UNIVERSITY OF NAIROBI

DEPARTMENT OF ECONOMICS

THE IMPACT OF DIVIDEND ANNOUNCEMENTS ON FIRM VALUE: AN EVENT STUDY OF THE CASE OF THE NSE

BY

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C/50/7526/2002

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A PROJECT REPORT SUBMITTED TO THE ECONOMICS DEPARTMENT, UNIVERSITY OF NAIROBI IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF ARTS IN ECONOMICS.

SEPTEMBER 2004

DECLARATION

This research project is my original academic work and has not been presented for the award of any degree in any University.

Signed: ---Date: ----- 17/9/04 --------------------------------

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This research paper has been submitted for examination with our approval as University supervisors.

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September 2004

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Dedication

To my eldest brother
Vincent Mayieka Agoti,

You were there when I most needed you.
Thank you for being a "real" brother.

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Abstract

This research uses the event study methodology to analyze the impact of one type of disclosure - dividend announcements, on the firm value as measured by stock price. We investigate the information content of dividend announcements for four firms in the Nairobi Stock Exchange for the period 1999-2003. The study provides additional empirical evidence to the existing body of knowledge on whether dividend announcements convey useful information about the future value of a firm. After controlling for clustering, the results based on an estimation window of more than 00 trading days show that, for the analyzed firms, dividend announcements do indeed convey useful information about the future value of a firm listed in the NSE.

CHAPTER 1

1.1 INTRODUCTION

The history of the use of event study methodology in analyzing announcement effects of corporate actions on firm value, dates as far back as the first published study by Dolley (1933), who examined the price effects of stock splits. This study opened the avenue for other studies which analyzed the impact of various corporate actions like earnings announcements, change of management and change in the regulatory environment among others, on prices of stocks of listed companies. One of the early studies on dividend announcements was by Lintner (1956), who postulated that current dividends convey a considerable amount of information about firm value. He noted that, at least for large firms, dividends tend to be inflexible downwards and that, firms tend to make positive dividend announcements only when there is a high probability that cash flows in the future would be sufficient to support the higher rate of payment. Additionally, he observed that dividends should be decreased only when management is assured that cash flows will be insufficient to support the present dividend rate.

Another study by Watts (2001), found that although dividend announcements may contain some information, the absolute size of the future value, which might be conveyed by dividend announcements is very small. Therefore, the information content of dividends is trivial.

The foregoing two studies are indicative of the raging debate on whether or not dividend announcements have some information content. The primary objective of this study was to establish as to what extent dividend announcements of a selected sample of Nairobi Stock Exchange (NSE) stocks, determined the firm values of these stocks, so that market participants could make rational decisions depending on what dividend announcements by these firms portended for them as per the findings of the study.

1.2 THE NSE AND DIVIDEND ANNOUNCEMENTS

As at the 25th of May 2004, Nairobi Stock Exchange had 52 listed companies. Due to variations in market performance, shareholder expectations and company policy among other factors, not all of these listed companies made dividend announcements in the period 1999-2003[1].

NSE regulations require that whenever any of the listed companies makes a dividend announcement, it should have announced its dividends following the procedure below.

(i)   A company should have prepared and ratified a policy on what ratio of its earnings should be paid as dividends (if it is going to be paying dividends).

(ii)   Financial statements should have been prepared to show the quarterly, semi-annual or annual performance of the company as the case may be.

(iii)   Auditors should have examined the company's financial statements to give a report of their independent opinion on the true performance of that company.

(iv)   A decision should have been made about the type, rate and date of dividend that is to be paid.

(v)   A dividend announcement should have been made to the press stating; the rate, the closure date and (in some cases) when the payment is likely to be made.

(vi)   The details of the dividend payment should have been submitted to the NSE at about the same time for future reference by market participants.

The major types of dividends announced in the period 1999-2003 were: Interim dividends, Final dividends, Special dividends, Bonuses, 2nd interim dividends, rights issues and two millennium dividends. Some companies like the British American Tobacco (B.A.T) could offer bonus issues and final dividends in the same Calendar year. It is also noteworthy that, it took two and a half months on average after the dividend announcement for the actual payment of the dividend to take place.

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[1] This is according to NSE's stock files and information from the NSE information desk.

Table1. Sector-by-sector spread between the closure and payment dates of dividends in NSE.

SECTOR	1999		2000		2001		2002		2003	
	No. of days		No. of days		No. of days		No. of days		No. of days	
	Clos.	Pmt.	Clos.	Pmt.	Clos.	Pmt.	Clos.	Pmt.	Clos.	Pmt.
Agricultural	63	84	60	86	46	58	28	82	30	89
Commercial	19	45	41	55	41	96	81	108	78	106
Finance & Inv.	31	101	33	101	72	94	74	109	21	57
Industrial & All.	29	77	21	74	72	108	74	108	16	75

Legend:
Clos. – Closure   All. – Allied
Pmt. – Payment   Inv. – Investment
No. – Number

The decision as to how many times a company could announce dividends in a calendar year was found to be a matter of company policy. From the records of company actions in the period under review, most companies made announcements only once a year. Also, some Companies in the same sector showed a pattern of announcing dividends at almost the same time.   In 2003 for instance, Barclays Bank, CFC Bank, Standard Chartered Bank, NIC Bank and Diamond Trust - all belonging to the Financial and Investment sector, made their dividend announcement in February 2003.

Table 2. Number of days between closure and payment for the various sectors.

SECTOR	1999	2000	2001	2002	2003	Average
	Days	Days	Days	Days	Days	
Agricultural	21	26	12	54	59	34
Commercial	26	14	55	27	28	30
Finance & Inv.	70	68	22	35	59	46
Industrial & All.	48	58	36	34	36	46

Table 2 above shows on average, the number of days it took for dividend payment to be made. The Commercial sector leads with the shortest period (one month), seconded by the agricultural sector, with the remaining two sectors taking the same period on average.

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In 1999, 20 firms listed on the NSE did not make dividend announcements. In 2000 21 firms did not whereas in 2001, 16 firms failed to declare dividends. In the following year, 20 firms failed to make dividend announcements and subsequent payments. 2003 saw the number that did not declare dividends increase to 24.

In total, 255 dividend announcements involving an average of 33 firms were made in the five years under consideration. Year 2000 registered the greatest number of firms to have declared dividends in the 1999-2003 period, while 2003 recorded the least. In percentage terms, in 1999 62% of the registered firms declared dividends, in 2000 61%, declared, in 2001 70% did, 2002 saw 60% of the firms declare and in 2003 54% declared.

Table 3. Number of companies that made dividend announcements over the period 1999-2003.

Type of Dividend	1999	2000	2001	2002	2003
1st interim	18	18	12	15	11
2nd interim	1	2	2	2	3
Final	28	30	30	29	27
Special	0	1	1	1	2
Bonus	2	4	6	1	2
Rights issues	0	0	3	1	1
Millennium	1	1	0	0	0
Total No. of announcements	50	56	54	49	46
Number of Firms	34	33	39	31	29
Total No. of firms listed	54	54	55	51	53

1.3 STATEMENT OF THE PROBLEM

According to the Information Content Hypothesis (ICH) [2], dividend announcements convey pertinent information about a firm's value. However, some studies like the one conducted by Uddin (2003) do not reach at the same conclusion. According to this school of thought, dividend announcements have no significant impact on firm value. Given this difference of opinion, market specific empirical studies are necessary to put the record straight. In the case of the NSE market, participants in the market have been making

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[2] The ICH was first postulated by Modigliani and Miller (1958)

critical investment decisions on when to invest after a dividend announcement, without basing those decisions on some empirical evidence so that they are assured about receiving positive net return on their investment. Additionally, no known study has been done to establish the exact relationship between these two variables for the companies listed on the NSE, and whether or not this relationship is significant.

This study sought to fill this research gap using the event study methodology, with company dividend announcements and stock price values of sample stocks on the Nairobi Stock Exchange as the key variables.

1.4 OBJECTIVES OF THE STUDY

1. Using event study, establish the relationship between dividend announcements and stock price.
2. Based on the study findings, make policy recommendations on how investment decisions should be arrived at by market participants.
3. Suggest areas that require further research on this subject to add to the existing body of knowledge on stock price and its relationship with dividend announcements.

1.5 SIGNIFICANCE OF THE STUDY

In modern times, a country's stock market plays an important role as a vehicle for mobilizing capital for rapid economic growth[3]. The economic performance of companies listed in the exchange determines by extension the stability of the stock exchange and their ability to signal a stable economy. Information signaling can take various forms and can be used as an indicator of future prospects. In the case of dividend announcements, the question as to whether or not, dividend announcements have an impact on stock price can have an influence on the decisions that managers, brokers, dealers, merchant bankers and generally market participants take to maximize their net returns.

In the case of Managers for instance, a finding that stock prices positively respond to dividend announcements at the NSE could lead to use of dividend announcements by

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[3] Literature on the role of Stock markets in a globalizing world can be found on www.worldmarkets .com

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managers as an economical way to transmit their assessment of future firm's prospects to the market, because in this case they expect this decision to be interpreted by market participants as a signal of management's expectation about the future. This would eventually lead to an upward movement of the firm's stock price. Conversely, if was found that dividend announcements have no information content for the sample companies at the NSE, then, managers taking note of this would take steps to find another event that could be used as a signal to market participants as to their firms' expected future performance. On the other hand, if it was found that dividend announcements have a negative impact on stock price, then they would either reduce the frequency of announcements or stop the corporate action altogether for the sake of the firm's economic performance in the future.

Additionally, the stock market regulatory authorities (Nairobi Stock Exchange and the Capital markets Authority) could use our findings to review their policy on some aspects of company evaluation, which may have been emphasizing on dividend announcements and subsequent payments by listed companies as a basis for measuring company performance, depending on what the findings will be.

CHAPTER 2

2.0 LITERATURE REVIEW

2.1 INTRODUCTION

A major controversy exists in finance literature regarding evidence of the informational content of dividends. Several recent empirical studies and the evidence presented give mixed results. Despite considerable support for the position of dividend non-triviality by Studies of scholars like Pettit (1972), Aharon and Swary (1980) and Scott (1996) among others. Watts' (1973) observation about dividend announcements containing trivial information represents a formidable challenge to the widely held opinion. The study by watts was challenged by Laub (1976) who was himself rebutted by Watts as presenting an argument, which was only a semantic issue.

It is clear that, opinion is divided on whether or not dividend announcements contain information that can significantly influence company stock price, and if these dividend announcements do actually have a signaling effect. Our study tested the hypothesis that:

H_0: Dividend announcements have no information content and therefore have no influence on firm value.

H_1 : Dividend announcements contain information that influences the value of a firm.

Following is a review of some of the existing theoretical and empirical literature on the subject.

2.2 THEORETICAL LITERATURE REVIEW

2.2.1 The Information Content of Dividends Hypothesis (ICH)

The ICH is one the most referred to hypotheses in financial economics literature in so far as the impact of dividend announcements on stock price is concerned. The hypothesis was developed by Modigliani and Miller (1958). They postulated that under the assumptions of perfect capital markets, rational behavior and zero taxes, the value of the firm does not depend on the firm's announcement of a dividend. Durand (1959) questioned whether this conclusion was consistent with the then existing evidence, which consisted mostly of strong positive cross-sectional correlations of price with dividends.

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However, in their reply to Durand, Modigliani and miller explained that a firm's market value depends on its expected future value. Thus if the value which is determined by a firm's market performance consists of permanent and transitory components and if dividends depend on the former, dividend announcements would serve as a surrogate for expected future value, and such a surrogate relationship might explain the results of the cross-sectional studies.

This hypothesized relationship was labeled by the two as "**the information content of dividends**". Suggesting that the announcement of a dividend has no impact on stock prices in the face of the idealistic assumptions put up by the pair.

Since its exposition by Miller and Modigliani, the information content hypothesis has been frequently quoted in articles and texts of financial economics as a possible explanation of observed relationship between dividend announcements and stock price[4].

2.2.2 Cash Flow Signaling Hypothesis (CFSH)

The pioneer of this theory was Kalay (1980), who developed a model on what signal is sent to the market when there is an unexpected dividend announcement that leads to a cut in actual dividend. He argued that, managers are reluctant to cut dividends as a necessary condition for dividends to convey information.

This hypothesis contends that unexpected dividend announcements that suggest increases in dividends signal the fact that the firm's financial position is favorable and that it has good investment projects in its portfolio, and therefore is able to generate positive cash flows in the long term. This would lead to an increase in the stock price of the firm.

Similarly, investors view an unexpected announcement that leads to a cut in dividends relative to the previous period level as an indictment of the firm as having a bleak future. According to him, this negative signal would lead to a fall of the firm's stock price. Consistent with Kalay's hypothesis, Aharony and Swary (1980) found that announcing firms experience substantial abnormal returns at the time of their dividend announcement.

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[4] See Friend and Puckett 1969.

According to them the abnormal returns are larger in absolute value for dividend decreases, and this would lead to a market fall of the firm's stock.

2.2.3 The Free Cash Flow Hypothesis (FCFH)

The FCFH was propounded by Jensen (1986), who postulated that a firm with substantial free cash flows would encourage managers to have a tendency of over investing by accepting marginal investment projects with negative present values. If managers over invest, an unexpected dividend announcement leading to an increase in dividend would lead to a reduction in the amount of available cash flows and limit over investing. Consequently, the improved projection of the firm to the investors would lead to an increase in the stock price of the firm and therefore, its market value. Conversely, a reduction in dividends would facilitate over investing and as a consequence lead to a fall in stock price.

2.2.4 The Coarse Dividend-Signaling Theory (CDST)

This theory was developed by Warther (1994), who was interested in establishing the impact of a dividend announcement resulting from a cut in the dividend level. In his analysis, he predicted that dividends are more likely to have information when they are decreased than when they are increased. According to him, if a company has been making losses in the past, an announcement resulting from a cut in dividend turns market sentiment against the holding of shares of such a firm leading to a fall in the stock price of that firm.

2.2.5 The Tax Preference Hypothesis (TPH)

Other researchers have made efforts to further understand the impact of a dividend announcement on firm value in the face of taxation. Among them, Brennan (1970 and 1973), Litzenberger and Ramaswamy (1979 and 1980), showed that it is not optimal for a positive dividend announcement to be made if marginal tax rate is greater than zero and investors' after tax expected rate of return depends on the dividend yield and systematic risk. This leads to an argument that dividend announcements might have some tax-induced effect on share prices.

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According to them, average investors, subject to their personal tax rates, would prefer to have less cash dividend if it is taxable. The size of optimal dividend is inversely related to personal income tax rates (Pye 1972), hence, stock prices tend to decline after the announcement of a dividend increase. Subsequent studies by Bhattacharya (1979) developed a theoretical model of dividend signaling that included signaling costs. In his model, signaling costs are a function of the differential tax treatment of dividend versus capital gains income.

2.3 EMPIRICAL LITERATURE REVIEW

Uddin (2003) conducted a study to establish the effect of dividend announcements on shareholders' value using Dhaka Stock Exchange (DSE) as a case study. This empirical study was based on 137 samples of dividend paying companies listed on the DSE. These are companies that announced dividends between October 2001 and September 2002. He chose this period following immediately after the change of political power in Bangladesh to avoid high market volatility.

The choice of companies that were included in the sample depended on the sector to which they belonged and the overall the sample included stocks from all sectors. From each sector, Uddin selected 10 to 20 stocks except in the Paper, Jute and the Services sectors. The event study methodology was used to calculate the security return, expected return, market adjusted abnormal return and the daily cumulative abnormal return. The research also used the DSE all-share price index as the proxy for average market price. The event window was identified as −30 through day +30.

To study the impact of dividend announcement on firm value, Uddin (2003) used two measures:

1) Daily Market-Adjusted Abnormal Return (*MAAR*) and
2) Daily Cumulative Abnormal Return (*CAR*).

MAAR was used to indicate the relative daily percentage price change in the dividend paying stocks compared to the change in average market price.

$$MAAR_{it} = R_{it} - R_{mt} \qquad (1)$$

Where:

$MAAR_{it}$ = The market adjusted abnormal return for security i over time t.

R_{it} = Time t return on security i, calculated as $(P_{it} - P_{it} - 1)/P_{it} - 1$.

Where:

P_{it} = The market closing price of stock i on day t.

$P_{it} - 1$ = The market closing price on day $t-1$

R_{mt} = The time t return on the DSE all-share index calculated as $(I_t - I_t - 1)/I_t - 1$

Where: I_t = The market index on day t. $I_t - 1$ = The market index on day $t-1$.

The $MAAR$ shows the change in the individual stock's value due to the dividend announcement. As the percentage change in market index (average market price) is deducted, the remainder gives the unsystematic portion of the value change, which is specific to that particular stock resulting from its dividend announcement. Uddin (2003) used a 61 day window period, starting from −30 day to +30 day relative to the dividend announcement day (0-day). The cumulative abnormal returns were computed as:

$$CAR_t = \sum_{t=1}^{t=J} MAAR_t \qquad (2)$$

He also used a parametric test to determine the statistical significance of market adjusted average abnormal return of dividend paying stocks over the event window. The t statistics were calculated cross-sectionally by using the standard deviation of abnormal returns of the portfolio of 137 dividend-paying stocks. The t-statistic suggested in Brown and Warner (1980) was applied to test the significance of the cumulative abnormal returns.

