the reactions were not the same as those in the previous years could be as a result of changing investor perceptions as new investors entered the bourse as more IPO's were floated.

4.2.4 Reaction to Dividend Announcement by Companies in Year 2006

Figure 4 Cumulative abnormal returns for year 2006 dividend announcement
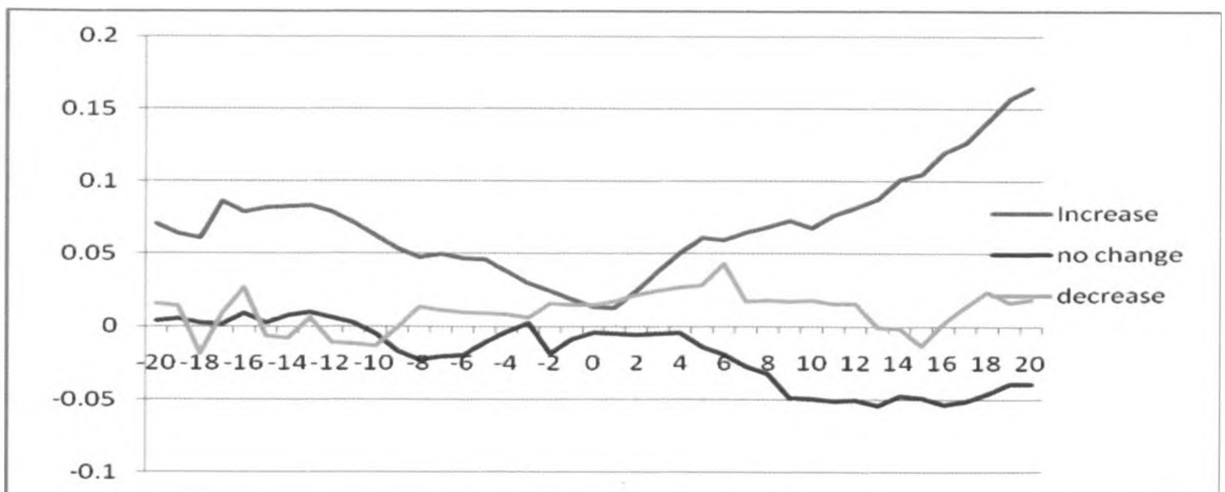
From the graph of cumulative abnormal return the study found that despite a slight decrease prior to the announcements, there was a change of direction on the event day which resulted to the value of CAR increasing. This trend was sustained through out the rest of the event window. In regard to decreasing dividend the study found that there was a slight increase in CAR beginning two days before the event day which decreases on day five , in the graph of no change in dividend the study found that there was a consistent return from day -1 to day 5 then the returns began to decrease until day 16 where a change in direction was noted. This information's shows that divided announcement by companies that form NSE 20 had effects on CAR values, which is an indication that dividend announcement had effects on stock returns

Table 4   Average summary for 2006

2006	Increase	No change	Decrease
average for 41 days	0.0703	-0.0185	0.0109
average for +20 day	0.0844	-0.0344	-0.0148
average for -20	0.0591	-0.0034	0.0360

In year 2006 the study found that value for CAR for companies with increasing dividend had a positive reaction to dividend announcement while those with decreasing dividend and no change in dividend had negative reaction, this confirms that divided announcement by company's causes some reaction in market prices and returns depending on the information contained in the announcement.

4.2.5 Reaction to Dividend Announcement by Companies in Year 2007

Figure 5 Cumulative abnormal returns for year 2007 dividend announcement
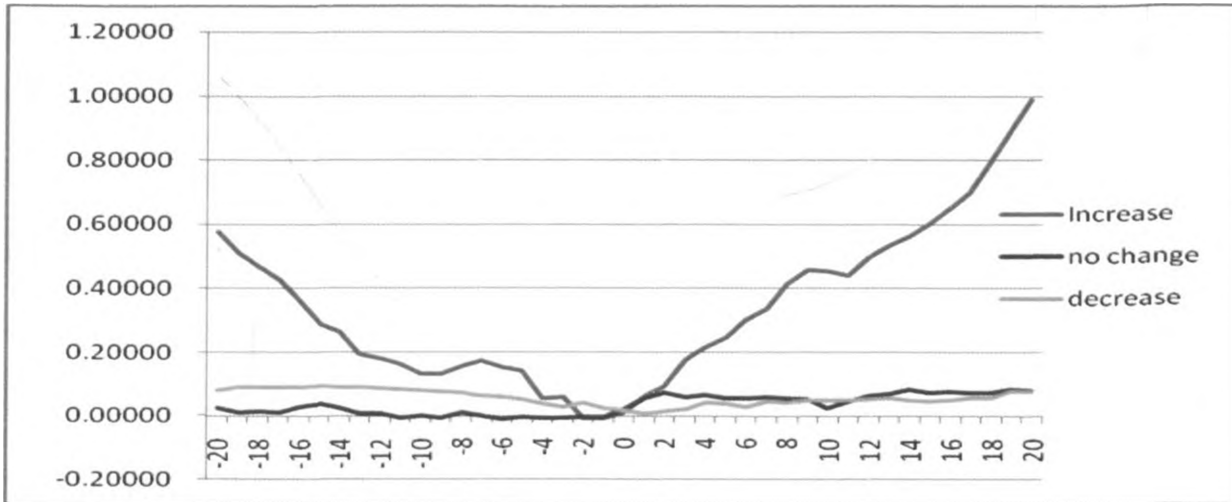
From the above figure the study found that there was a change in direction for all the graphs on the event day, the most profound changes was seen on the graph of companies with increasing dividend where a declining trend was noted from day -20 to the event day when a sustained increase in returns was note. A slight decline in abnormal return and a slight increase were noted in the decrease and no change categories with overall consistency noted in comparison with the increase category.