Based on the 137 (DSE) listed companies declaring dividends during October 2001 and September 2002, Uddin found that investors do not benefit from a dividend announcement. Over the period starting from 30 days prior to the dividend announcement, investors lost up to 19.52 percent of their stock value. The CAR curve had a hump shape indicating the persistence of abnormal returns even though they were insignificant. The results therefore supported the Miller and Modigliani (1961) hypothesis of dividend announcement irrelevancy in determining stock value.

Scott et al (1996) examined the differential share price reaction to dividend increase and decrease announcements with respect to market phase (Bull or Bear). They drew a sample from the Center for Research in Securities' Prices (CRSP), New York Stock Exchange (NYSE) and American Exchange (AMEX) daily file. To qualify for inclusion in the sample, a firm was required to pay continuous, quarterly cash dividends over the period beginning two years prior to and ending two years following each individual phase period. This, according to them helped eliminate the possibility of sampling bias resulting from companies announcing either an initial dividend, or resumption of a previously discontinued dividend. The sample therefore comprised of firms, which had historically provided a continuous long-term reliable signal to investors through dividend announcements.

They used the methodology of getting two market periods for each market phase (Bull or Bear). They then identified strong market phases which were adjacent, and whose duration exceeded 12 months. All eligible firms from the CRSP file were tested for dividend changes during the selected market phase periods, with the first regular quarterly cash dividend announcement made within each phase being used as the initial reference point.

In performing the task of parameter estimation for firms in the sample, to avoid sensitivity in the form of bias or instability with respect to market phase, the study used Klein and Rosefield's (1987) Single Index Market Model (*SIMM*). After noting that in a study using *SIMM*, Kizm and Zumwalt (1979) found 11% of securities in their sample exhibiting significant non-stationarity, leading them to conclude that some securities responded differently with respect to market phase, Scott et al estimated both pre-event and post event betas for each security in the study using *SIMM* and the analysis was carried out separately using both sets of estimates. The estimates were generated using 200-day estimation periods with an event period window of $\pm$ 20 days on either side of the announcement date. Observations with ex-dates within 2 days of the announcement date were discarded. Also, the 200 daily return observations for each security were

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combined into 100 two-day observations for the purpose of parameter estimation in order to capture the estimation interval with the two-day event period interval.

The results of the study supported the hypothesis that investor expectation, and therefore the amount of the information conveyed by dividend change announcements, varies significantly with respect to market phase. The study found a low percentage increase in Cumulative abnormal return *(CAR)* over the event period alluding to a hump shape of the *CAR* curve for both phases. However, persistence of CAR was found to higher in the bear market phase than in the bull market phase.

On his part, Pettit (1972) investigated the relationship between dividend announcements, security performance and capital market efficiency. He was interested in establishing whether the market makes use of announcements of dividends in assessing the value of a security.

Pettit selected his sample from:

(a) Monthly data

The announcement dates of all dividend changes for a set of 625 New York Stock Exchange (NYSE) companies for the period of January 1964 through June 1968 were collected from the Wall Street Journal index. The dividend data was taken from a tape constructed by the Center for Research in Securities' Prices at the University of Chicago updated at the university of Pennsylvania. Quarterly earnings information came from Standard and Poor's Quarterly COMPUSTAT tapes. In total, there were approximately 1000 dividend changes announced by the 625 firms. The coefficients of the market model were estimated by regressing monthly firm investment relatives against the time relatives of Fisher's "Combination Investment Performance index"[5]. The number of months used in the regression varied between 24 and 111, and in all cases, the last observation used in the regression was twelve months before the announcement.

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[5] The construction of this index is explained in Lawrence Fisher (1966).

(b) Daily data.

Daily price information was also collected for 135 announcements made in the 1967 – 1969 period. The performance measure (δ_{it}) in the market model was estimated using the NYSE composite index after transforming α_i and β_i originally calculated using Fisher's index, to take account of the differential slope coefficient for a firm between two indices.

According to Pettit (1972), to develop a meaningful measure of performance, that adequately abstracts from the different risk characteristics of firms, the study made use of the "market model" which argues that a security's return is the result of two factors: the first, common to all securities, results in the tendency for stock prices to move together. The second factor, unique to the individual firm affects only the return on the securities to that firm.

Mathematically, the market model posits a linear relationship between return on an individual security and the return on the market.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \mu_{it} \qquad (1)$$

R_{it} is the investment relative of the ith security in time period t, R_{mt} is the investment relative of the market and μ_{it} is a random error term incorporating the effect of factors that affect only the ith security. The coefficient β_i measures the response of this security's return to factors that affect the returns on all securities and since the effect cannot be diversified away, serves as a relative measure of the risk of holding the ith security. The random error term μ_{it} is presumed to satisfy the conditions of a well-specified linear repression model[6]. He continues that since the first two terms on the right of the equation (1) supply a conditional expected return for the ith security, the difference between the actual return in period t and the conditional expected return in period t, given by: -

$$\delta_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \qquad (2)$$

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[6] The empirical validity of the model requires that cov (R_{mt}, μ_{it})=0 cov (μ_{it}, μ_{jt})=0 and cov (μ_{it}, μ_{it+s})=0 for s not equal to zero.

Serves as a measure of the risk adjusted abnormal performance of the security. In an efficient market, the value of δ_{it} would be determined by information coming into the market that is unique to the ith firm. In the study, δ_{it} was used to measure the effect of dividend announcements and the efficiency with which the effect was impounded into the price of the security. Care was taken by Pettit to avoid the effect of confounding effects through separation of the corporate actions and consideration of the days that the dividend announcements took place. Also, δ_{it} was averaged across firms to effectively remove any potential bias in measuring risk-adjusted performance.

The study found that dividend announcements are significant in determining firm value. Also, a spike in the shape of the CAR curve implying that CAR did not persist over time was found for the stocks considered in the period under study.

It was also found that most information implicitly in the announcement is reflected in the securities' prices as of the end of the announcement period (the largest change in most categories occurring in the announcement period).

Aharony and Swary (1980) sought to ascertain whether quarterly dividend changes provide information beyond that already provided by earnings numbers. A sample of 149 industrial firms was selected from those listed on the New York Stock Exchange (NYSE). Each firm had to meet the following criteria:

1. Its quarterly earnings per share and quarterly dividends per share including extra dividends, had to be available on the quarterly industrial COMPUSTAT tapes of the Investor Management Sciences for the period I /1963 – IV/ (1976).
2. Its daily rates of return had to be available on the tapes constructed by the Center for Research in Securities' Prices (CRSP) at the university of Chicago for the period 1/1/63 – 12/31/76.
3. Declaration dates of quarterly payments had to be available in the annual cumulative issues of Moody's Dividend Record. It was assumed that these dates were available through public media such as the Wall Street Journal.
4. Announcement dates of quarterly earnings per share had to be available in the different annual issues of the Wall Street Journal index.

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In addition, the daily closing Standard and Poor's industrial common stock price index was obtained from the annual issues of standard and Poor's trade and securities statistics security price index record for the period 1/1/63 – 12/31/76. Aharony et al. (1980) used the dividend expectation model and the market model to determine the effect of dividend announcements on stock price. To empirically examine the adjustment of common stock prices to quarterly dividend announcements, a measure of unexpected change in dividends was first derived. The expectation model used in the study was of the form that forecasted no change in dividends from one quarter to another, that is:

$$\hat{D}_{j,q} = D_{j,q-1} \tag{1}$$

Where $\hat{D}_{j,q}$ = expected dividend per share for the jth firm in the qth quarter

$D_{j,q}$ = Actual dividend per share announced by the jth firm in the qth quarter.

Accordingly, a dividend announcement was considered favorable if $D_{j,q} > \hat{D}_{j,q}$, neutral if $D_{j,q} = \hat{D}_{j,q}$ and unfavorable if $D_{j,q} < \hat{D}_{j,q}$

Justification for the naïve expectation model in (1) was derived from the reluctance to change dividends assertion, which states that managers do not change dividends payments unless they have reasons to expect a significant change in the future prospects of the firm.

In order to isolate possible dividends effects from those of earnings, the study examined only those quarterly dividend and earnings announcements conveyed to the public on different dates within any quarter. The measurement of the abnormal performance was done by use of the market model. This study attempted to resolve the empirical issue as to whether or not, quarterly dividend announcements convey useful information beyond that provided by quarterly earnings numbers.

Cumulative abnormal returns were found to be significant and the CAR was found to be spike shaped meaning that CARs rose sharply and then fell sharply in the event period. This implies non-persistence of CAR. Findings about the capital market reaction to be dividend announcements studied therefore, strongly supported the hypothesis that

changes in quarterly cash dividends provide useful information beyond that provided by corresponding quarterly earnings numbers. In addition the results also supported the semi-strong efficient capital market hypothesis, that on average, the stock prices adjust in an efficient manner to new quarterly dividend information.

On his part, Woolridge (1982) sought to investigate whether or not, dividend announcements contain information. In addition to other empirical studies done by Aharony and Swary (1980), Woolridge went a step further to provide more defensible measures of investors' expectation. The data used was that strictly available to the market at the time of the dividend announcement, and the influence of earnings on stock price was accounted for during the test period. The approach used by Woolridge was considered superior by him to that of Aharony et al, because the latter used a naïve model where no dividend expectation models were initially tested by comparing dividend predictions in a hold out sample. To determine the relationship between dividend announcements and stock prices, sampling was restricted to cases involving only announcements of changes in regular dividends published in the Wall Street Journal. The sample consisted of the dividend change announcements over the 1971 to 1977 period using a random sample of 200 firms, which met the following criteria:

1. The announcement had to be made within a calendar fiscal year,
2. The stock had to be listed on the New York Stock Exchange (NYSE),
3. Dividends and earnings announcement records had to be available on the annual industrial file of the COMPUSTAT tapes for 1959-1977.
4. The firms had to be covered by Value Line and the Standard and Poor (S&P) earnings forecaster over the 1970 to 1977 period.

The study controlled for the influence of earnings and other extraneous information through the elimination from the sample whenever other significant announcements from the same firm were published in the Wall Street Journal during the period under consideration. For the 200 companies over the seven-year sample period, 835 dividend changes were announced according to the Center for Research in Security Prices (CRSP) master file. 376 of these dividend change announcements (from 170 firms) met the

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sample screen that no other firm specific information was transmitted to the market during the period starting five days before and ending ten days after the dividend announcement day.

To measure the market's risk adjusted reaction to dividend change announcements, the daily return, conditional on the daily market return was specified by employing the market model[7]. In this study a stock's daily residual (μ_i) was obtained by subtracting the market's (S & P) 500 daily return (r_m) from the observed stock's return (r_i).

According to Woolridge, the purpose here was to find whether or not, a stock's unexpected dividend and residual tends to be of the same sign around the information point. For each dividend observation, the behavior of residuals was summarized by the sign and the level of an Abnormal Performance Index (API) measure equal to the sum of the stock's daily residuals in the event period, as follows:

$$API = \sum_{T=-5}^{+10} \hat{\mu}_{it} = \sum_{t=-5}^{+10} (r_{i,t} - r_{m,t}) \qquad (1)$$

In the above expression, day 0 is the publication date. The distribution of summed residuals for each information set was then used to make statistical inferences concerning the direction of the stock price movement.

Another statistic, the Average Cumulative Average Residual ($ACAR$) was also calculated. $ACAR$, representing the mean cumulated residual value for each information set as of time t, was used to make judgments concerning the efficiency of the market in absorbing new information. For each information set, the CAR as of day T was specified as:

$$CAR_{T,S} = \sum_{t=1}^{T} \sum_{s=1}^{S} \frac{r_{i,t,s} - r_{m,t}}{S}$$

Where:

S = The number of dividend observations in information set s

The statistical procedure employed was the Kruskal-Wallis one-way analysis of variance test, which is sensitive to medians of two or more variables and has a chi-square distribution. In this test, the residuals in each pair-wise test are pooled and then ranked

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[7] Woolridge used the Market model specified in Fama (1976) chapter 3

based on their ordinal size. If the residuals come from a distribution with the same median, the mean rank for each information set would be expected to be nearly equal. The chi-square statistic gives the likelihood that this is true.

The study found that the mean market reaction to negative dividend information was almost twice (-6.93%) that of the reaction to positive information 3.54%. Additionally, negative dividend information was found to be more persistent than positive dividend information. According to Woolridge, the explanation may lie in the size of the unexpected dividends change.

The study by Woolridge improved on past studies by using a tested ex-ante dividend expectational model, centering the analysis on daily as opposed to monthly returns and explicitly controlling for the influence of earnings. A hump shape of cumulative returns was found to hold, demonstrating that ACAR persisted over time in the period under consideration.

Tierry et al (1984) sought to examine investor behavior around dividend announcement dates in order to provide additional evidence relevant to the information content of dividends hypothesis. To do this, they used methodologies and variables not previously employed in exploration of the subject to develop a deeper understanding of investor behavior during periods of dividend change.

To select the appropriate sample for analytical purposes, Tierry selected his sample using the following criteria.

1. Each firm must have been listed on the NYSE during the years of sampling 1969-1977.

2. Each firm had to have a large dividend change (between 1969-1977) after two years of a stable dividend pattern. A firm was considered "stable" only if its cash dividend stream, adjusted for any capitalization changes, was uncharged for at least two years. By "large" they meant either an omission of resumption of

dividend (or an initial dividend) or change in indicated yearly rate of at least 25 percent (a new yearly rate of either less than 75 percent or more than 125 percent) of the previous rate.

3. At least two years of monthly return data and two months of daily return data had to be available both prior to and subsequent to the dividend changes, with such data available of the (CRSP).

4. Announcement dates of dividend resumption, increase, decrease and all regular (and extra) dividends must had to be available in Moody's Annual Dividend Records for each firm for the period of the study. Announcement dates for omissions had to be available in the Wall Street journals index for all firms omitting a dividend.

According to Tierry et al, such restrictive dividend changes could be identified by any trader because they could be interpreted as unambiguous deviations from a simple, naive model of expectations of no dividend change. Additionally, they expected that some traders might trade on large changes such as those defined in the sample selection criteria. Monthly and daily security returns were obtained form the CRSP tapes, as were the value-weighted market indices used in the study. The risk free rate of return used was the monthly rate on three-month treasury bills. For each firm included in the study, monthly (daily) returns were collected for up to eight years (130 days) prior to the dividend change announcement, and for up to five years (60 days) subsequent to announcement.

The methodology used in the study differs from the abnormal return analysis, although it also allows examination of the average effect on return of dividend announcements. The Random Coefficient Regression (RCR) model developed by Swamy[8] was used. Under Swamy's RCR model, the assumption is that R_{it}, the period t rate of return on security i can be written as a linear function of several explanatory variables.

$$R_{it} = a_i + b_i R_{mt} + d_i D_{mt} + m_i M_{it} + \sum_{k=1}^{20} P_k; i^P; i_t + \sum_{k=1}^{20} Sk; i^S k; i_t + e_{it} \ldots\ldots(1)$$

[8] RCR model can be found in a document Swamy P. (1970) pp. 311-323.

R_{mt} = The period t rate of return on the market

M_{it} = A dummy variable equal to one if firm I announced a dividend change on day t, and equal to zero for all other days.

$P_{k,;it}$ = A dummy variable equal to one if firm I announced a dividend change on day $t+k$ and equal to zero for all other days.

$S_{k;it}$ = A dummy variable equal to one if I announced a dividend change on day $t-k$ and equal to zero for all other days.

D_{mt} = A dummy variable equal to R_{mt} for the day of announcement and subsequent days and equal to zero for the period prior to the announcement.

The coefficient m_i measures any abnormal return on the day of dividend announcement.

The variables $s_{k;it}$ are dummy variables indicating days subsequent to the announcement. If the coefficients of these variables are found to be equal to zero, the conclusion would be that any information conveyed by dividend announcement is totally observed by the announcement day. The dummy variables $P_{k;it}$ are included to indicate days prior to dividend announcements. The coefficients $p_{k,i}$ indicate the extent of information anticipation or leakage prior to the announcement day.

The variable D_{mt} is used to determine whether the average systematic risk (beta) of the groups of securities shifted at the time of announcement. This value decomposes beta into a "before" and "after" an announcement component.

Beta for firm i = b_i before the announcement.

$\qquad$ = $b_i + d_i$ at and subsequent to the announcement.

A test statistic with a chi-square distribution under the null hypothesis that the coefficients were fixed and identical across firms was used. The statistics has $L (N -1)$ degrees of freedom, where L is the number of coefficients tested.

The study aimed at examining the security performance of four distinct groups; A group of securities resuming dividend payment (or making an initial payment), a group

increasing payment by at least 25 percent, a group decreasing payment by at least 25 percent and a group omitting dividends.

In the analysis of monthly data for each group using both RCR model and the residual analysis approach. Each group was found to exhibit a similar pattern: large positive or negative cumulative returns (consistent with the type of news) for the six-month period prior to announcement and a large excess return during the month subsequent to announcement. While monthly results (through month $t-1$) were interpreted as consistent with investors correctly anticipating dividend changes, the results did not provide direct evidence of the information content of dividends hypothesis. For the daily results, for each group (except the group with 25 percent decrease), there was excess return available prior to the day of announcement. For the groups with resumptions and omissions, the excess returns were 1.68 percent and −3.24 percent respectively. Further, these excess returns were found to be concentrated largely during the last ten days prior to announcements.