Table 5   Average summary for 2007

2007	Increase	No change	Decrease
average for 41 days	0.0565	0.0349	0.3375
average for +20 days	0.0709	0.0061	0.2206
average for -20 days	0.0441	0.0644	0.4708

From the table above the study found that the mean CAR for companies with increasing dividend was higher   after dividend announcement having a value of 0.0709 from 0.0441 in the pre-event period thus a positive reaction to dividend

announcement , the value for companies with no change in dividend was found negative reaction to dividend announcement decreasing from 0.0644 to 0.0061while that for companies with decreasing dividend had a negative reaction decreasing by 0.2502 .This shows that there was a reaction to dividend announcement by companies forming NSE 20 index in year 2007 which is consistent with the dividend signalling theory.

4.2.6 Five Year summaries

Table 6   Summary of T-statistics, mean and standard deviation

Day	2003	2004	2005	2006	2007	Mean	Std. Deviation	t
-20	-0.007	0.074	0.056	0.030	0.226	.0758228	.08937788	1.897
-19	0.016	0.069	0.056	0.028	0.203	.0745257	.07486381	1.226
-18	0.021	0.072	0.057	0.015	0.191	.0711952	.07105123	1.241
-17	0.022	0.068	0.067	0.033	0.175	.0730381	.06067752	1.692
-16	0.039	0.064	0.068	0.038	0.160	.0737479	.05002210	1.297
-15	0.041	0.066	0.071	0.026	0.140	.0687681	.04398873	1.496
-14	0.040	0.058	0.071	0.028	0.126	.0646440	.03826787	1.777
-13	0.034	0.055	0.065	0.033	0.097	.0570061	.02625407	1.855
-12	0.036	0.051	0.066	0.025	0.091	.0540386	.02602803	1.642
-11	0.042	0.036	0.054	0.021	0.079	.0462479	.02183712	1.736
-10	0.030	0.004	0.061	0.015	0.071	.0360152	.02892805	1.784
-9	0.013	-0.018	0.064	0.012	0.067	.0276498	.03662282	1.688
-8	0.012	-0.011	0.063	0.013	0.079	.0311899	.03823494	1.824

-7	0.010	-0.020	0.067	0.014	0.079	.0300103	.04166700	1.611
-6	0.031	-0.014	0.065	0.013	0.066	.0321539	.03431123	2.095
-5	0.040	-0.010	0.066	0.015	0.063	.0348141	.03247601	2.397
-4	0.046	-0.005	0.065	0.014	0.028	.0297557	.02724193	2.442
-3	0.047	-0.002	0.061	0.013	0.026	.0289965	.02561209	2.532
-2	0.044	-0.008	0.056	0.008	0.010	.0221846	.02675348	2.854
-1	0.044	-0.005	0.061	0.009	0.005	.0225810	.02826786	2.786
0	0.027	-0.002	0.043	0.008	0.015	.0181307	.01722013	2.354
1	0.013	-0.045	0.037	0.008	0.041	.0109251	.03448368	2.708
2	0.022	-0.043	0.030	0.014	0.061	.0163487	.03789663	2.965
3	0.027	-0.052	0.021	0.019	0.086	.0204429	.04917224	2.930
4	0.007	-0.030	0.026	0.025	0.107	.0271393	.05035685	2.205
5	0.007	-0.035	0.039	0.025	0.112	.0296444	.05400712	2.227
6	0.004	-0.039	0.034	0.028	0.129	.0311219	.06188715	2.124
7	-0.001	-0.036	0.031	0.019	0.147	.0319002	.06905999	2.033
8	-0.015	-0.036	0.029	0.018	0.170	.0332493	.08083747	.920
9	-0.014	-0.038	0.027	0.014	0.186	.0350412	.08818495	.889
10	0.000	-0.042	0.025	0.012	0.176	.0342910	.08337935	.920
11	0.012	-0.046	0.027	0.014	0.178	.0370007	.08353515	.990
12	0.019	-0.058	0.021	0.016	0.203	.0404585	.09693885	.933
13	0.040	-0.030	0.021	0.011	0.220	.0523702	.09684520	1.209
14	0.030	-0.039	0.022	0.018	0.231	.0524855	.10348427	1.134
15	0.024	-0.041	0.013	0.014	0.239	.0501084	.10887854	1.029
16	0.019	-0.059	0.015	0.023	0.258	.0512429	.12051124	.951

17	0.016	-0.048	0.013	0.030	0.276	.0572831	.12590992	1.017
18	0.007	-0.065	0.012	0.040	0.308	.0603543	.14364354	.940
19	0.002	-0.103	0.010	0.045	0.350	.0606739	.17072223	.795
20	-0.010	-0.121	0.010	0.048	0.382	.0619936	.18971045	.731

The study sought to establish the significance of the CAR and therefore computed the t- statistic at the 95% confidence level; if the t-value was found to be greater than 2 then CAR was significant; if less than 2 the CAR was insignificant. From the findings in the above table the CAR was found to be significant in the -6th day all the way to +7 day where the value was found to be greater than 2. This show that period surrounding the event day the CAR was significant thus dividend announcement influenced the share prices for companies forming the NSE 20 share index.

Figure 6 Cumulative abnormal returns for entire study period
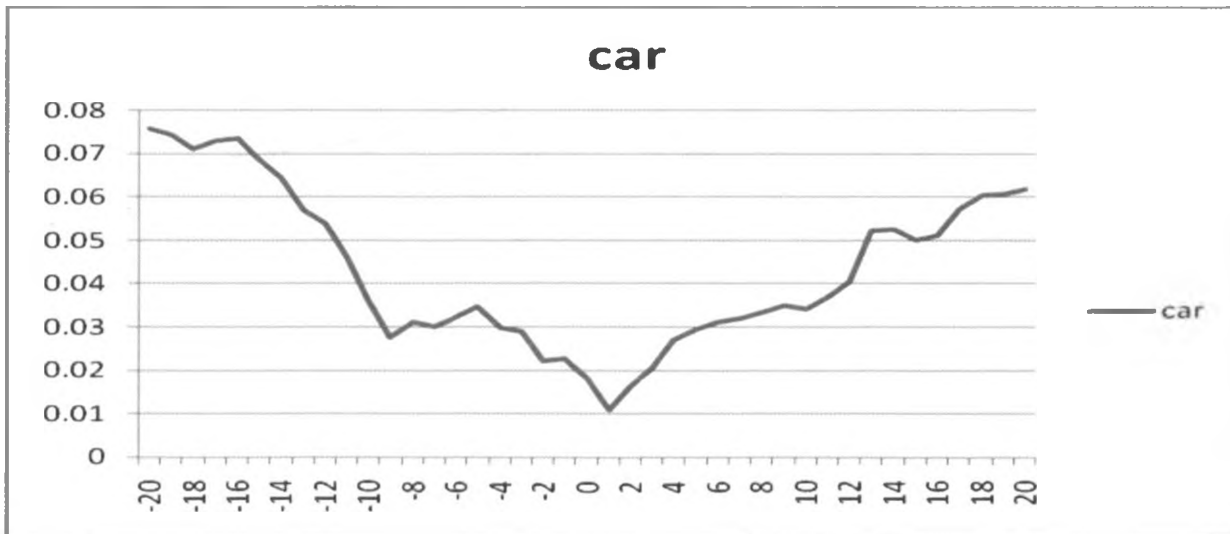
From the above figure the study did graphing for the cumulative abnormal return for the entire study period , for all the companies, from the finding the study found that

there was change of direction in the event day where the value of CAR started to rise this shows that the CAR value was reacting to dividend announcement by the companies. The increase is attributable to the fact that most of the announcements analyzed (54%) were in relation to increasing dividends in comparison to no change (24%) and decrease (12%).

4.3 Hypothesis Testing

The null hypothesis was stated as;

Ho: Dividend movements have no effect on the share price following financial performance and dividend announcements.

The various aspects of dividend movements were subjected to ANOVAs, to test the hypothesis that dividend movements have no effect on the share price following financial performance and dividend announcements. The ANOVAs results are summarized in Table below.

Table 7   Summary of ANOVAs

	Sum of squares	df	Mean Square	F	α
Between groups	5.908	4	1.477	$F_o = 7.468$	$α_o = .050$
Within groups	3.168	16	.198	$F_c = 2.663$	$α_c = .000$
Total	**9.076**	**20**			

Note: df = degrees of freedom; F = ANOVAs; α = level of significance; F_o = calculated value of F; F_c = the critical value of F; $α_o$ = calculate value of α; and $α_c$ = the critical value of α.

The information in Table above shows that Fo = 7.468 > F_c = 2.663; and α_o = .050 > α_o = .000, thus there is a significant difference on effects of dividend announcement on the share price. The hypothesis that dividend movements have no effect on the share price following financial performance and dividend announcements was therefore rejected.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary of Findings

In year 2003 the study found that companies with decreasing dividend the value of cumulative abnormal return was increasing from the days before the event up to the event day when it started decreasing again up to the 10th day after dividend announcement when it started rising again, this shows that dividend announcement had effects on the value of CAR of companies with decreasing dividend. From the graphs of the companies with no change in dividend the study found that on the 4th day before dividend announcement the value of CAR started decreasing up to the 9th day after dividend announcement when it started rising from the negative value of CAR, this also shows that dividend announcement had effects on value of CAR for companies with no change in dividend. Companies with increasing dividend showed positive trend whereby the value of CAR rose from the negative to positive in the 2nd day after dividend announcement. The study found that the mean CAR for companies with increasing dividend was higher after dividend announcement thus a positive reaction to dividend announcement, the value for companies with no change in dividend was found negatively react to dividend announcement while that for companies with decreasing dividend had a negative reaction on announcement .This shows that there was a reaction to dividend announcement by companies forming NSE 20 index in year 2003.

In the year 2004 the study found that the companies which had decreasing dividend the value of CAR changes direction 12 day prior to the event and on the event day both showing a negative trend. it only started rising 12 days after the event where it rose to the positive CAR, thus showing presences of an effects on CAR by dividend

announcement. Companies with no change in dividend the graph changed direction to the negative on the event day which continued up to the end of the event window. For companies with increasing dividend the value of CAR was seen to decrease up to the event day when it changed direction and started increasing. The study also found that the mean CAR for companies with increasing dividend was higher after dividend announcement having thus positively reacting to dividend announcement. the value for companies with no change in dividend was found to negatively react to dividend announcement while that for companies with decreasing dividend had a negative reaction.