In conclusion, for each group the day of announcement effect was found to be large, approximately signed and statistically significant. However, the cumulative abnormal residual curve was found to have a spike, meaning that the shocks brought about by dividend announcements were temporary.

Kwan (1981) sought to solve the controversy formed in finance literature regarding the empirical evidence of the informational content of dividends by evaluating and extending Watts' (1973) methodology. He considered three methodological issues: First, the standard Lintner (1956) and Fama-Babiak (1968) annual dividend models (which were used to identify the firm's potential dividend information in Watts' study) were refined to incorporate quarterly earnings and dividend data. Second, the potential problem of misclassification of information due to the inherent noise of empirical models which may have contributed to Watts' results, was treated by a filtering process based on the concept of prediction intervals. Third, the study isolated dividend announcement information from the firm's other publicity available information.

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According to Kwan (1981) the Fama-Babiak model are unsuitable for the purpose of identifying information from quarterly dividend announcements given the fact that they only explain annual dividend changes, regardless of when the information becomes publicly available during the firm's fiscal year. A test based on annual models could only treat the information as if it were associated solely with the divided declared during that particular quarter. To obtain a more appropriate identification of the information associated with a quarterly dividend announcement, Kwan (1981) relaxed the definition of the fiscal year by treating any four consecutive quarters as one year in the two models.

$$\Delta D_{q,t} \equiv D_{q,t} - D_{q,t-1} = \alpha_0 + \alpha_1 D_{q,t-1} + \alpha_2 E_{q,t-1} + Z_{q,t} \dots\dots\dots(1) \quad \text{Lintner equation}$$

or,

$$\Delta D_{q,t} \equiv D_{q,t} - D_{q,t-1} = \alpha'_1 D_{q,t-1} + \alpha'_2 E_{q,t} + \alpha_3{}' E_{q,t-1} + Z'_{q,t} \dots\dots(2) \quad \text{Fama-Babiak}$$

equation, with q = 1, 2, 3, 4.

Here, the moving annual earnings $E_{q,t}$ are the sum of the firm's four consecutive quarterly earnings ending at quarter q of year t. the moving annual dividend $D_{q,t}$ is the sum of the firm's four consecutive quarterly announced dividends (including regular and extra dividends). Contemporaneous with $E_{q,t}$ in these models $Z_{q,t}$ and $Z'_{q,t}$, are the error terms.

To take care of noise regression Kwan (1981) treated the noise problem by constructing a filter using prediction intervals[9]. This was done by letting the filter be a 95 percent prediction for $D_{q,t}$ according to a particular model. If the actual $D_{q,t}$ falls within this interval there is a 95 percent probability that either the dividend announcement conveys no information or the model is unable to identify the potential signal from the announcement because of the noise problem. If however, the announced $D_{q,t}$ falls outside this interval, there is only a 2.5 percent probability that the announcement is incorrectly classified. Therefore the prediction interval can serve as a filter to remove potentially misclassified cases for the two information groups categorized according to the sign of $D_{q,t} - \hat{D}_{q,t}$.

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[9] Further explanation can be found in Theil (1971) pp. 134-135

On the assumption that all relevant corporate news was reported daily in the Wall Street Journal (WSJ) and summarized in the wall street journal index, Kwan (1981) identified those dividend announcements, which were separable from other sources of information.

Firms included in the sample were restricted to those reported in Moody's Handbook of common stocks and listed on the NYSE. The announcements collected from the WSJI included regular dividend changes and extra dividends declared during the period 1973-1977. For the purpose of estimating the parameters in (1) and (2), each firm's quarterly earnings and dividend per share data were collected from the value line data base and Moody's dividend records for a period of 11 years up to the quarter under consideration.

According to the sample selection criteria of the study, 183 announcements of regular dividend changes and extra dividends were collected. In the sample, there were only 20 cases of regular dividend decreases including dividend omissions. Empirical models (1) and (2) with the dividend variable measured by the moving annual dividend were initially used to identify potential information from all these announcements. Upon replacing the dividend variable in these models by annualized quarterly dividend, the number of eligible cases for the analysis was reduced from 183 to 147.

In conclusion, for all filtered and unfiltered information groups classified according to empirical models whose dividend variable was the annualized quarterly dividend, statistically non zero average residuals (as the 0.01 or 0.05 level) of correct signs were observed around the dividend announcement day. This evidence supported the position of dividend non-triviality. However, the shocks due to dividend announcements were found to be temporary as observed from the spike shape of the cumulative average returns curve.

Benartzi et al (1997) conducted a comprehensive study on whether changes in dividends have information content or not. This study unlike previous ones utilized a large number of firms and events whilst controlling for many other factors that could create a spurious relationship between dividend changes and subsequent market value changes. Additionally, they sought to establish whether dividend changes could signal something

other than the expected future firm value and also establish the long-term return behavior of dividend announcing firms.

To establish whether changes in dividends have information content, Benartzi et al, (1997) defined unexpected earnings for a firm year as the difference between the actual earnings and the earnings that could have been predicted using all the relevant information other than the change in dividends. In this regard, in their definition information content implied the following two predictions:

1. Firms that increased (or decreased) dividends in year 0 would have positive (negative) unexpected earnings in years 1,2, ...,N.

2. Among firms that increased dividends, the larger the dividend increase, the greater the unexpected earnings in the following years.

Prediction 2 follows because if signaling is costly, then the larger the signal, the greater the cost.

Their analysis began by examining simple raw earnings, where the implicit model was that earnings are a random walk. In this approach, they compared the earnings of firms that changed dividends in a given year to those that did not. They controlled for possible industry trends by directly comparing firms that changed their dividend to firms that did not change their dividend and were in the same industry. In addition, they controlled for a possible earnings drift in two ways: First, by subtracting the five year earnings drift from each firm's earnings and Secondly, by comparing dividend changing firms to non-dividend changing firms with similar earnings growth rates between years –5 and –1 and between years –2 and –1 (long and short run growth rates). They also used measures of unexpected earnings to compare the dividend increasing firms to each other in order to test prediction 2.

In addition to the above categorical analyses, they also used regression analysis in which the basic approach was to regress earnings in year t on all relevant data that were available before the dividend was announced. They then added the dividend change

variable (for year 0) to observe whether the dividend announcement helps to explain future earnings.

Using the Center for Research in Security Prices (CRSP) and COMPUSTAT tapes (PST, full and research files), they collected all companies that traded on the NYSE or on the AMEX for at least two years during the period 1979-1991. They excluded all foreign companies from the sample (usually traded on American Depository Receipts). To remain in the sample, a firm had to meet the following criteria.

1. It had to have a December fiscal year,
2. It had to pay quarterly dividends in at least two consecutive years. This includes dividend initiation and omission events.
3. The COMPUSTAT files contained information on the firm's income before extra ordinary items for the firm years around the dividend payment year (years –2 through +2) and for the fifth year before the dividend payment year.

The resulting sample contained 1025 firms and 7186 firm year observations. This was taken as the main sample. For the regression analysis they formed a set of firm-year observations (labeled as the secondary sample) in which they controlled for several of the firm's characteristics. Also, there was a requirement of the secondary sample to have additional variables like the ratio of working capital to total assets for instance. For their study, 4996 firm-year observations had complete information on all the control variables.

Consistent with the early findings of Watts (1973), Benartzi et al were unable to find any evidence to support the view that dividend announcements have information content about future market value. While there was a strong past and concurrent link between market value and dividend announcements, the information content of dividends was found to be minimal. However, according to their findings, announcements involving cuts relatively signal an increase in future firm value. They also found evidence of dividend-increase announcing firms being less likely to have subsequent earnings decreases than firms that do not make announcements changing their dividends despite similar earnings growth. In this context, according to them, dividend announcements do

contain information about the present and the future: the current increase in earnings in permanent signaling a spike in the ACAR curve.

Laub (1976) sought to show that as opposed to Watts (1973), dividends do convey information about future firm value that enables market participants to predict future earnings more accurately. Using a quarterly model which according to him is as plausible as an annual model, Laub (1978) relied on a sample of 30 large corporations over the years 1946-1965. About two thirds of the regular dividends announcements occurred in the first and third quarters of the fiscal year, while about one third occurred in the second and fourth quarters. While the annual earnings reports are audited and presumably contain more accurate information than quarterly reports, according to Laub, there is no good basis for disregarding the information provided by quarterly reports, and this is the reasoning that led Laub to attempt to build a quarterly model of the dividends firm - value relationship.

Laub (1976) used the comparisons of mean squared forecast errors implied by Watts (1973) model, the Fama-Babiak (1968) model and his own model to arrive at conclusions on the information content of dividends[10]. The first two earnings-forecasting models were based on the two different interpretations of the annual dividend model. The third forecast is based on the quarterly earnings forecasting model used to develop the earnings proxy for the model.

According to Laub, on balance, evidence lends considerable support to the hypothesis that dividend announcements convey information about future earnings prospects that is not inherent in the past time series of the future earnings. However, the ACAR curve was found to be spike-shaped, meaning that the impact on future earnings of dividend announcements was found not to be persistent.

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[10] For further information on the mean squared errors, see Laub 1976 pp. 76-79.

Table 4. A summary of the empirical literature

Author	Sample	Objective	Methodology	Hypothesis	Results
Uddin Hamid M. (2003)	The study involved 137 companies that made dividend announcements between October 2001 and September 2002.	Investigate the impact of dividend announcements on shareholder's value in the Dhaka Stock Exchange.	Event study methodology using Daily Market Adjusted Abnormal Return (MAAR) and Daily (CAR).	Ho: Dividend announcements have no impact on shareholder value.	The null hypothesis was not rejected meaning that shareholder value does not change as a result of a dividend announcement.
Scott B. et al (1996)	200 companies were used on the dates indicated elsewhere in the Literature Review.	Examine the differential share price reaction to dividend increase and decrease announcement with respect to market phase (Bear and Bull)	Event study methodology using the Market Model.	Ho: Investor expectation and therefore the amount of the information conveyed by dividend change announcements varies with the market phase.	The differences between market phases were found to be significant for both positive dividend announcements (good news) and negative dividend announcements (bad news).
Pettit R. (1972)	Monthly data: 625 companies in NYSE Jan. 1964-jun.1968 Daily data: 625 companies 1967-1969.	Conduct a study on the relationship between dividend announcement, security performance and capital market efficiency.	Event study methodology using the Market Model.	Ho: Market does not make use of dividend announcement in signaling the value of a security.	The market makes use of announcement of dividends in signaling the value of a security.
Aharony J. and Swary I. (1980)	The study involved 149 companies that made dividend announcements between January 1963 December 1976.	To ascertain whether dividend announcements provide information beyond that already provided by earnings.	Event study methodology using the Dividend Expectation Model and the Market Model.	Ho: Quarterly dividend announcements do not convey useful information beyond that already provided by earnings.	Quarterly dividend announcements do convey useful information beyond what earnings convey in determining stock price.

Woolridge R. (1982)	The study involved 170 firms which made dividend announcements between 1971 and 1977.	To establish whether dividends contain information that has influence on stock price.	Dividend Expectational Model.	Ho: Dividends do not contain any information that can influence stock price.	Dividend Announcements contain information that has influence on the stock price.
Tierry et al (1984)	250 firms were involved in the final sample for the period 1969-1977.	Examine investor behavior around dividend announcement dates.	The Random Coefficient Regression Model.	Ho: The-Day-of announcement effect is not significant in influencing Firm value.	The Day-of-announcement was found to be large, appropriately signed and statistically significant.
Kwan Clarence (1981)	The study involved 147 firms that made dividend announcements between 1973 and 1977.	To solve the controversy regarding evidence on information content of dividends.	A refined form of the Lintner and Fama-Babiak models using a relaxed definition of the fiscal year.	Ho: Dividend announcements are trivial in determining firm value.	Dividends are not trivial in influencing the value of the firm.
Benartzi et al (1997)	1025 Firms that made dividend announcements between 1979 and 1991 were involved.	To establish whether or not dividends contain any information.	They used categorical and regression analysis	Ho: Dividend announcements have no information content about Firm value.	Dividend announcements do not contain information about future firm value.
Laub (1976)	He used 30 large corporations over the years 1946-1965.	To show that dividends contain information about future earnings Information of a firm.	A quarterly dividend model and Mean Squared forecast errors implied by Watts (1973).	Ho: Dividend announcements do not convey information about future earnings.	Dividend announcements convey information about future company earnings.

2.4 OVERVIEW OF LITERATURE REVIEW

The examination of the effect of dividend announcements on a firm's stock price has been the subject of rigorous research since the Modigliani and Miller's Information Content of dividends Hypothesis (ICH). Alternative explanations of the relationship

between the two variables have since seen the postulation of various hypotheses to explain the likely impact of dividend announcements on stock price. The cash flow signaling hypothesis, the free cash flow hypothesis, the coarse dividend signaling theory and the tax preference hypothesis are among these theories.

Empirical evidence on the effect of dividend announcements on stock price is also varied. Whereas some researchers like Woolridge (1982) have come up with findings strongly in support of the fact that dividends have information content, others like Uddin (2003) have found dividends to be irrelevant in determining the firm value.

It is also noteworthy that in comparing between Developed and emerging economies, the results are mixed. For instance, Ray et al (1990) in their study of Istanbul stock Exchange (ISE) found no significant effect of dividend announcements on firm value, while Uddin (2003) in studying the Dhaka Stock Exchange (DSE) found the opposite. Similarly, studies using the NYSE stocks by Pettit (1972) found a positive impact of dividend announcements of stock price, while Watts (2001) using CRSP data found a positive but insignificant relationship. Further empirical research is therefore necessary to shed more light on the exact relationship between stock price and dividend announcements.

CHAPTER 3

3.0 METHODOLOGY

3.1 CONCEPTUAL FRAMEWORK

According to the semi-strong form of the Efficient Market Hypothesis (EMH), the allocative efficiency of capital markets depends on the extent to which security prices reflect fully and unbiasedly, all the publicly available information (Fama 1976). The faster the market reacts to corporate reports, the more efficient it is deemed to be.

If dividends contain any information, and if the market efficiently incorporates this information into common stock prices, then, security prices should reflect the new information on the day that the dividend announcement is made. Investors acting on this publicly available information should not be able to gain a return consistently in excess of the stock's risk adjusted return.

The impact of the arrival of unexpected information is different though. In their study on dividend announcements and the behavior of stock prices around those announcements, Kim and Verrechia (1991a, 1991b, 1992) postulate that, an anticipation of a public announcement in itself leads to increased trading volume and price volatility. If the announcement was unanticipated, this would lead to even more excess returns.

Documented Literature on the impact of dividend announcements on stock price starts with Miller and Modigliani (1958) who recognized that dividend announcements could contain information about a firm's future value. This led to further research as evidenced by a series of studies by Chavest (1978), Ghosh and Woolridge (1988) and Eades et al. (1985), to mention but a few.

All said, the impact of dividend announcements on stock price has received much attention in Economics literature. A corporate action is said to contain information when an event results in a change in expectations about the outcome of the future value of a firm, (Theil 1976). Modigliani and Miller (1958) recognized that dividend

announcements contained information about a firm's future value and caused a revaluation of its securities in the stock exchange.

Most research on the relationship between company announcements and stock price has used event study methodology. The first published study that used this methodology was by Dolley (1933) who examined price effects of stock splits using a sample of 95 splits from 1921 to 1931. Over the decades from the 1930s until late 1960s the level of sophistication of event studies increased. Myers and Bakay (1948) and Ashley (1962) made improvements by removing general stock market movements and separating the impact of confounding events so that the effect of a specific event on stock price could be accurately determined. In the late 1960s seminal studies by Ball and Brown (1968) and Fama, Fisher, Jensen and Roll (1969) introduced the methodology that is in use today.

In order to establish the relationship between dividend announcements and stock price using a sample of stocks of the Nairobi Stock Exchange, the event study methodology will be used because it has been proven to be reliable in measuring the effect of any economic event on firm value. The Model to be used closely follows that used by McWilliams and Siegel (1997) and Mackinlay et al (1997) and event study tests as postulated by Anna Paula Serra (2002).

3.2 MODEL SPECIFICATION AND ESTIMATION PROCEDURES
3.2.1 MODEL SPECIFICATION

In financial economics literature, an event is defined as some change, development or announcement that may produce a relatively large change in the price of an asset listed on a stock exchange over some specified time period. The event study methodology which follows six steps in establishing the significance of the relationship between an event and changes in stock returns is as follows:

♦ **Identification of the event of interest**
This is the first step in event study methodology. It involves defining the event that should be analyzed and reasons why such an event is chosen. Examples of events are such as earnings, corporate take overs, changes of the business regulatory environment,

stock splits, stock issuance, hiring and firing of high level officers and change in pollution regulation announcements among others.

- **Definition of the event window**

This involves the identification of the period over which the security prices of the firms involved in the event identified in step 1 will be examined. It is customary to define the event window to be larger than the specific period of interest. The event window is formally defined as shown below:
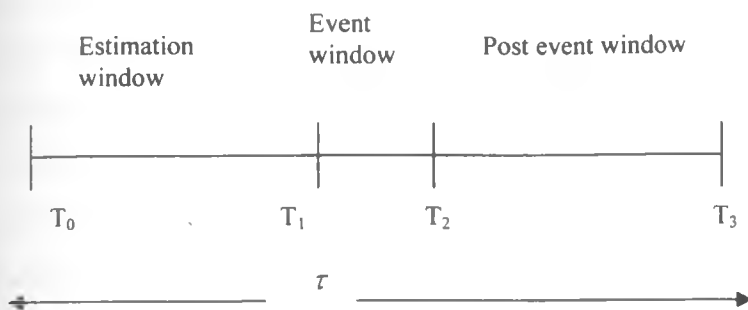
- $(T_0 \ldots \ldots T_1)$ is estimation window
- $(T_1 \ldots \ldots T_2)$ is event window
- $(T_2 \ldots \ldots T_3)$ is post event window

The index returns in time (τ) are as follows;

For the estimation window, τ ranges from $T_0 + 1$ through T_1

For the event window, τ ranges from $T_1 + 1$ through T_2

For the post estimation window, τ ranges from $T_2 + 1$ through T_3

- **Determination of the event selection criteria**

The criteria for inclusion of a given firm in the study is identified in this step.

It may involve restrictions imposed by data availability, a listing in a given stock exchange or membership in a specific industry among other factors.

- **Measurement of normal returns**

The normal return which is the expected return without conditioning on the event taking place for firm i and event date τ the normal return is: -

$$E\left(R_{i\tau} / \Omega_{t-1}\right)\ldots\ldots\ldots\ldots\ldots(1)$$

Where:

$E =$ The expectation for the time period τ,

$R_{i\tau} =$ The actual return and

$\Omega_{t-1} =$ The conditioning information for the normal return model.

The two common choices for modeling the normal returns are; The constant mean return model which assumes that Ω_{t-1} is a constant through time and the market model, which assumes a stable linear relationship between the market return and the security return. The market model is an improvement over the constant mean return model because it removes the portion of the return that is related to the variation of the market return. This leads to variance of the abnormal return being reduced, meaning, increased ability to detect event effects.

♦ **Definition of the estimation window and the abnormal returns**

The estimation window which is represented by the period prior to the event window is then identified. The event period itself is not included in the estimation period to prevent the event from influencing the normal performance model parameter estimates. Equation 1 above is then estimated by the market model of the form;

$$R_{i\tau} = \hat{\alpha}_i + \hat{\beta}_i R_{m\tau} + \hat{\varepsilon}_{i\tau}\ldots\ldots\ldots\ldots(2)$$

$$E\left(\varepsilon_{i\tau}\right) = 0$$

$$Var\left(\varepsilon_{i\tau}\right) = \hat{\sigma}^2_{\varepsilon_i}$$

Where:

$R_{i\tau} =$ Period τ returns on security I,

$R_{m\tau} =$ Period τ returns on market portfolio and

$\varepsilon_{i\tau} =$ Zero mean disturbance term

$\hat{\alpha}_i$, $\hat{\beta}_i$ and $\hat{\sigma}^2_{\varepsilon_i}$ are the estimated parameters of the market model.

The potential abnormal returns are then calculated using the model

$$AR_{i\tau} = R_{i\tau} - E\left(R_{i\tau}\right)\ldots\ldots\ldots\ldots(3)$$

The above model is then estimated by the equation;

$$AR_{it} = \hat{\varepsilon}_{it}^* = R_{it}^* - \hat{\alpha}_i - \hat{\beta}_i R_{mt}^* \ldots \ldots \ldots \ldots (4)$$

$$\hat{\varepsilon}_{it}^* - N(O, V_{it})$$

Where:

AR_{it} = The abnormal return generated from equation 4. The "hats" denote the estimated values of parameters from the estimated window.

R_{it}^* = The event window stock returns generated from stock prices of the selected firms.

R_{mt}^* = The event window market returns generated from the market index.

$\hat{\varepsilon}_{it}^*$ = The residual generated from equation 4.

After the above process, the abnormal returns are then cumulated over time and across firms to get "cumulative abnormal returns" in the event window.

$$CAR_i = \sum_{t=T_i+1}^{T_2} \hat{\varepsilon}_{it} \ldots \ldots \ldots \ldots (5)$$

$$ACAR = \bar{\varepsilon}^* = \frac{1}{N} \sum_{i=1}^{N} \hat{\varepsilon}_{it}^* \ldots \ldots \ldots \ldots \ldots (6)$$

$$Var(ACAR) = \sigma_{ACAR}^2 = N^2 \sum_{i=1}^{N} \hat{\sigma}_{CAR,i}^2$$

$ACAR \approx N(0, \bar{\sigma}^2)$, N = Normal distribution

Where:

CAR_i = The cumulative Abnormal Return for firm i.

$ACAR_i$ = The average cumulative Abnormal Return for firm i.

N = The number of days in the event window.

♦ **Diagnostic Tests**

Parametric tests which assume normality in the distribution of average cumulative abnormal returns or non-parameter tests which assume that the average cumulative abnormal returns are not normally distributed are used to determine the significance of abnormal returns. Under the null hypothesis that the abnormal returns are insignificant,

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the distribution of $ACAR/\sigma_{ACAR}$ is asymptotically normal with zero mean and unit variance. Mathematically;

$$SAR_{i\tau} = \frac{AR_{i\tau}}{S(AR_i)} \ldots\ldots\ldots\ldots(7)$$

Where:

$SAR_{i\tau}$ = Standard abnormal returns of firm i at time τ

$AR_{i\tau}$ = Abnormal returns of firm i at time τ

S = Standard error

For the parametric test, the test statistic of the hypothesis that the average standardized residuals across forms is equal to zero is computed as:

$$Z = \frac{SAR_{i\tau}}{S(SAR_{i\tau})} = N^{-1}\frac{\sum_{i=1}^{N} SAR_{i\tau}}{S(SAR_{i\tau})} \ldots\ldots\ldots\ldots(8)$$

Considering independence across firms, and that abnormal returns are independently distributed and that:

$$S(SAR_{i\tau}) = \frac{1}{\sqrt{N}} \ldots\ldots\ldots\ldots\ldots(9)$$

The standardized abnormal return would follow a t distribution with N-1 degrees of freedom.

3.2.2 MODEL ESTIMATION PROCEDURES

The standard event study methodology that follows six steps was used to establish the impact of dividend announcements on stock price at the Nairobi Stock Exchange.

The following is the procedure that was used:

(i) Identification of he event of interest.

As explained in the problem statement, dividend announcements of a selected sample of firms at the NSE were identified as the event of interest. The event day was labeled day 0. The estimation window for the companies sampled was chosen to be 6 months.
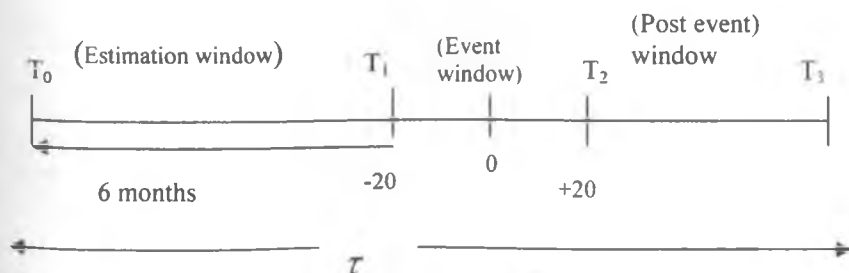
(ii) Identification of the event window

The sample of selected firms used in the estimation of our model was those firms that consistently announced final dividends in the period between January 1999 and December 2003 in addition to having more than 100 daily trading observations. The event window that was used to show the behavior of average cumulative abnormal returns was ± 20 days from the day of the final dividend announcement.

(iii) The sample selection criteria

In order to come up with the sample of firms that was used in our analysis, we set up minimum conditions that a firm had to meet to qualify for inclusion in the sample. The conditions were: -

(a) It should have announced its final dividends in the period between January 1999 and December 2003. The objective of this was to use the most current data so that the most recent effects would be captured to ensure relevance of the findings to the market participants.

(b) Its final dividend announcements fell within the calendar years 1999 – 2003.

(c) It did not announce earnings for at least 7 trading days prior to and after the dividend announcement day.

(d) It consistently announced final dividends for each of the five years under study.

(e) It traded for at least 100 days or more in the 6-month estimation window.

Table 5. Estimation window and Event window dates of the selected sample

Panel I. The estimation window for the selected companies (6 Months)					
COMPANY	1999	2000	2001	2002	2003
BBK	20/7/98-15/2/99	15/8/99 -14/2/00	13/8/00 - 12/2/01	14/8/01 - 13/2/02	20/8/02 - 22/2/03
EABL	16/2/99-15/9/99	4/3/00 - 3/9/00	3/3/01 - 2/9/01	2/3/02 - 1/9/02	1/3/03 - 1/8/03
NIC Bank	5/8/98-1/3/99	6/9/99 - 5/3/00	1/9/00 - 28/2/01	27/8/02 - 26/2/02	25/8/02 -27/1/03
SCB	4/8/98-28/2/99	23/8/99 -22/2/00	22/8/00 - 21/2/01	21/8/01 - 20/2/02	20/8/02 - 23/1/03
Panel II. The event window for the selected companies (6 Months)					
COMPANY	1999	2000	2001	2002	2003
BBK	19/1/99-16/3/99	18/1/00-15/3/00	16/1/01-13/3/01	17/1/02-14/3/02	23/1/03-20/3/03
EABL	19/8/99-30/10/99	4/8/00-2/10/00	6/8/01-1/10/01	5/8/02-30/9/02	4/8/03-29/9/03
NIC Bank	2/2/99-30/3/99	7/2/00-3/4/00	1/2/01-29/3/01	30/1/02-27/3/02	28/1/03-25/3/03
SCB	1/2/99-29/3/99	25/1/00-22/3/00	25/1/01-22/3/01	24/1/02-21/3/02	24/1/03-21/3/03

Legend:
BBK - Barclays bank.
EABL- East African Breweries Limited.
NIC Bank – National Industrial Credit bank.
SCB – Standard Chartered.

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From the conditions set, four companies (Barclays Bank, East African Breweries, NIC Bank and Standard Chartered Bank) qualified for the study. The four companies made a total of 20 announcements during the period 1999-2003.

(iv) Measurement of normal returns

The normal returns arising from the assumption that dividend announcements had no impact on stock prices was measured using the market model. Normal returns were generated on the premise that there were no unanticipated dividend announcements. Additionally, abnormal returns based on the difference between actual and expected returns assuming the announcements were unanticipated were also generated.

The market model was used because of it being an improvement on the constant mean return model as it removes the portion of stock return related to the variation in market return and therefore reducing the variance of the abnormal return leading to increased ability to detect event effects. The market model was also preferred because it overcomes the shortcomings of the capital asset pricing model and the Arbitrage pricing theory like testability of a model's validity.

The market model for security s and observation t in event time was calculated as;

$$R_{st} = \beta_0 + \beta_1 R_{mt} + \varepsilon_{st} \dots\dots(1)$$

The above model was estimated from the estimation window observations using Ordinary Least squares (OLS).

Where :-

R_{st} = The rate of return of the common stock of firm s on day t.

R_{st} = The $ln\ Price_{s,t}$ - $ln\ Price_{s,t-1}$

R_{mt} = The NSE 20 share index return at time t .

$R_{mt} = ln\ SI_t - ln\ SI_{t-1}$

ln = Natural logarithm.

SI = stock market index

$\beta_1 =$ Coefficients estimated using OLS from a regression of daily security returns on daily market index for the estimation window (T_0+1 to T_1) preceding the dividend announcement.

$\varepsilon_{st} =$ The residual for stock s at time t with $E(\varepsilon_{s,t}) = 0$. From equation (1) above, the estimated coefficients $\hat{\beta}_0$ and $\hat{\beta}_1$ were estimated.

(v) Definition of the estimation window and the framework for abnormal returns

The period before the event (6 months) was our estimation window. The event window and the estimation window were separated to avoid overlapping and in the process biasing our results. The abnormal return was calculated as :-

$$AR_{st} = \hat{\varepsilon}_{st}^* = R_{st}^* - \hat{\beta}_0 - \hat{\beta}_i R_{mt}^* \ldots \ldots \ldots \ldots (2)$$

Where: -

$\hat{\varepsilon}_{st} =$ The residual generated from equation (2)

$R_{st}^* =$ The event window returns generated from the stock prices of the selected sample of firms.

$R_{mt}^* =$ The event window market returns generated from the 20 share NSE index.

Under the assumption of normal distribution, the abnormal returns were found to be jointly normally distributed and following a student t distribution. Under the null hypothesis, Ho, that dividend announcement had no impact on the mean of variance of returns; we used the normal distribution assumption to draw inferences about the behavior of abnormal returns.

$$\hat{\varepsilon}_{st}^* \approx N(0, V_{st}) \qquad\qquad (3)$$

Where V is the variance.

Defining the ACAR as the cumulative average abnormal return, for the event window;

$$ACAR = \bar{\varepsilon}^* = \frac{1}{N} \sum_{i=1}^{N} \hat{\varepsilon}_{st}^* \qquad\qquad (4)$$

$$Var(\bar{\varepsilon}_s^*) = V = \frac{1}{N^2} \sum_{i=1}^{N} V_{st} \qquad (5)$$

Where :-

N = Number of observations in the event window

$\sum$ = Cumulation.

Given that the event window of the N securities does not overlap with the estimation window, we set the covariance terms to zero so that we could make inferences about the cumulative abnormal returns using: -

ACAR using the event window $\approx N(0, \bar{\sigma}^2)$

(vi) Diagnostic Tests

Parametric tests, which rely on the assumption that individual firm's abnormal returns are normally distributed, were used. The computed t using standardized abnormal returns was calculated and compared to the critical t-value from the tables at N-1 degrees of freedom to make statistical inferences.

The standardized residuals given by the equation below were generated thus: -

$$AR_{st} = \frac{AR_{st}}{S(AR_s)} \qquad (6)$$

Where: -

AR_{st} = Abnormal returns of firm s at time t.

S = Standard error of the abnormal return of firms.

The test statistic of the hypothesis that the average standardized residuals across firms is equal to zero was computed as:

$$Z = \frac{AR'_{st}}{S(AR'_{st})} = \frac{1/N \sum_{i=1} AR'_{st}}{S(\overline{AR}'_{st})} \qquad (7)$$

Considering independence across firms, and that abnormal returns are independently distributed, and that: -

$$S\left(AR_{st}^{\cdot}\right) = \frac{1}{\sqrt{N}} \qquad\qquad (8)$$

The abnormal returns would follow a student-t distribution.

The generated standardized abnormal returns were compared with the critical value of the t-statistic from the tables to determine the significance of the average cumulative abnormal returns.

CHAPTER 4

4.0 EMPIRICAL RESULTS

4.1 DESCRIPTIVE STATISTICS

The selected companies that made up the study sample went through a rigorous filtering process outlined in the sample selection criteria. Four firms namely: Barclays Bank of Kenya, East African Breweries, NIC Bank and Standard Chartered Bank met this criterion. The selected sample of Companies was among the 12 companies that consistently announced final dividends in the period 1999 – 2003. In addition, these four firms had at least 100 daily trading observations in the same period.

Table 6. The value of final dividends, their announcement dates and Percentage dividend changes for the selected sample (1999 – 2003)

Panel 1. The value of final dividends for the selected sample (1999 – 2003)					
Company	1999	2000	2001	2002	2003
	Sh.	Sh.	Sh.	Sh.	Sh.
BBK	8	7.5	7.5	11.25	6
EABL	5	5.5	6.75	9	12
NIC Bank	1	1.05	1.05	1	1.4
SCB	3	5	6.6	4.25	3.85
Panel 2. Dates of final dividends (1999 – 2003)					
COMPANY	1999	2000	2001	2002	2003
BBK	16/2/99	15/2/00	13/2/01	14/2/02	20/2/03
EABL	16/9/99	4/9/00	3/9/01	2/9/02	1/9/03
NIC Bank	2/3/99	6/3/00	1/3/01	27/2/02	25/2/03
SCB	1/3/99	23/2/00	22/2/01	21/2/02	20/2/03

Panel 3. Percentage change of final dividends for the selected sample (1999 – 2003)						
COMPANY	1999	2000	2001	2002	2003	AVERAGE
	%	%	%	%	%	%
BBK	-11.11	-6.25	0	50	-46.67	-3.5075
EABL	25	10	22.73	33.33	33.33	31.0975
NIC Bank	-	5	0	-4.76	40	10.06
SCB	71.43	66.67	32	35.6	-9.41	49.0725

Legend:
Sh. – Kenya shillings.
BBK – Barclays bank.
NIC – National Industrial Credit bank.
EABL – East African Breweries.

From the sample selected, it was noted that the highest amount of dividend paid was by East African Breweries in 2003, which announced a final dividend of Sh. 12. In contrast, NIC bank recorded the lowest dividend payout (Sh. 1) in 1999 and 2002. Additionally, on average, Barclays bank made the highest dividend announcement, followed by East African Breweries, Standard Chartered bank and NIC bank in that order.