For year 2005 the study found that their value of CAR change direction 2 days prior to the event day where it started to decrease and after the dividend announcement it had both positive and negative fluctuation in the value of CAR. the same trend was observed for companies with no change in their dividend although their value was higher than that of decreasing dividend. The companies with increasing dividend showed a change in direction in the event day and then it was followed by fluctuation which saw the value of CAR continue to decrease up to +20 day when it touched zero. This information confirms that dividend announcement by companies has effects on the value of CAR. The study also found that the mean CAR for companies with increasing dividend was lower after dividend announcement thus a negative reaction to dividend announcement. the value for CAR for companies with no change in dividend was found negatively react to dividend announcement while that for companies with decreasing dividend had a positive reaction.

For 2006 the study found that the graph for increasing dividend had a change of direction on the event day which resulted to the value of CAR start to increase. from

the graph of decreasing dividend the study found that there were major fluctuation in CAR after the events day, in the graph of no change in dividend the study found that there was decrease in the value of the CAR after the event day. The study found that value for CAR for companies with increasing dividend had a positive reaction to dividend announcement while those with decreasing dividend and no change in dividend had negative reaction; this confirms that divided announcement by company's causes

In year 2007 the study found that there was a change in direction for all the graphs on the event day, the most profound changes was seen on the graph of companies with increasing dividend this is clear indication that dividend announcment affects the value of CAR . The value for companies with increasing dividend was shown to start increasing after dividend announcement. The study also shows that the mean CAR for companies with increasing dividend was lower after dividend announcement thus a negative reaction to dividend announcement, the value for companies with no change in dividend was found positive react to dividend announcement while that for companies with decreasing dividend had a positive reaction.

From the general graph of the cumulative abnormal return for the entire study period, for all the companies, the study found that there was change of direction on the event day where the value of CAR started to rise after the announcement indicating that the market value was reacting to dividend announcement by the companies.

A t-test on the five year data indicated significance at the 95% confidence level from day -6 to day 7 while the ANOVAs test results prompted the rejection of the null hypothesis.

5.2 Conclusion

From the above findings the study concludes that dividend announcement by companies have effects in share prices of companies forming the NSE 20 share index, this is to be expected given that the stock market is not efficient. The study also found that dividend announcement had positive effects for companies with increasing dividend while it had negative reaction to companies with decreasing dividend; companies with no changes in dividend were found to have mixed reaction toward dividend announcement. Exceptions were however noted in the 2005 results which indicated a declined across the board after the dividend announcement. The exact factors causing this trend could not be established but entry of speculators in the market whose expectations were not be met could have a contributing factor. These results and hypothesis testing thus give an indication of the influence of dividend signalling in the bourse.

5.3 Recommendations

From the research findings it can be established that there is evidence of investors using dividend signals to make buy and sell decisions, thus the study recommends that dividend announcement could be used by investors to predict stock price of firms in the period after announcement. Buy and sell decisions can also be reached depending on the anticipated announcements.

It would also be worthwhile to carry out an in-depth study of the trends in the market especially in the 2005 to investigate why the expected trends in returns were not noted. External influences could also be looked into. Finally, a study can be done to investigate the behavioural influences of various categories of investors in the market

and establish if decisions are made due to lack of adequate knowledge or pre-conceptions of the investors.

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APPENDICES

APPENDIX A

LIST OF COMPANIES AT THE NAIROBI STOCK EXCHANGE

Main investment market

Agriculture

1. Rea Vipingo Ltd.
2. Sasini Tea & Coffee Ltd.
3. Kakuzi Ltd.

Commercial and Services

1. Marshalls E.A. Ltd.
2. Car & General Ltd.
3. Hutchings Biemer Ltd.
4. Kenya Airways Ltd.
5. CMC Holdings Ltd.
6. Uchumi Supermarkets Ltd.
7. Nation Media Group Ltd.
8. TPS (Serena) Ltd.
9. Standard Group Ltd.

Finance and Investment

1. Barclays Bank of Kenya Ltd.
2. CFC Stanbic Bank Ltd.
3. Housing Finance Ltd.
4. Centum Investment Ltd.
5. Kenya Commercial Bank Ltd.
6. National Bank of Kenya Ltd.

7. Pan Africa Insurance Holdings Co. Ltd
8. Diamond Trust Bank of Kenya Ltd.
9. Jubilee Insurance Co. Ltd
10. Standard Chartered Bank Ltd.
11. NIC Bank Ltd.
12. Equity Bank Ltd.
13. Olympia Capital Holdings Ltd
14. The Co-operative Bank of Kenya Ltd.
15. Kenya Re-Insurance Ltd.

Industrial and Allied

1. Athi River Mining Ltd.
2. BOC Kenya Ltd.
3. British American Tobacco Kenya Ltd.
4. Carbacid Investments Ltd. .
5. E.A. Cables Ltd.
6. E.A. Breweries Ltd.
7. Sameer Africa Ltd.