In terms of individual company dividend announcements, BBK registered its highest dividend payout in 2002 (Sh. 11.25), and the lowest value in 2003 (Sh. 6). EABL had its lowest dividend value in 1999 (Sh. 5) and its highest dividend value in 2003 (Sh. 12). NIC bank registered its highest dividend payout in 2003 (Sh. 1.40) and its lowest dividend value in 1999 and 2002 (Sh. 1).

In percentage terms, SCB registered the highest percentage change in dividend announcement in a single year 71.43% in 1999. In contrast, BBK registered the highest negative percentage change (-46.67%) in 2003. Column 7 of Panel 3 in table 7 above shows the average percentage increase (decrease) of dividend values in the period under study. On average SCB registered the highest the highest positive change. Additionally, as shown in the column, it is only BBK that registered an averaged negative dividend value. From the dates of final dividend announcements in the period under study , it can be noted that the Banking sector, represented by BBK, SCB, and NIC bank made final dividend announcements at about the same time (February or March), whereas the

Industrial and Allied sector represented by EABL made its final dividend announcement in September.

4.1.1 Market and Stock returns of the Event Window for the Selected sample

I. Barclays Bank of Kenya

Table 7. Stock and market returns of Barclays Bank of Kenya

Ev.wd	rst99	rmt99	rst00	rmt 00	rst01	rmt 01	rst02	rmt02	rst03	rmt03
-19	-0.0055	-0.0031	-0.0037	-0.0001	-0.0155	0.0017	-0.0009	-0.0021	-0.0125	0.0035
-18	-0.0013	0.0007	-0.0171	-0.0033	-0.0025	-0.0011	0.0041	-0.0005	0.0044	0.0016
-17	-0.0040	-0.0053	0.0136	-0.0004	-0.0593	-0.0053	-0.0010	-0.0050	-0.0102	0.0041
-16	-0.0054	-0.0046	-0.0019	-0.0008	0.0011	0.0028	0.0080	-0.0037	0.0008	-0.0005
-15	0.0105	-0.0006	0.0037	0.0079	0.0171	0.0037	-0.0059	-0.0070	0.0128	0.0034
-14	0.0017	-0.0025	0.0014	0.0031	0.0060	-0.0020	0.0275	0.0002	0.0080	0.0023
-13	0.0085	-0.0011	-0.0036	-0.0024	0.0253	0.0001	0.0135	0.0030	0.0108	-0.0377
-12	0.0023	-0.0015	0.0028	0.0001	-0.0045	0.0022	0.0002	0.0013	-0.0085	0.0006
-11	0.0065	-0.0059	-0.0040	-0.0032	-0.0095	-0.0025	0.0202	-0.0031	0.0016	0.0075
-10	0.0073	-0.0056	-0.0219	-0.0094	0.0109	0.0028	0.0116	-0.0015	-0.0211	0.0052
-9	0.0170	-0.0009	-0.0329	0.0003	-0.0196	0.0022	0.0219	-0.0023	0.0145	-0.0015
-8	0.0051	0.0002	0.0049	0.0033	0.0001	0.0017	-0.0430	-0.0023	0.0127	0.0053
-7	-0.0002	0.0067	-0.0238	-0.0046	0.0103	0.0009	0.0282	-0.0055	0.0022	-0.0008
-6	0.0028	-0.0062	0.0197	-0.0018	0.0050	0.0006	-0.0211	-0.0013	0.0185	0.0014
-5	0.0051	-0.0022	0.0085	-0.0012	0.0115	0.0062	0.0276	0.0035	-0.0006	-0.0063
-4	-0.0004	0.0000	-0.0042	-0.0041	0.0048	-0.0042	-0.0051	0.0030	0.0113	-0.0053
-3	-0.0055	-0.0011	-0.0082	0.0020	-0.0028	-0.0002	-0.0027	-0.0053	0.0186	0.0001
-2	-0.0003	-0.0024	0.0064	-0.0001	-0.0027	0.0051	-0.0099	-0.0001	0.0209	-0.0003
-1	-0.0033	0.0058	-0.0004	-0.0074	-0.0054	0.0007	0.0021	-0.0001	-0.0163	-0.0005
0	-0.0309	0.0002	-0.0005	-0.0019	-0.0038	-0.0070	-0.0008	-0.0015	-0.0762	-0.0058
1	0.0163	0.0081	0.1012	0.0027	0.0451	0.0050	0.0319	0.0038	0.0008	-0.0014
2	-0.0107	0.0013	0.0170	-0.0019	-0.0142	0.0035	0.0021	0.0002	0.0386	0.0053
3	-0.0025	-0.0159	0.0084	0.0004	-0.0059	-0.0022	0.0030	0.0037	0.0157	-0.0034
4	-0.0292	0.0035	0.0031	0.0027	-0.0016	-0.0058	-0.0044	-0.0020	0.0116	0.0155
5	0.0111	0.0099	-0.0144	-0.0025	0.0015	0.0019	0.0027	-0.0011	0.0040	0.0019
6	-0.0064	0.0002	0.0346	0.0122	0.0040	-0.0006	-0.0088	0.0014	0.0213	0.0131
7	-0.0066	-0.0090	0.0162	-0.0027	0.0049	0.0067	-0.0046	-0.0025	-0.0015	-0.0109
8	-0.0065	0.0150	0.0160	0.0059	0.0110	-0.0006	-0.0169	-0.0014	-0.0028	-0.0017
9	0.0089	-0.0007	-0.0039	-0.0026	0.0005	0.0059	-0.0111	-0.0040	0.0061	0.0081
10	0.0038	-0.0037	0.0017	0.0081	0.0271	-0.0018	0.0004	-0.0055	0.0074	-0.0026
11	0.0017	-0.0005	-0.0240	-0.0075	0.0000	0.0027	0.0009	-0.0060	0.0248	0.0019
12	-0.0092	0.0001	-0.0141	-0.0102	0.0074	0.0017	-0.0042	0.0013	0.0121	0.0124
13	-0.0069	-0.0037	0.0074	-0.0027	0.0061	-0.0012	0.0126	-0.0011	0.0397	0.0200
14	-0.0107	0.0001	0.0004	0.0030	0.0095	-0.0045	0.0010	-0.0156	-0.0269	0.0005
15	-0.0235	-0.0187	0.0086	0.0037	-0.0023	-0.0040	0.0021	-0.0227	-0.0007	-0.0002
16	0.0160	0.0021	0.0114	-0.0066	0.0006	-0.0052	0.0000	0.0169	0.0144	-0.0372
17	-0.1118	-0.0081	-0.0779	-0.0064	-0.0086	-0.0093	0.0115	-0.0130	0.0023	0.0107
18	-0.0135	-0.0001	-0.1188	-0.0063	-0.0083	-0.0004	0.0091	-0.0107	0.0062	0.0007
19	-0.0020	-0.0065	-0.0229	-0.0028	-0.0035	-0.0030	0.0152	-0.0067	0.0065	0.0043
20	0.0108	-0.0037	-0.0074	0.0019	-0.0128	-0.0065	-0.0135	-0.0090	0.0046	-0.0010

Legend:

Rmt – Market return.

Rst – Stock return.

'99, '00, '01 '02, '03 – 1999, 2000, 2001, 2002, 2003.

The graph below shows a summary of the market and stock returns for the event window for Barclays bank in the period (1999 – 2003). In the period before the dividend announcement, both the market and stock return for the various years had a general trend of a relatively lower dispersion compared to the period after the announcement. The highest negative spike was registered by the stock return in year 2000 on day +18 which

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recorded a value of -0.1118, followed by the 1999 stock return for day +17 with a return value of -0.1117, then followed by day 0 in 2003, day −17 and day 0 in 1999 in that order. Generally, stock returns showed a relatively more volatile trend compared to market returns for Barclays bank in the period under analysis.

Stock and market return for Barclays Bank (1999 - 2003)
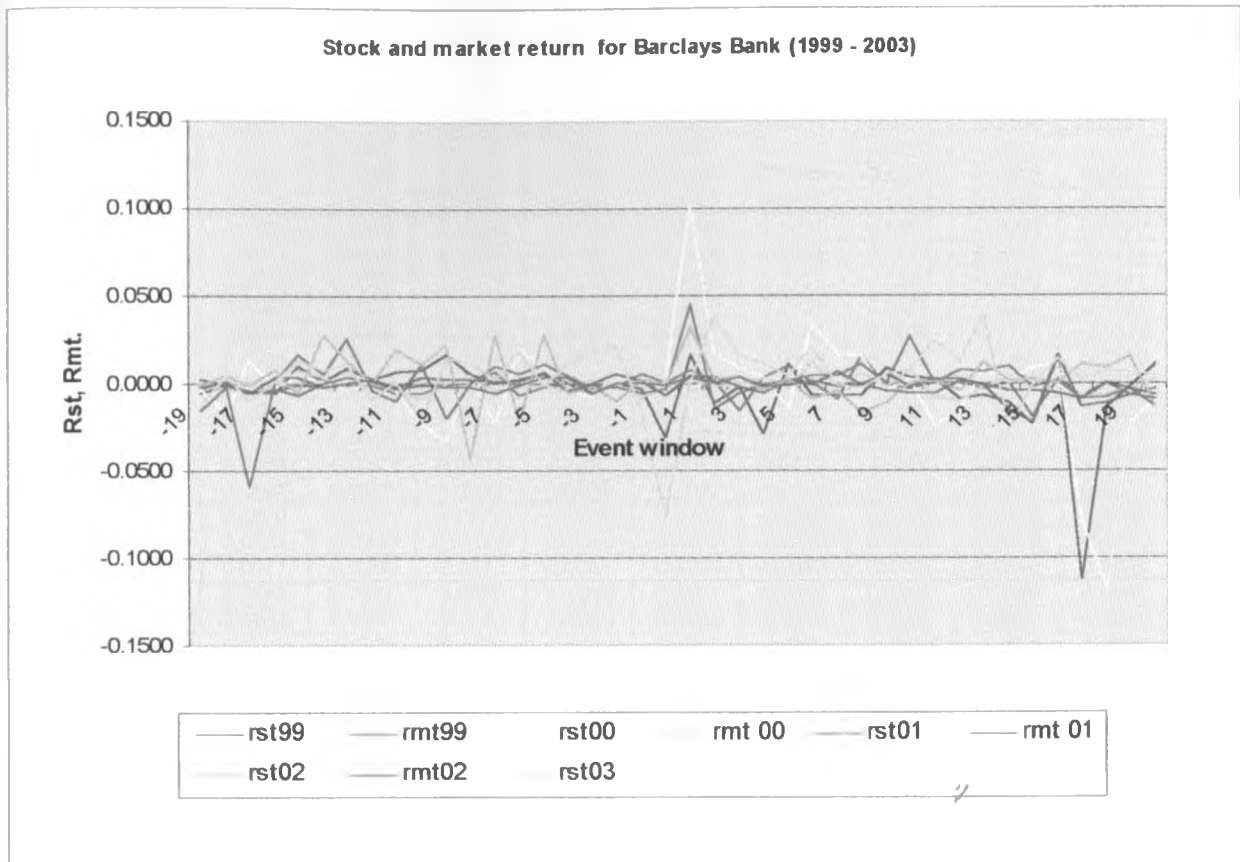
Legend:
Rmt – Market return.
Rst – Stock return.
'99, '00, '01 '02, '03 – 1999, 2000, 2001, 2002, 2003.

In the case of positive returns, in 2000, day +1 after the dividend announcement registered the highest value of stock return for Barclays bank (0.1012), followed by the stock return on day +1 in 1999 which was itself followed by day +13 in 2003, then the rest of the days in the event window follow. The market return was generally observed to be stable and oscillating around zero, meaning that, the dividend announcement influenced only the behavior of the stock return in the case of Barclays bank.

II. East African Breweries Limited

Table 8. Stock and market returns of East African Limited

Ev.wd	rst99	rmt99	rst00	rmt 00	rst01	rmt 01	rst02	rmt02	rst03	rmt03
-19	-0.0178	-0.0033	0.0197	-0.0018	-0.0030	-0.0030	0.0000	0.0013	0.0052	0.0025
-18	0.0161	0.0017	-0.0048	0.0022	-0.0122	-0.0085	-0.0060	-0.0006	0.0169	0.0028
-17	0.0022	-0.0044	0.0073	0.0049	0.0213	-0.0032	0.0081	-0.0048	-0.0072	0.0168
-16	0.0153	-0.0026	-0.0196	-0.0093	-0.0087	-0.0009	0.0103	-0.0040	0.0016	-0.0076
-15	-0.0135	-0.0022	0.0160	0.0057	-0.0004	-0.0011	-0.0124	-0.0030	0.0458	-0.0040
-14	-0.0092	-0.0032	0.0181	0.0027	-0.1331	-0.0077	0.0015	-0.0039	0.0103	0.0048
-13	-0.0099	-0.0016	0.0053	-0.0046	0.1310	-0.0022	0.0140	-0.0009	0.0185	0.0039
-12	0.0263	-0.0253	0.0078	0.0016	-0.0087	-0.0032	0.0173	0.0033	0.0097	0.0056
-11	-0.0012	-0.0010	-0.0423	0.0036	0.0077	-0.0021	0.0160	0.0005	0.0011	0.0002
-10	-0.0118	-0.0047	0.0552	-0.0058	-0.0114	-0.0049	0.0000	-0.0010	0.0025	-0.0017
-9	0.0010	-0.0008	0.0502	0.0018	-0.0428	-0.0005	-0.0075	-0.0027	0.0070	-0.0011
-8	-0.0068	0.0063	-0.0134	0.0070	0.0170	-0.0071	0.0174	-0.0021	0.0224	0.0031
-7	0.1150	0.0024	0.0201	-0.0055	0.0126	-0.0040	-0.0039	-0.0050	-0.0007	-0.0040
-6	-0.0958	0.0009	-0.1890	-0.0020	0.0009	-0.0033	-0.0051	-0.0065	-0.0038	0.0032
-5	-0.0264	-0.0139	0.2030	0.0006	0.0004	-0.0037	0.0021	-0.0008	0.0018	0.0045
-4	0.0056	-0.0122	-0.0443	-0.0034	-0.0138	-0.0001	-0.0030	-0.0028	-0.0064	0.0049
-3	-0.0137	-0.0011	0.0034	0.0027	0.0126	-0.0020	-0.0035	-0.0003	0.0045	0.0134
-2	-0.0911	-0.0076	0.0334	-0.0018	-0.0305	-0.0020	0.0133	-0.0067	-0.0006	0.0141
-1	-0.0174	-0.0052	0.0000	0.0042	-0.0297	-0.0050	0.0108	0.0062	0.0032	-0.0080
0	0.0242	0.0008	0.0088	0.0009	0.0726	0.0048	0.0000	0.0000	-0.1771	-0.0176
1	0.1018	0.0035	-0.0055	-0.0044	-0.0041	-0.0071	0.0594	-0.0001	0.0363	0.0132
2	0.0128	-0.0041	-0.0007	0.0019	0.0133	-0.0019	-0.0055	0.0024	0.1457	0.0019
3	-0.0002	-0.0047	0.0169	0.0075	-0.0092	-0.0074	0.0315	-0.0033	0.0051	0.0062
4	-0.0171	0.0030	0.0042	-0.0012	-0.0009	-0.0062	-0.0249	-0.0054	0.0533	0.0115
5	0.0106	0.0038	-0.0027	0.0003	-0.0717	-0.0071	0.0313	-0.0036	0.0488	0.0020
6	0.0060	-0.0046	0.0023	0.0003	0.0932	-0.0022	-0.0068	-0.0063	0.0024	0.0079
7	0.0006	0.0030	-0.0004	0.0079	-0.0069	-0.0054	-0.0003	-0.0090	-0.0120	0.0096
8	-0.0054	0.0039	-0.0242	-0.0129	0.0046	-0.0052	-0.0122	0.0016	0.0072	-0.0110
9	-0.0005	0.0017	-0.0350	-0.0012	0.0021	-0.0025	-0.0093	-0.0100	0.0048	0.0052
10	-0.0001	0.0040	0.0621	0.0080	-0.0036	0.0007	0.0095	0.0019	-0.0055	0.0083
11	-0.0067	-0.0018	0.0007	-0.0032	-0.0001	-0.0082	-0.0013	0.0001	0.0001	-0.0010
12	-0.0076	-0.0019	-0.0071	0.0029	-0.0013	-0.0050	-0.0076	-0.0060	-0.0023	-0.0013
13	0.0061	-0.0017	-0.0056	-0.0010	-0.0092	0.0000	0.0065	0.0054	-0.0073	0.0046
14	-0.0177	-0.0253	0.0167	-0.0030	0.0000	0.0001	0.0000	0.0116	0.0120	0.0117
15	-0.0052	-0.0009	-0.0047	0.0063	0.0061	-0.0061	0.0000	0.0000	-0.0014	0.0132
16	0.0014	0.0078	-0.0093	-0.0037	0.0015	-0.0020	-0.0007	0.0057	0.0045	0.0091
17	-0.0273	-0.0083	0.0028	0.0087	0.0036	0.0074	0.0061	0.0036	0.0003	0.0095
18	0.0029	0.0030	0.0184	0.0030	-0.0051	-0.0084	-0.0036	0.0030	0.0025	0.0017
19	-0.0041	0.0052	-0.0005	0.0000	0.0021	-0.0105	0.0036	0.0082	-0.0015	0.0149
20	0.0143	0.0017	-0.0051	0.0001	-0.0268	0.0017	0.0000	0.0003	-0.0007	0.0152

Legend:
Rmt – Market return.
Rst – Stock return.
'99, '00, '01 '02, '03 – 1999, 2000, 2001, 2002, 2003.

The stock return in 2000 and 2001 for East African Breweries registered the highest spikes in the period under study. In 2000, day -6 registered the lowest stock return (-0.1889) and the highest stock return on day -5 with a stock return value of 0.203. From the graph it can be observed ed that dispersion was higher –15 days before the dividend announcement date. +11 days after the dividend announcement, dispersion of the stock returns was highly reduced and the returns show a stable trend.

Stock and Market returns for East African Breweries (1999 - 2003)
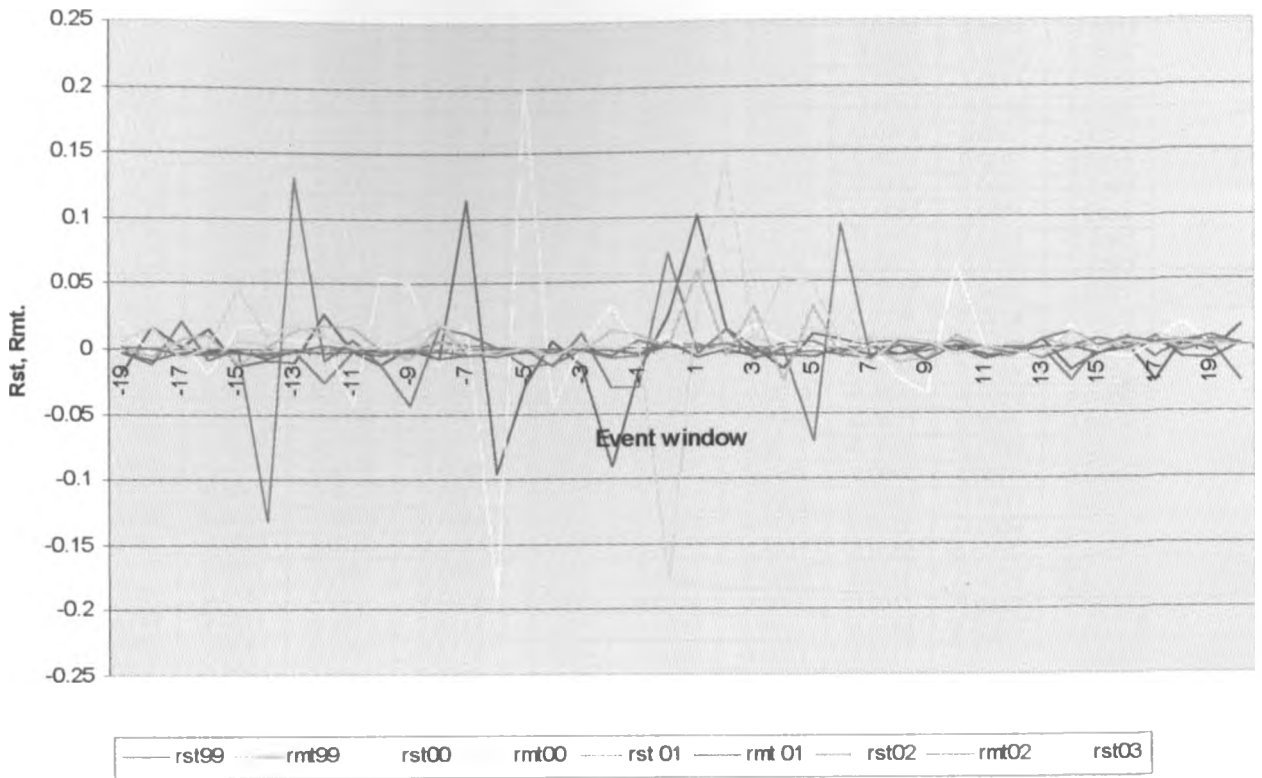
The stock returns for 1999, 2000 and 2003 led in reacting to the dividend announcement both in the period before and after the announcement day, whereas 2002 registered a relatively lower dispersion from the zero stock return value. On the announcement day, the East African Breweries stock reacted almost immediately as shown by the spikes on day 1 in 1999, 2000 and 2001

III. National Industrial Credit Bank

Table 9. Stock and market of National Industrial Credit Bank

Ev.wd	rst99	rmt99	rst00	rmt 00	rst01	rmt 01	rst02	rmt02	rst03	rmt03
-19	0.0022	-0.0056	0.0085	-0.0046	-0.0637	0.0017	0.0000	-0.0037	-0.0160	0.0034
-18	-0.0191	-0.0009	0.0123	-0.0018	0.0799	0.0009	-0.0033	-0.0070	-0.0070	0.0023
-17	0.0168	0.0002	0.0118	-0.0012	-0.0452	0.0006	0.0073	0.0002	0.0864	-0.0377
-16	-0.0078	0.0067	-0.0420	-0.0041	-0.0722	0.0062	0.0313	-0.0003	-0.0299	0.0006
-15	0.0059	-0.0062	0.0090	0.0020	-0.0093	-0.0042	0.0134	-0.0046	0.0074	0.0075
-14	0.0083	-0.0022	0.0116	-0.0001	-0.0044	-0.0002	0.0219	-0.0055	-0.0185	0.0052
-13	-0.1064	0.0000	-0.0321	-0.0074	0.0910	0.0051	0.0031	-0.0013	-0.0207	-0.0015
-12	0.1001	-0.0011	0.0390	-0.0019	-0.0163	0.0007	-0.0099	0.0035	0.0207	0.0053
-11	-0.0006	-0.0024	-0.0061	0.0027	-0.0010	-0.0070	-0.0012	0.0030	0.0000	-0.0008
-10	-0.0188	0.0058	-0.0140	-0.0019	0.0051	0.0050	-0.0012	-0.0053	0.0071	0.0014
-9	0.0090	0.0002	0.0170	0.0004	-0.0015	0.0035	0.0012	-0.0001	0.0201	-0.0063
-8	-0.0179	0.0081	-0.0112	0.0027	-0.0103	-0.0022	0.0037	-0.0001	-0.0161	-0.0053
-7	0.0023	0.0013	0.0031	-0.0025	0.0180	-0.0058	0.0012	-0.0015	0.0460	0.0001
-6	0.0065	-0.0159	0.0008	0.0122	-0.0200	0.0013	-0.0708	0.0038	0.0318	-0.0003
-5	-0.0186	0.0035	-0.0039	-0.0027	-0.0441	0.0067	0.0583	0.0002	-0.0181	-0.0005
-4	-0.0392	0.0099	-0.0164	0.0059	-0.0192	-0.0006	0.0113	0.0037	0.0144	-0.0052
-3	0.0191	0.0002	0.0261	-0.0026	0.0011	0.0059	-0.0019	-0.0020	-0.0053	-0.0006
-2	0.0032	-0.0090	0.0190	0.0081	0.0137	-0.0018	-0.0349	-0.0011	0.0086	-0.0014
-1	-0.0299	0.0150	0.0038	-0.0075	-0.0055	0.0027	0.0311	-0.0024	-0.0239	0.0053
0	-0.0009	-0.0044	0.0179	-0.0099	0.0270	0.0017	0.0192	-0.0040	0.0873	-0.0034
1	0.1441	-0.0005	-0.0037	0.0037	0.0132	-0.0057	-0.0012	-0.0087	-0.0807	0.0155
2	-0.0269	0.0001	-0.0015	-0.0066	0.0052	-0.0040	-0.0173	0.0032	-0.0384	0.0019
3	0.0161	-0.0037	0.0022	-0.0064	-0.0037	-0.0052	-0.0031	-0.0060	0.0317	0.0131
4	-0.0112	0.0001	0.0491	-0.0063	0.0141	-0.0093	-0.0050	0.0013	-0.0426	-0.0109
5	-0.0089	-0.0187	0.0223	-0.0028	0.0083	-0.0004	-0.0076	-0.0011	-0.0445	-0.0017
6	-0.0789	0.0021	-0.0593	0.0019	-0.0031	-0.0030	0.0013	-0.0156	0.0291	0.0081
7	-0.0267	-0.0081	-0.0066	-0.0170	-0.0224	-0.0065	-0.0013	-0.0227	0.0175	-0.0026
8	0.0317	-0.0001	0.0066	0.0012	-0.0170	-0.0035	-0.0019	0.0169	0.0030	0.0019
9	-0.0111	-0.0102	-0.0140	-0.0008	-0.0534	0.0014	-0.0013	-0.0130	-0.0197	0.0124
10	0.0542	0.0004	0.0041	0.0118	-0.0404	-0.0017	-0.0193	-0.0107	0.0088	0.0200
11	0.0056	-0.0057	0.0121	0.0011	-0.0184	0.0004	-0.0052	-0.0067	0.0087	0.0005
12	-0.0042	-0.0042	-0.0099	0.0005	-0.0024	-0.0031	-0.0013	-0.0090	0.0022	-0.0002
13	0.0207	0.0015	-0.0015	-0.0039	-0.0048	-0.0006	-0.0178	-0.0100	0.0184	-0.0372
14	-0.0044	-0.0011	0.0063	-0.0040	0.0018	-0.0026	0.0112	-0.0021	0.0118	0.0107
15	-0.0174	0.0014	0.0018	0.0108	-0.0127	-0.0086	-0.0033	-0.0029	0.0154	0.0007
16	-0.0373	0.0067	-0.0018	-0.0038	-0.0074	-0.0035	0.0000	-0.0052	0.0041	0.0043
17	0.0072	-0.0020	0.0007	0.0050	0.1563	-0.0018	0.0000	-0.0188	0.0049	-0.0010
18	0.0114	-0.0016	-0.0100	0.0056	-0.1813	0.0009	0.0000	0.0011	-0.0124	0.0254
19	-0.0224	-0.0122	0.0121	-0.0013	-0.0288	0.0004	0.0072	-0.0033	-0.0475	0.0053
20	0.0101	0.0004	-0.0121	0.0064	0.0019	0.0002	-0.0139	-0.0028	0.0000	-0.0045

Legend:
Rmt – Market return.
Rst – Stock return.
'99, '00, '01 '02, '03 – 1999, 2000, 2001, 2002, 2003.

In the period some −19 days before the dividend announcement, there was a high dispersion registered with the stock return for 1999 recording a stock return value of − 0.1064 on day −13 and 0.1 on day −12. However, the highest negative spikes were registered in 2001 on day +18 (-0.1813), whereas the highest positive spikes were registered in 2001 on day +17 (0.1563).

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Stock and Market return for NIC bank (1999 - 2003)
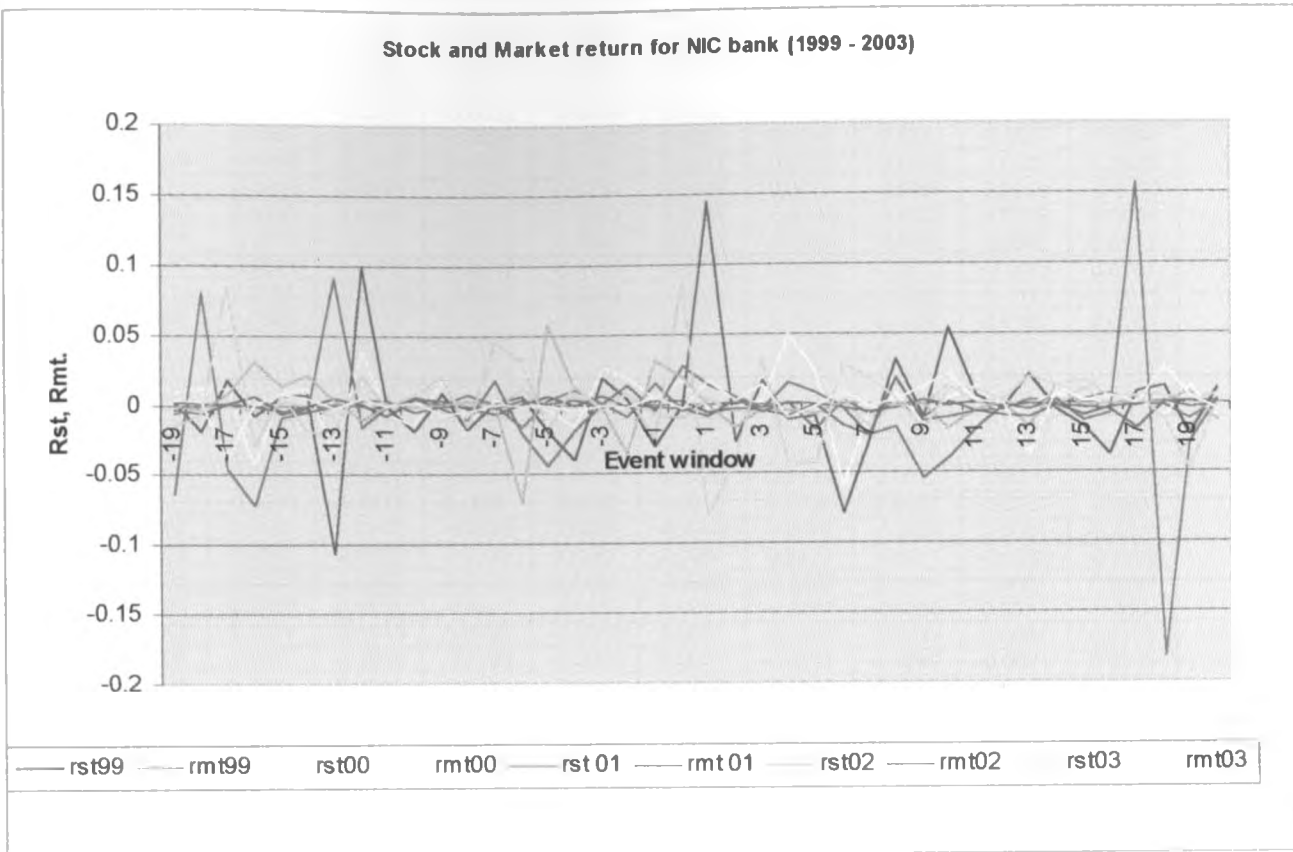
Legend:
Rmt – Market return.
Rst – Stock return.
'99, '00, '01 '02, '03 – 1999, 2000, 2001, 2002, 2003.

It was observed that both before and after the announcement day (day 0), the stock returns of NIC bank reacted to the dividend announcement. Also, between day –10 and -1, and day +2 day +16 there was relative stability of the stock returns.