8. Kenya Oil Ltd.

9. Mumias Sugar Company Ltd.

10. Unga Group Ltd.

11. Bamburi Cement Ltd.

12. Crown Berger (K) Ltd.

13. E.A Portland Cement Co. Ltd.

14. Kenya Power & Lighting Co. Ltd.

15. Total Kenya Ltd.

16. Eveready East Africa Ltd.

17. KENGEN Ltd.

Alternative Investments Market

1. A.Baumann & Co.Ltd

2. Eaagads Ltd

3. Williamson Tea Kenya Ltd

4. Kenya Orchards Ltd

5. City Trust Ltd

6. Express Ltd

7. Kapchorua Tea Co. Ltd

8. Limuru Tea Co. Ltd

APPENDIX B

LIST OF SAMPLED COMPANIES

1. Unilever Tea
2. Williamson tea
3. Kakuzi
4. Sasini
5. Uchumi
6. Kenya Airways
7. TPS Serena
8. Nation Media group
9. Barclays bank
10. Diamond Trust bank
11. Kenya Commercial Bank
12. Standard Chartered Bank
13. Bamburi Cement
14. BAT Kenya
15. BOC Limited
16. NIC Bank
17. East African Breweries Ltd
18. KP&LC
19. Total Kenya
20. Sameer Africa

APPENDIX C

DATA COLLECTION FORM

Company	Date	Category	α	β
Unilever	2/19/2003	Increase	0.006	0.001
DTB	2/25/2003	Increase	0.002	0.237
NIC	2/25/2003	Increase	0.009	0.102
NMG	2/27/2003	Increase	0.012	-0.097
Total	3/14/2003	Increase	0.006	0.152
WT	6/13/2003	Increase	0.004	0.741
BAT	7/11/2003	Increase	-0.002	1.346
EABL	9/1/2003	Increase	0.003	1.333
BBK	12-Feb-2004	Increase	0.001	2.390
Bamburi	18-Feb-2004	Increase	0.002	0.483
DTB	23-Feb-2004	Increase	0.004	1.204
NIC	23-Feb-2004	Increase	0.002	1.359
KCB	25-Feb-2004	Increase	0.002	2.328
SCB	26-Feb-2004	Increase	-0.001	1.729
Total	26-Feb-2004	Increase	0.001	1.116
Unilever	3/2/2004	Increase	-0.005	0.346
NMG	3/9/2004	Increase	0.001	0.537
KQ	4/28/2004	Increase	0.005	1.138
EABL	8/27/2004	Increase	0.001	0.832
BBK	2/10/2005	Increase	-0.001	0.512

Sameer	2/21/2005	Increase	0.001	0.275
KCB	2/25/2005	Increase	0.001	0.839
NIC	2/25/2005	Increase	0.001	0.254
Kakuzi	3/3/2005	Increase	0.004	1.300
NMG	3/3/2005	Increase	0.001	1.279
KQ	5/27/2005	Increase	0.005	0.179
WT	6/14/2005	Increase	0.001	0.983
BOC	10/3/2005	Increase	0.001	-0.040
KPLC	10/7/2005	Increase	0.005	0.891
NIC	2/24/2006	Increase	0.000	1.485
KCB	2/27/2006	Increase	0.003	0.490
TPS	3/2/2006	Increase	0.001	0.426
SCB	3/2/2006	Increase	0.001	-0.036
KQ	5/30/2006	Increase	0.004	1.318
EABL	8/25/2006	Increase	0.000	0.457
BAT	2/21/2007	Increase	0.002	0.577
DTB	2/26/2007	Increase	0.000	1.265
NIC	2/28/2007	Increase	0.002	0.553
SCB	3/2/2007	Increase	0.000	0.919
KCB	3/5/2007	Increase	0.001	1.028
WT	6/27/2007	Increase	0.001	1.746
EABL	8/31/2007	Increase	0.001	0.127
KPLC	9/28/2007	Increase	0.001	0.573
Sameer	2/14/2003	No change	0.007	-0.154

TPS	2/28/2003	No change	0.005	0.080
BOC	11/6/2003	No change	0.004	-0.095
TPS	26-Feb-2004	No change	-0.002	0.593
BAT	3/12/2004	No change	0.003	0.942
WT	6/18/2004	No change	0.003	0.344
BOC	11/5/2004	No change	-0.003	0.233
Bamburi	2/16/2005	No change	0.000	0.508
DTB	2/25/2005	No change	-0.002	2.666
TPS	2/28/2005	No change	0.003	0.006
Unilever	3/3/2005	No change	0.000	0.647
Total	3/3/2005	No change	-0.001	1.691
BAT	3/18/2005	No change	0.002	0.297
BAT	2/17/2006	No change	-0.001	0.129
BBK	2/22/2006	No change	0.001	0.113
Sameer	2/22/2006	No change	0.002	0.373
DTB	3/3/2006	No change	0.006	0.566
NMG	3/6/2006	No change	0.001	0.030
TOTAL	3/16/2006	No change	0.001	0.554
KPLC	9/29/2006	No change	0.004	0.645
BOC	11/2/2006	No change	0	0
Bamburi	2/14/2007	No change	-0.001	1.253
Total	3/22/2007	No change	-0.002	0.676
TPS	3/23/2007	No change	0.000	0.053
Unilever	3/6/2007	No change	0.002	0.472