IV. Standard Chartered Bank

Table 10. Stock and market of Standard Chartered Bank

| Ev.wd	rst99	rmt99	rst00	rmt 00	rst01	rmt 01	rst02	rmt02	rst03	rmt03
-19	0.0038	-0.0056	-0.0029	-0.0024	0.0154	0.0001	-0.0356	-0.0070	-0.0046	0.0016
-18	-0.0004	-0.0009	-0.0057	0.0001	0.0122	0.0022	0.0329	0.0033	-0.0021	0.0041
-17	0.0044	0.0002	-0.0207	-0.0032	-0.0084	0.0003	0.0007	0.0013	0.0066	-0.0005
-16	0.0180	0.0067	-0.0117	-0.0094	0.0322	0.0022	0.0045	-0.0031	-0.0027	0.0034
-15	-0.0078	-0.0062	-0.0116	0.0003	0.0104	0.0017	0.0124	-0.0015	0.0252	0.0023
-14	0.0171	-0.0022	0.0013	0.0033	0.0254	0.0009	0.0075	-0.0023	0.0139	-0.0377
-13	-0.0043	0.0000	0.0166	-0.0046	0.0062	0.0006	-0.0145	-0.0023	0.0233	0.0006
-12	-0.0030	-0.0011	0.0113	-0.0018	0.0084	0.0062	-0.0156	-0.0055	0.0050	0.0075
-11	0.0110	-0.0024	0.0092	-0.0012	-0.0100	-0.0042	0.0016	-0.0013	-0.0016	0.0052
-10	-0.0013	0.0058	-0.0030	-0.0041	0.0050	-0.0002	0.0040	0.0035	-0.0137	-0.0015
-9	0.0056	0.0002	0.0073	0.0020	-0.0050	0.0051	-0.0057	0.0030	0.0180	0.0053
-8	0.0325	0.0081	0.0029	-0.0001	-0.0060	0.0007	-0.0168	-0.0053	0.0051	-0.0008
-7	0.0037	0.0013	0.0028	-0.0074	-0.0091	-0.0070	0.0120	-0.0001	0.0052	0.0014
-6	-0.0145	-0.0159	0.0060	-0.0019	0.0091	0.0050	-0.0113	-0.0001	0.0034	-0.0063
-5	-0.0156	0.0035	0.0877	0.0027	0.0066	0.0035	-0.0078	-0.0015	-0.0028	-0.0053
-4	0.0082	0.0099	0.0213	-0.0019	0.0008	-0.0022	0.0423	0.0038	0.0028	0.0001
-3	-0.0108	0.0002	0.0011	0.0004	0.0010	-0.0058	0.0199	0.0002	0.0076	-0.0003
-2	-0.0111	-0.0090	-0.0171	0.0027	0.0085	0.0019	0.0135	0.0037	-0.0217	-0.0005
-1	0.0062	0.0150	0.0157	-0.0025	0.0028	-0.0006	0.0076	-0.0020	0.0034	-0.0052
0	0.0019	-0.0007	0.0000	0.0000	0.0067	0.0067	0.0127	-0.0011	-0.0076	-0.0020
1	0.0335	-0.0037	0.0352	0.0122	0.1421	-0.0006	-0.0381	0.0014	0.0061	0.0053
2	-0.0131	-0.0005	0.1615	-0.0027	-0.0152	0.0041	-0.0267	-0.0025	0.0071	-0.0034
3	-0.0008	0.0001	-0.0013	0.0059	-0.0022	0.0027	-0.0047	-0.0014	0.0052	0.0155
4	0.0058	-0.0037	-0.0658	-0.0026	-0.0009	0.0017	-0.0315	-0.0040	-0.0071	0.0019
5	-0.0015	0.0001	0.0167	0.0081	-0.0141	-0.0012	-0.0573	-0.0087	-0.0035	0.0131
6	0.0002	-0.0187	-0.0082	-0.0075	-0.0042	-0.0045	0.0046	0.0032	0.0000	-0.0109
7	-0.0006	0.0021	0.0025	-0.0102	-0.0105	-0.0040	0.0105	-0.0060	0.0079	-0.0017
8	-0.0179	-0.0081	0.0000	-0.0027	-0.0002	-0.0052	0.0065	0.0013	-0.0008	0.0081
9	0.0025	-0.0001	0.0070	0.0030	-0.0032	-0.0093	-0.0014	-0.0011	0.0018	-0.0026
10	-0.0309	-0.0065	0.0096	0.0037	0.0064	-0.0004	0.0002	-0.0156	0.0042	0.0019
11	-0.0061	-0.0037	0.0000	-0.0066	-0.0039	-0.0030	-0.0035	-0.0227	0.0022	0.0124
12	-0.0033	0.0004	0.0046	-0.0064	0.0053	-0.0065	0.0094	0.0169	0.0257	0.0200
13	0.0168	-0.0057	0.0058	-0.0063	0.0146	-0.0035	-0.0147	-0.0130	-0.0089	0.0005
14	-0.0035	-0.0042	-0.0082	-0.0028	-0.0026	0.0014	0.0147	-0.0107	0.0122	-0.0002
15	0.0319	0.0015	0.0163	0.0019	-0.0030	-0.0017	-0.0098	-0.0067	0.0026	-0.0372
16	0.0044	-0.0011	-0.5265	-0.0170	0.0086	0.0004	-0.0198	-0.0090	0.0131	0.0107
17	0.0008	0.0014	0.0087	0.0012	0.0069	-0.0031	0.0257	-0.0023	-0.0090	0.0007
18	0.0052	0.0067	-0.0050	-0.0008	-0.0024	-0.0006	0.0039	-0.0077	0.0162	0.0043
19	-0.0100	-0.0020	0.0252	-0.0007	-0.1319	-0.0026	0.0112	0.0023	0.0032	-0.0010
20	-0.0159	-0.0016	0.0291	0.0125	-0.0100	-0.0086	0.0124	-0.0044	-0.0007	-0.0008

Legend:

Rmt – Market return.

Rst – Stock return.

'99, '00, '01 '02, '03 – 1999, 2000, 2001, 2002, 2003.

The stock and market returns before the dividend announcements in this bank showed a stable trend of low dispersion. The highest stock return was registered in 2000 0n day +2 with a stock return value of 0.1615, followed by the stock return in 2001 on day +1.

Stock and market returns for Standard Chartered bank (1999 - 2003)
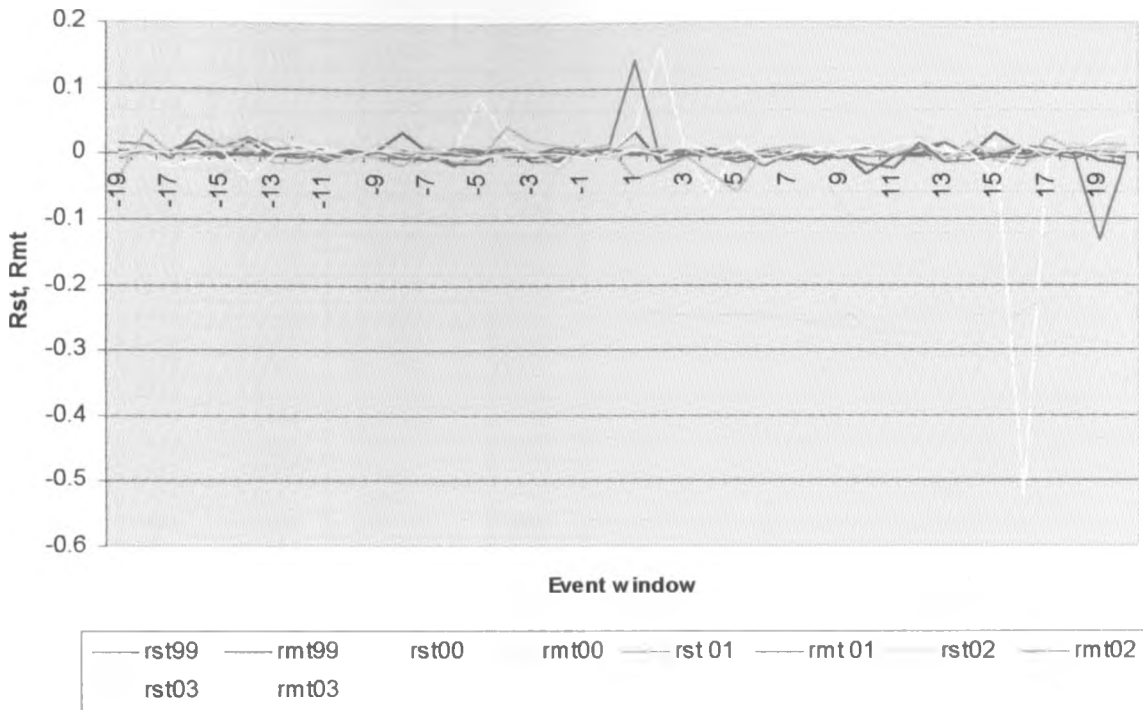
On day +16 after the dividend announcement, Standard Chartered bank registered the lowest stock return value in the period under study (-0.5265). Compared to the other three firms, dispersion for stock returns in Standard Chartered was lowest. In the day just after the announcement day (day 0), the stock returns for 2000 and 2001 shot up as shown by the spikes in the graphs above. It can therefore be concluded that although the influence of the announcement day was not as pronounced as in the case of the other three firms, the returns at least reacted to the dividend announcement.

4.2 ESTIMATION RESULTS

4.2.1 Individual Company Average Cumulative Abnormal Returns.

The company-by-company average cumulative abnormal return for the event window is shown in table 11 below.

Table 11. *ACAR* For Each of The Selected Companies

Ev.wd	BBK	EABL	NIC	SCB
-19	-0.0082	0.0008	-0.0118	0.0039
-18	0.0108	0.0005	0.0025	0.0021
-17	0.0221	0.0063	0.0309	0.0016
-16	-0.0215	0.0032	0.0062	0.0048
-15	0.0148	0.0096	0.0117	0.0106
-14	0.0060	0.0130	0.0161	0.0300
-13	0.0108	0.0165	0.0053	0.0354
-12	0.0087	0.0283	0.0306	0.0347
-11	0.0114	0.0235	0.0295	0.0369
-10	0.0082	0.0287	0.0252	0.0343
-9	0.0083	0.0287	0.0368	0.0361
-8	0.0031	0.0353	0.0268	0.0389
-7	0.0065	0.0615	0.0423	0.0426
-6	0.0115	0.0010	0.0330	0.0432
-5	0.0216	0.0373	0.0277	0.0566
-4	0.0243	0.0237	0.0165	0.0704
-3	0.0246	0.0229	0.0255	0.0750
-2	0.0266	0.0065	0.0293	0.0698
-1	0.0218	0.0002	0.0219	0.0761
0	0.0016	0.0168	0.0569	0.0780
1	0.0390	0.0184	0.0685	0.1130
2	0.0440	0.0505	0.0534	0.1357
3	0.0492	0.0600	0.0617	0.1317
4	0.0434	0.0611	0.0681	0.1119
5	0.0432	0.0630	0.0676	0.0983
6	0.0494	0.0812	0.0462	0.1015
7	0.0524	0.0770	0.0494	0.1046
8	0.0519	0.0674	0.0503	0.1025
9	0.0500	0.0578	0.0318	0.1059
10	0.0591	0.0688	0.0277	0.1054
11	0.0596	0.0662	0.0310	0.1037
12	0.0559	0.0604	0.0314	0.1085
13	0.0649	0.0564	0.0497	0.1134
14	0.0614	0.0585	0.0536	0.1170
15	0.0616	0.0572	0.0499	0.1312
16	0.0757	0.0532	0.0412	0.0262
17	0.0403	0.0493	0.0797	0.0331
18	0.0162	0.0516	0.0326	0.0357
19	0.0156	0.0500	0.0189	0.0158
20	0.0140	0.0436	0.0177	0.0206

Legend:
ACAR – Average Cumulative Abnormal Returns
bbk – Barclays Bank Of Kenya.
eabl – East African Breweries.
nic – NIC Bank.
scb – Standard Chartered Bank.
Ev.wd – event window.

The graph below derived from table 11 above, gives a picture of the behavior of the cumulative abnormal returns in the 1999-2003 period. It can be observed that Standard Chartered Bank registered the highest positive level of Average Cumulative Abnormal Returns (*ACAR*) on day +2 (0.1316849) after its final dividend announcement. The second highest registered value of *ACAR* was by East African Breweries on day +6,

followed by NIC bank on day +17 (0.07966) and then Barclays bank on day +16 (0.0765).
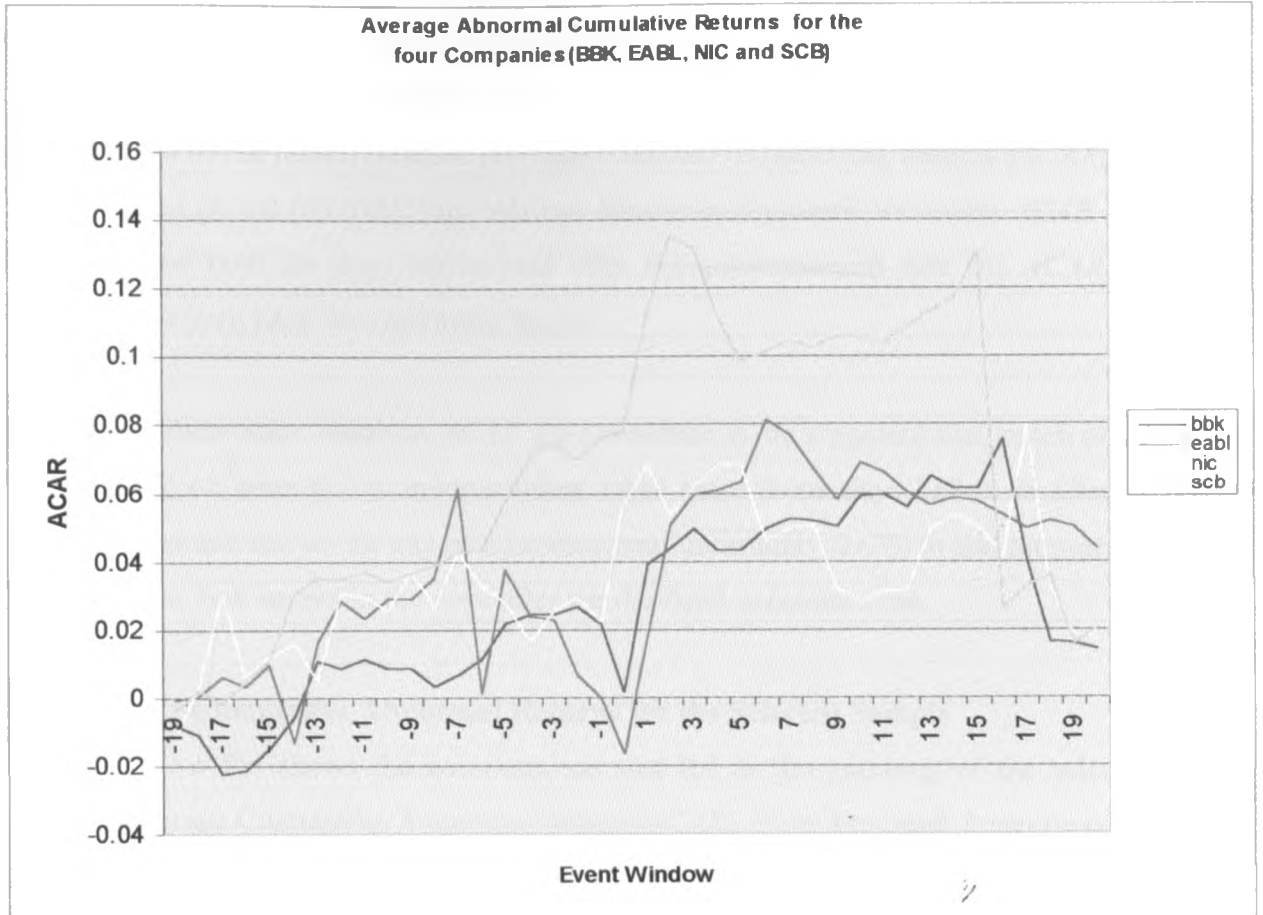
Average Abnormal Cumulative Returns for the four Companies (BBK, EABL, NIC and SCB)

Event Window

Legend:
bbk – Barclays Bank Of Kenya
eabl – East African Breweries
nic – NIC Bank
scb – Standard Chartered Bank

In terms of the negative Average Cumulative Abnormal returns, Barclays bank recorded the lowest value on day −17 before the final dividend announcement (-0.0221), followed by East African Breweries on day 0 (-0.0168), then NIC bank on day −19 (-0.0118) and lastly, standard Chartered bank on day −19 with an $ACAR$ value of −0.0039.

Turning to the behavior of the Average Cumulative Abnormal Returns on the announcement day, it was observed that there was sharp dip in the $ACAR$ curve on day 0, compared to the days immediately before and after the dividend announcement day. For

Standard Chartered bank, the hitherto increasing $ACAR$ registered an increase at a decreasing rate of the $ACAR$ from 0.076 on day −1 to 0.078 on the announcement day, and then it starting to rise at an increasing rate immediately after the day of announcement (from 0.078 on day 0 to 0.113 on day +1). For NIC bank, the average cumulative abnormal returns had dipped earlier (on day −1) and were making positive gains on the announcement day as evidenced by the NIC curve on event day 0. Barclays bank's average cumulative abnormal returns on day 0 showed a sharp negative spike and registered one of the lowest positive Average Cumulative Abnormal Returns ($ACARs$) in the considered period (0.0016). East African Breweries registered its lowest $ACAR$ on day 0, and on both the days before and after the announcement date the $ACAR$ for Standard Chartered bank was relatively higher.

The general observation made on $ACAR$ gave credence to the argument that, much of the reaction of stock price to an announcement takes place some days before or after an announcement and that on the day of announcement uncertainty creeps in and recovery of the stock price took ensues in the days after the dividend announcement.

4.2.2 Average Cumulative Abnormal Returns for the Selected Sample

Table 12 below the shows the computations that led to the graphing of the selected sample's Average Cumulative Abnormal Return ($ACAR$). From the graph it can be noted that the $ACAR$ curve depicted a steadily rising trend from day −19 to day −17 before the announcement of dividend. I then fell between day −17 and −16 before it rose again up to day −12 before the announcement of dividend.

Table 12. *ACAR* **For The whole sample of the selected Companies.**

Ev.wd	ssar	aar	car
-19	0.1234	0.0062	0.0062
-18	0.0951	0.0048	0.0014
-17	0.0960	0.0048	0.0034
-16	0.1042	0.0052	0.0018
-15	0.1224	0.0061	0.0043
-14	0.0496	0.0025	0.0068
-13	0.2039	0.0102	0.0170
-12	0.1716	0.0086	0.0256
-11	-0.0045	0.0002	0.0253
-10	0.0250	0.0013	0.0241
-9	0.0676	0.0034	0.0275
-8	0.0287	-0.0014	0.0260
-7	0.2439	0.0122	0.0382
-6	0.3207	0.0160	0.0222
-5	0.2724	0.0136	0.0358
-4	0.0418	0.0021	0.0337
-3	0.0656	0.0033	0.0370
-2	0.0783	0.0039	0.0331
-1	0.0637	0.0032	0.0299
0	0.0003	0.0000	0.0299
1	0.5965	0.0298	0.0597
2	0.2229	0.0111	0.0709
3	0.0951	0.0048	0.0756
4	0.0906	0.0045	0.0711
5	0.0615	0.0031	0.0680
6	0.0311	0.0016	0.0696
7	0.0256	0.0013	0.0709
8	0.0567	0.0028	0.0680
9	0.1333	0.0067	0.0614
10	0.0775	0.0039	0.0652
11	0.0020	-0.0001	0.0651
12	0.0219	-0.0011	0.0640
13	0.1411	0.0071	0.0711
14	0.0303	0.0015	0.0726
15	0.0470	0.0023	0.0750
16	0.5177	0.0259	0.0491
17	0.0305	0.0015	0.0506
18	0.3315	-0.0166	0.0340
19	0.1790	0.0090	0.0251
20	0.0217	0.0011	0.0240

Legend:
ACAR – Average Cumulative Abnormal Returns
sar – summation of abnormal returns.
aar – average abnormal returns.
acar – average cumulative abnormal returns.
Ev.wd – event window.