NMG	3/26/2007	No change	-0.005	1.641
KQ	5/30/2007	No change	0.000	1.682
Unilever	6/20/2006	Decrease	-0.002	0.130
Williamson	3/6/2006	Decrease	0.000	0.350
KQ	5/24/2004	Decrease	0.007	1.139
BBK	2/20/2003	Decrease	0.006	-0.038
BBK	2/22/2007	Decrease	-0.022	3.184
SCB	2/20/2003	Decrease	0.005	-0.223
SCB	2/17/2005	Decrease	-0.003	0.812
Bamburi	2/19/2003	Decrease	0.012	-0.043
EABL	8/25/2005	Decrease	0.003	1.331
Sameer	12-Feb-2004	Decrease	-0.001	0.465

APPENDIX D

Analysis of AR and CAR 2003

Event day	2003					
	Increase		No change		Decrease	
	AR	CAR	AR	CAR	AR	CAR
-20	-0.010	-0.063	-0.053	0.118	-0.013	-0.076
-19	-0.010	-0.059	0.001	0.171	-0.011	-0.063
-18	-0.009	-0.056	-0.005	0.170	-0.004	-0.052
-17	-0.014	-0.060	-0.027	0.175	-0.003	-0.048
-16	0.000	-0.040	-0.016	0.201	0.005	-0.045
-15	-0.007	-0.046	-0.004	0.217	0.007	-0.050
-14	-0.010	-0.046	0.016	0.222	-0.008	-0.057
-13	-0.019	-0.056	0.001	0.206	-0.005	-0.049
-12	-0.019	-0.052	-0.009	0.206	-0.011	-0.044
-11	-0.027	-0.057	0.045	0.214	-0.009	-0.033
-10	-0.030	-0.055	0.053	0.169	0.002	-0.024
-9	-0.032	-0.051	0.022	0.116	-0.009	-0.026
-8	-0.028	-0.042	0.000	0.094	-0.003	-0.017
-7	-0.033	-0.050	-0.046	0.094	-0.008	-0.015
-6	-0.025	-0.040	-0.016	0.140	-0.003	-0.007
-5	-0.019	-0.032	-0.005	0.156	-0.009	-0.004
-4	-0.015	-0.028	-0.005	0.160	0.004	0.005
-3	-0.014	-0.025	0.018	0.165	-0.004	0.002
-2	-0.013	-0.019	0.025	0.147	-0.014	0.005
-1	-0.008	-0.011	0.048	0.122	0.004	0.020
0	-0.008	-0.011	0.074	0.074	0.016	0.016
1	-0.024	-0.026	-0.038	0.036	0.013	0.029
2	-0.002	-0.015	0.016	0.052	-0.002	0.028
3	0.034	0.035	-0.023	0.029	-0.010	0.018
4	0.035	0.035	-0.043	-0.014	-0.018	0.000
5	0.044	0.049	-0.026	-0.039	0.013	0.013
6	0.038	0.044	0.006	-0.033	-0.010	0.002
7	0.024	0.027	0.005	-0.028	-0.005	-0.003
8	0.022	0.021	-0.025	-0.053	-0.010	-0.013
9	0.027	0.026	-0.005	-0.058	0.001	-0.012
10	0.035	0.036	0.037	-0.021	-0.003	-0.014
11	0.032	0.033	0.016	-0.005	0.023	0.008
12	0.027	0.022	0.025	0.020	0.006	0.014
13	0.016	0.007	0.053	0.073	0.025	0.039
14	0.016	0.006	-0.013	0.061	-0.014	0.024
15	0.011	0.005	-0.014	0.047	-0.003	0.021
16	0.011	0.001	-0.005	0.041	-0.007	0.014
17	0.006	-0.013	0.015	0.057	-0.011	0.003

18	0.008	-0.014	-0.027	0.029	0.004	0.007
19	0.011	-0.014	-0.011	0.018	-0.005	0.002
20	0.005	-0.016	-0.027	-0.009	-0.006	-0.004

Analysis of AR and CAR 2004

2004						
Event day	**Increase**		**No changes**		**Decrease**	
	AR	**CAR**	**AR**	**CAR**	**AR**	**CAR**
-20	0.010	0.122	0.008	-0.008	-0.006	0.106
-19	-0.001	0.113	-0.010	-0.016	0.003	0.112
-18	0.015	0.114	0.002	-0.006	-0.005	0.109
-17	0.005	0.099	0.009	-0.009	0.000	0.115
-16	0.004	0.094	0.011	-0.018	-0.021	0.114
-15	0.013	0.090	-0.004	-0.028	0.014	0.135
-14	0.002	0.078	-0.006	-0.025	0.013	0.122
-13	0.005	0.076	-0.003	-0.019	0.012	0.109
-12	0.012	0.071	-0.001	-0.015	0.034	0.097
-11	0.012	0.060	0.002	-0.015	0.083	0.063
-10	0.010	0.047	-0.002	-0.017	0.055	-0.020
-9	0.010	0.037	0.000	-0.015	-0.029	-0.075
-8	0.006	0.028	-0.003	-0.016	0.022	-0.046
-7	0.005	0.021	0.003	-0.013	-0.026	-0.068
-6	-0.010	0.016	-0.008	-0.016	0.007	-0.042
-5	-0.007	0.026	-0.005	-0.008	-0.004	-0.049
-4	0.006	0.033	-0.009	-0.003	-0.005	-0.045
-3	0.013	0.027	-0.002	0.005	0.003	-0.040
-2	0.003	0.014	-0.005	0.007	-0.007	-0.044
-1	-0.003	0.011	-0.002	0.012	-0.005	-0.037
0	0.013	0.013	0.014	0.014	-0.032	-0.032
1	0.033	0.047	0.000	0.014	-0.164	-0.196
2	0.009	0.056	-0.005	0.009	0.001	-0.195
3	-0.003	0.053	-0.010	-0.001	-0.014	-0.209
4	0.009	0.063	-0.013	-0.014	0.069	-0.140
5	-0.007	0.056	-0.014	-0.028	0.006	-0.134
6	-0.001	0.055	-0.009	-0.037	-0.002	-0.136
7	-0.002	0.053	-0.009	-0.046	0.022	-0.115
8	0.007	0.060	-0.018	-0.064	0.010	-0.104
9	0.005	0.065	-0.010	-0.075	0.001	-0.104
10	0.004	0.069	-0.011	-0.086	-0.007	-0.110
11	0.004	0.073	-0.030	-0.116	0.015	-0.096
12	0.006	0.079	-0.042	-0.157	0.001	-0.094
13	0.009	0.088	-0.026	-0.183	0.100	0.006
14	-0.011	0.077	-0.042	-0.226	0.028	0.033
15	0.002	0.078	-0.039	-0.265	0.031	0.064

16	-0.007	0.071	-0.026	-0.291	0.080	0.044
17	0.002	0.074	-0.022	-0.313	-0.010	0.094
18	0.005	0.079	-0.044	-0.357	-0.021	0.083
19	-0.014	0.065	-0.043	-0.401	-0.038	0.025
20	-0.001	0.064	-0.040	-0.440	0.008	0.013

Analysis of AR and CAR 2005

2005						
Event day	Increase		No change		Decrease	
	AR	CAR	AR	CAR	AR	CAR
-20	0.002	0.0606	-0.003	0.069	0.001	0.038
-19	0.000	0.0582	-0.001	0.073	0.033	0.037
-18	-0.005	0.0578	-0.006	0.074	-0.027	0.039
-17	-0.008	0.0628	-0.003	0.080	-0.017	0.057
-16	-0.009	0.0704	0.002	0.083	0.033	0.051
-15	-0.003	0.0791	-0.006	0.080	0.002	0.053
-14	0.015	0.0822	-0.002	0.086	-0.014	0.045
-13	-0.008	0.0672	0.010	0.089	0.017	0.040
-12	-0.002	0.0749	0.004	0.079	0.001	0.045
-11	-0.010	0.0769	-0.004	0.074	0.002	0.012
-10	0.000	0.0868	-0.005	0.079	-0.013	0.017
-9	0.005	0.0868	-0.003	0.083	-0.014	0.021
-8	0.001	0.0815	-0.001	0.086	0.002	0.022
-7	-0.003	0.0805	0.015	0.088	0.001	0.034
-6	-0.005	0.0835	-0.002	0.073	0.001	0.038
-5	0.002	0.0881	0.002	0.074	0.001	0.036
-4	0.013	0.0859	0.002	0.073	0.001	0.037
-3	0.009	0.0726	-0.005	0.070	-0.010	0.041
-2	-0.021	0.0632	0.004	0.075	0.001	0.029
-1	0.051	0.0839	-0.001	0.071	0.000	0.028
0	0.033	0.0331	0.073	0.073	0.015	0.023
1	0.010	0.0429	-0.020	0.053	0.002	0.015
2	0.008	0.0505	-0.014	0.039	0.004	-0.001
3	-0.010	0.0402	0.004	0.043	0.003	-0.020
4	0.005	0.0451	0.006	0.049	0.002	-0.015
5	0.019	0.0637	0.003	0.052	0.002	0.000
6	-0.001	0.0631	0.007	0.059	0.015	-0.022
7	-0.014	0.0496	0.006	0.065	-0.026	-0.021
8	-0.004	0.0453	0.012	0.077	0.000	-0.035
9	0.005	0.0501	-0.019	0.058	-0.001	-0.028
10	-0.005	0.0453	-0.002	0.056	0.000	-0.027
11	-0.004	0.0416	-0.001	0.056	-0.002	-0.016
12	-0.002	0.0398	0.002	0.058	0.000	-0.033
13	-0.010	0.0302	-0.005	0.053	-0.017	-0.019

14	0.000	0.0298	0.001	0.054	0.000	-0.018
15	-0.015	0.0151	-0.004	0.051	-0.012	-0.026
16	-0.008	0.0070	-0.004	0.047	0.016	-0.010
17	-0.003	0.0038	-0.005	0.042	0.011	-0.006
18	-0.002	0.0017	-0.005	0.037	0.010	-0.003
19	-0.001	0.0003	0.000	0.036	-0.008	-0.006
20	-0.001	-0.0006	0.003	0.039	0.002	-0.008

Analysis of AR and CAR 2006

	2006					
Event day	Increase		No change		Decrease	
	AR	CAR	AR	CAR	AR	CAR
-20	0.007	0.071	-0.002	0.004	0.016	0.016
-19	0.003	0.064	0.003	0.006	0.015	0.015
-18	-0.025	0.061	0.001	0.003	-0.018	-0.018
-17	0.008	0.087	-0.008	0.002	0.009	0.009
-16	-0.003	0.079	0.007	0.010	0.027	0.027
-15	-0.001	0.082	-0.006	0.002	-0.006	-0.006
-14	0.000	0.083	-0.002	0.008	-0.007	-0.007
-13	0.004	0.083	0.004	0.010	0.006	0.006
-12	0.008	0.079	0.004	0.006	-0.010	-0.010
-11	0.009	0.071	0.007	0.003	-0.012	-0.012
-10	0.009	0.063	0.012	-0.005	-0.013	-0.013
-9	0.006	0.054	0.006	-0.017	-0.001	-0.001
-8	-0.002	0.048	-0.002	-0.023	0.014	0.014
-7	0.003	0.050	-0.001	-0.020	0.011	0.011
-6	0.000	0.047	-0.009	-0.019	0.010	0.010
-5	0.009	0.047	-0.007	-0.011	0.009	0.009
-4	0.009	0.038	-0.006	-0.004	0.008	0.008
-3	0.005	0.030	0.020	0.002	0.007	0.007
-2	0.006	0.025	-0.009	-0.018	0.016	0.016
-1	0.006	0.019	-0.005	-0.009	0.015	0.015
0	0.013	0.013	-0.004	-0.004	0.015	0.015
1	-0.001	0.013	-0.001	-0.005	0.017	0.017
2	0.012	0.024	-0.001	-0.006	0.022	0.022
3	0.013	0.038	0.001	-0.005	0.025	0.025
4	0.013	0.051	0.001	-0.004	0.027	0.027
5	0.010	0.061	-0.010	-0.014	0.028	0.028
6	-0.001	0.060	-0.005	-0.019	0.043	0.043
7	0.005	0.065	-0.008	-0.027	0.018	0.018
8	0.004	0.069	-0.006	-0.033	0.018	0.018
9	0.004	0.073	-0.016	-0.049	0.017	0.017
10	-0.005	0.068	-0.001	-0.049	0.018	0.018
11	0.009	0.077	-0.002	-0.051	0.016	0.016

12	0.005	0.082	0.001	-0.050	0.016	0.016
13	0.005	0.088	-0.004	-0.054	-0.001	-0.001
14	0.013	0.101	0.006	-0.048	-0.001	-0.001
15	0.004	0.105	-0.001	-0.049	-0.013	-0.013
16	0.015	0.120	-0.005	-0.053	0.003	0.003
17	0.006	0.127	0.002	-0.051	0.014	0.014
18	0.015	0.142	0.005	-0.046	0.024	0.024
19	0.015	0.157	0.007	-0.039	0.017	0.017
20	0.008	0.165	0.001	-0.039	0.018	0.018

Analysis of AR and CAR 2007

2007						
Event day	Increase		No change		Decrease	
	AR	CAR	AR	CAR	AR	CAR
-20	-0.008	0.575	0.013	0.023	-0.008	0.081
-19	-0.001	0.510	-0.005	0.010	-0.008	0.089
-18	0.001	0.468	0.005	0.014	-0.001	0.090
-17	-0.001	0.427	-0.017	0.009	0.001	0.089
-16	-0.003	0.362	-0.014	0.027	-0.001	0.091
-15	0.003	0.287	0.017	0.040	-0.003	0.094
-14	0.001	0.264	0.016	0.023	0.003	0.091
-13	0.001	0.193	0.001	0.007	0.001	0.090
-12	0.006	0.180	0.014	0.006	0.001	0.089
-11	0.003	0.162	-0.009	-0.008	0.006	0.083
-10	0.004	0.132	0.006	0.000	0.003	0.080
-9	0.003	0.131	-0.017	-0.006	0.004	0.076
-8	0.011	0.154	0.010	0.011	0.003	0.073
-7	0.005	0.175	0.012	0.001	0.011	0.062
-6	0.005	0.153	-0.008	-0.011	0.005	0.057
-5	0.013	0.141	0.004	-0.003	0.005	0.052
-4	0.012	0.054	-0.001	-0.007	0.013	0.039
-3	-0.016	0.059	-0.002	-0.006	0.012	0.026
-2	0.019	-0.007	-0.001	-0.004	-0.016	0.042
-1	0.007	-0.007	-0.022	-0.003	0.019	0.024
0	0.017	0.008	0.019	0.019	0.017	0.017
1	-0.011	0.061	0.037	0.056	-0.011	0.006
2	0.008	0.094	0.018	0.074	0.008	0.014
3	0.008	0.178	-0.014	0.060	0.008	0.022
4	0.018	0.215	0.007	0.067	0.018	0.040
5	-0.004	0.244	-0.011	0.057	-0.004	0.036
6	-0.009	0.303	0.000	0.057	-0.009	0.027
7	0.017	0.337	0.002	0.059	0.017	0.044
8	-0.002	0.414	-0.004	0.055	-0.002	0.041
9	0.008	0.457	-0.002	0.053	0.008	0.049

10	-0.001	0.456	-0.027	0.025	-0.001	0.048
11	0.000	0.441	0.019	0.044	0.000	0.048
12	0.003	0.496	0.019	0.063	0.003	0.051
13	0.004	0.534	0.006	0.069	0.004	0.055
14	-0.007	0.562	0.014	0.083	-0.007	0.048
15	-0.004	0.601	-0.010	0.073	-0.004	0.044
16	0.003	0.649	0.005	0.079	0.003	0.047
17	0.008	0.698	-0.004	0.075	0.008	0.055
18	-0.001	0.796	-0.002	0.073	-0.001	0.054
19	0.022	0.888	0.011	0.085	0.022	0.076
20	0.001	0.989	-0.004	0.080	0.001	0.077