In the period following day −12, the ACAR curve depicted an unstable trend of rises and falls but remained positive. This trend was broken on the announcement day when a sharp rise in ACAR was observed reaching a spike peak on day +3 after the dividend announcement. The trend of instability again set in until day +15 from which day a steady decline of the ACAR curve was observed up to the end of the event window (day +20 after the dividend announcement date).

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Average Cumulative Abnormal Return for the event Window
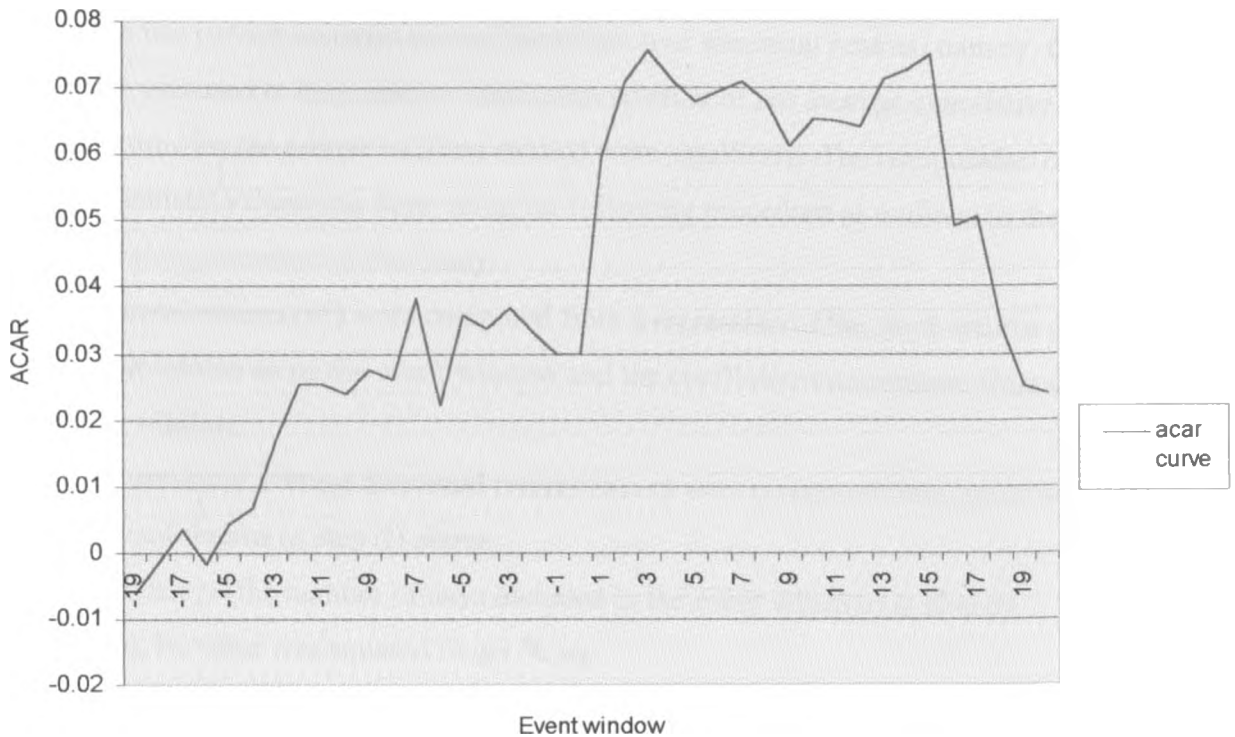
Legend:
acar – Average Cumulative Abnormal Returns.
Event window – The period within which the event occurred.

As far as observations relative to the event window (day 0) are concerned, it was noted that *ACARs* were generally higher in the period before than in the period after the dividend announcement. In fact, the highest ACAR value was recorded on day +3 just after the announcement day. This implies that market participants appreciated the influence of a dividend announcement in the period after the announcement.

Additionally, the small spikes on day -17, -12, -7, -5, -3, +3, +7, +15 and +17 relative to the announcement day show how information was being processed and interpreted in the stock market and is a manifestation of the non-persistence of ACAR on the days making up the event window mentioned above. It is noteworthy that the highest *ACAR* level achieved was on day +3 after the dividend announcement (0.0756344). The lowest

ACAR level recorded was on day -19 before the announcement (-0.006168). Also, the *ACAR* curve was found to be skewed to the right.

4.2.3 Diagnostic Tests

A parametric test (which assumes normal distribution of abnormal returns) namely, the student *t*-test was used to help reach a conclusion whether or not average cumulative abnormal returns for the sample of firms studied were significant. The computation of the calculated *t* statistic values was done using the following procedure as outlined in the model estimation procedure of this study.

I. Abnormal returns **(e*)** were computed from a regression of the stock returns on market returns using the event window and the coefficients determined from the event window.

II. The cumulated average abnormal returns **(acar)** were computed from generated abnormal returns in step (I) above.

III. Given that N (the number of days included in the event window) is already known, its value was squared to get **N. sq.**

IV. A computation of the cumulative variance was done by cumulating the variance of the average cumulative abnormal returns **($s^{2)}$** to get the cumulative variance **(c.v)**

V. To get the variance in each of the days in the event window, the value computed in (IV) above was multiplied by **1/ N. sq.** The standard errors **(s.e)** were then computed from the square root of the variance in each of the days making up the event window.

VI. The standardized abnormal returns **(AR')** were then computed by dividing abnormal returns (e*) by their individual standard errors (s.e).

VII. The value of (AR') for each day in the event window was then divided by the reciprocal of the square root of N (40 in our case) to get the *z* statistic approximated by the student *t* distribution with N-1 degrees of freedom. This calculated *t* value, is the one that was compared to the critical *t* value to determine the significance of the average cumulative abnormal returns.

As is shown in the table 13 below, all but three of the Average Cumulative Abnormal Returns (the ones with an asterisk (*)) were found to be significant. This finding supports the widely held opinion that dividends do indeed contain information.

Table 13. Derivation of the Diagnostic test

EV. Wi	e*	acar	N. Sq.	s2	c.v	1/N.sq	s.e	AR'	sqrtN	1/sqrtN	z app t dist
-19	-0.0062	-0.0062	1600	0.0006	0.0006	0.00000040	0.0006	-9.7948	6.3246	0.1581	61.9475
-18	0.0048	-0.0014	1600	0.0006	0.0013	0.00000079	0.0009	5.3391	6.3246	0.1581	33.7674
-17	0.0048	0.0034	1600	0.0006	0.0019	0.00000119	0.0011	4.4001	6.3246	0.1581	27.8289
-16	-0.0052	-0.0018	1600	0.0006	0.0025	0.00000159	0.0013	-4.1361	6.3246	0.1581	26.1591
-15	0.0061	0.0043	1600	0.0006	0.0032	0.00000198	0.0014	4.3480	6.3246	0.1581	27.4989
-14	0.0025	0.0068	1600	0.0006	0.0038	0.00000238	0.0015	1.6085	6.3246	0.1581	10.1732
-13	0.0102	0.0170	1600	0.0006	0.0044	0.00000278	0.0017	6.1198	6.3246	0.1581	38.7047
-12	0.0086	0.0256	1600	0.0006	0.0051	0.00000317	0.0018	4.8171	6.3246	0.1581	30.4663
-11	-0.0002	0.0253	1600	0.0006	0.0057	0.00000357	0.0019	-0.1186	6.3246	0.1581	-0.7504
-10	-0.0013	0.0241*	1600	0.0006	0.0063	0.00000397	0.0020	-0.6280	6.3246	0.1581	-3.9720
-9	0.0034	0.0275	1600	0.0006	0.0070	0.00000436	0.0021	1.6174	6.3246	0.1581	10.2296
-8	-0.0014	0.0260	1600	0.0006	0.0076	0.00000476	0.0022	-0.6574	6.3246	0.1581	-4.1575
-7	0.0122	0.0382	1600	0.0006	0.0082	0.00000516	0.0023	5.3703	6.3246	0.1581	33.9649
-6	-0.0160	0.0222	1600	0.0006	0.0089	0.00000555	0.0024	-6.8052	6.3246	0.1581	-43.0398
-5	0.0136	0.0358	1600	0.0006	0.0095	0.00000595	0.0024	5.5834	6.3246	0.1581	35.3127
-4	-0.0021	0.0337	1600	0.0006	0.0102	0.00000635	0.0025	-0.8296	6.3246	0.1581	-5.2469
-3	0.0033	0.0370	1600	0.0006	0.0108	0.00000674	0.0026	1.2642	6.3246	0.1581	7.9954
-2	-0.0039	0.0331	1600	0.0006	0.0114	0.00000714	0.0027	-1.4649	6.3246	0.1581	-9.2650
-1	-0.0032	0.0299	1600	0.0006	0.0121	0.00000753	0.0027	-1.1607	6.3246	0.1581	-7.3412
0	0.0000	0.0299*	1600	0.0006	0.0127	0.00000793	0.0028	0.0055	6.3246	0.1581	0.0347
1	0.0298	0.0597	1600	0.0006	0.0133	0.00000833	0.0029	10.3349	6.3246	0.1581	65.3634
2	0.0111	0.0709	1600	0.0006	0.0140	0.00000872	0.0030	3.7730	6.3246	0.1581	23.8625
3	0.0048	0.0756	1600	0.0006	0.0146	0.00000912	0.0030	1.5745	6.3246	0.1581	9.9581
4	-0.0045	0.0711	1600	0.0006	0.0152	0.00000952	0.0031	-1.4685	6.3246	0.1581	-9.2876
5	-0.0031	0.0680	1600	0.0006	0.0159	0.00000991	0.0031	-0.9766	6.3246	0.1581	-6.1767
6	0.0016	0.0696	1600	0.0006	0.0165	0.00001031	0.0032	0.4845	6.3246	0.1581	3.0645
7	0.0013	0.0709	1600	0.0006	0.0171	0.00001071	0.0033	0.3908	6.3246	0.1581	2.4718
8	-0.0028	0.0680	1600	0.0006	0.0178	0.00001110	0.0033	-0.8509	6.3246	0.1581	-5.3813
9	-0.0067	0.0614	1600	0.0006	0.0184	0.00001150	0.0034	-1.9658	6.3246	0.1581	-12.4327
10	0.0039	0.0652	1600	0.0006	0.0190	0.00001190	0.0034	1.1233	6.3246	0.1581	7.1043
11	-0.0001	0.0651*	1600	0.0006	0.0197	0.00001229	0.0035	-0.0278	6.3246	0.1581	-0.1760
12	-0.0011	0.0640	1600	0.0006	0.0203	0.00001269	0.0036	-0.3071	6.3246	0.1581	-1.9422
13	0.0071	0.0711	1600	0.0006	0.0209	0.00001309	0.0036	1.9505	6.3246	0.1581	12.3361
14	0.0015	0.0726	1600	0.0006	0.0216	0.00001348	0.0037	0.4131	6.3246	0.1581	2.6130
15	0.0023	0.0750	1600	0.0006	0.0222	0.00001388	0.0037	0.6305	6.3246	0.1581	3.9879
16	-0.0259	0.0491	1600	0.0006	0.0228	0.00001428	0.0038	-6.8505	6.3246	0.1581	-43.3262
17	0.0015	0.0506	1600	0.0006	0.0235	0.00001467	0.0038	0.3986	6.3246	0.1581	2.5210
18	-0.0166	0.0340	1600	0.0006	0.0241	0.00001507	0.0039	-4.2703	6.3246	0.1581	-27.0077
19	-0.0090	0.0251	1600	0.0006	0.0247	0.00001547	0.0039	-2.2760	6.3246	0.1581	-14.3946
20	-0.0011	0.0240	1600	0.0006	0.0254	0.00001586	0.0040	-0.2723	6.3246	0.1581	-1.7221

Legend:

EV. Wi – Event window

e* - Abnormal returns

acar - The cumulated average abnormal returns

c.v - cumulative variance

1/N.sq – Reciprocal of the square of the number of days in the event window

s.e – Standard error

AR' - The standardized abnormal returns

SqrtN – Square root of the number of days in the event window

1/sqrtN – Reciprocal of the square root of the number of days in the event window

z app t dist – The z-statistic approximated by the t-statistic

CHAPTER 5
5.0 CONCLUSION AND POLICY IMPLICATIONS
5.1 SUMMARY AND CONCLUSIONS

Given the pivotal role played by the stock market in mobilizing funds and instilling confidence in market participants about the performance of a given economy, this study sought to use the Nairobi Stock Exchange (NSE) as a test case to examine the importance of a dividend announcement in determining the value of the firm as measured by the movement of its stock price in the stock market. A sample of four firms selected using some specified criteria was used to conduct the study. In an attempt to determine whether such announcements play a role in influencing the firm values of the selected sample of companies, the event study methodology was used because of its proven effectiveness in analyzing the impact of corporate actions on firm value.

This study therefore, made a contribution towards resolving the empirical issue as to whether final dividend announcements convey useful information to capital market participants with specific reference to a selected sample of firms listed on the Nairobi Stock exchange. Such an attempt was crucial in establishing the validity of the "informational content of dividends" hypothesis. To achieve our objective, our study examined the association between unexpected final dividends and changes in firm value as measured by variations in stock price of the affected firms using the event study methodology. To test the significance of the average cumulative abnormal returns ($ACAR$), a parametric test assuming a student t distribution was used.

Using a sample drawn from the period 1999-2003, the results showed a significant relationship between dividend announcements and firm value. Also, the platykurtic (flatter than the normal distribution curve) shape of the $ACAR$ curve, meaning a hump shape, lends credence to the argument that abnormal returns persisted for some time after the announcement of dividends, although the curve has some spikes as shown in the Average Cumulative Abnormal Return curve.

Table 7. Shows the generated abnormal returns' distribution. The average cumulative abnormal returns observations reduced to 40 because of lagging and thereby loosing one degree of freedom. The test of the null hypothesis that average cumulative returns were not normally distributed was rejected and the joint probability that they were normally distributed was found to be 0.9775

Table14. The distribution of the Average Cumulative Abnormal Return for the selected sample.

	ACAR
Mean	0.040536
Median	0.034918
Maximum	0.075634
Minimum	-0.006168
Std. Dev.	0.025190
Skewness	-0.129733
Kurtosis	1.796103
Jarque-Bera	2.527816
Probability	0.282548
Observations	40
Pr (Skewness)	0.704
Pr (Kurtosis)	0.004
Adj chi2 (2)	7.58
Pr>chi2	0.0225

Legend:
ACAR - Average Cumulative Abnormal Returns
Std. Dev. - standard deviation
Jarque-Bera – A test for normal distribution, the closer its probability is to zero the more the probability of normal distribution.
Pr – probability
Adj – Adjusted
chi2 – Chi-square

As shown in the table above, the Average Cumulative Abnormal Return ($ACAR$) data was also found to be skewed to the right with a value of –0.12973 and the probability of kurtosis approximating the normal distribution was found to be 0.004. Also, the kurtosis value was 1.796103.

In conclusion, the results in the study show a significant relationship between unexpected dividend announcements and abnormal stock returns and therefore supports the proposition that dividends contain information about a firm's future value.

5.2 POLICY IMPLICATIONS

Event study methodology has been used over the years as a reliable method of analyzing the impact of corporate actions on firm value. Some of the corporate actions studied before are; stock splits, stock issuance, merger and spin-off announcements, hiring or firing of high level officers, changes in a corporate organization's regulations and changes in pollution regulations among a host of other corporate actions. Dividend announcement being one of the major corporate actions in financial economics, occupies a unique position in so far as company performance is concerned, because of the regularity with which it occurs and its importance in determining shareholder value in most companies.

After conducting an examination of the information content of dividends in the Nairobi Stock Exchange (NSE) for the selected sample of companies and finding that dividends do indeed convey information, the policy implications of this conclusion can be summarized thus:

Managers especially those working in the companies that made up the selected sample could use the conclusions of this study to send the appropriate signal to other market participants about their opinion on their company's performance in the foreseeable future. A positive dividend announcement for instance effectively signal an impressive future company performance to market participants leading to an upward movement of the company's stock price and vice versa.

For investors in companies listed on the NSE, A dividend announcement could be used as a signal of what the future portends for the announcing company making them swing into action by increasing their shareholding or reducing it, as the case may be depending on whether the news are positive or negative with the sole objective of minimizing risk and maximizing the net positive return.

Creditors and debtors of the dividend announcing company could use the findings of this study to make rational decisions. If the dividend announcement news were positive for

instance, the creditors could rely on this to advance more financial resources to the announcing firm given that its financial performance at least in the foreseeable future is good and vice versa. Debtors, after getting information that the dividend announcing company made negative dividend announcement should take emergency measures to repay the amount owing to maintain good business relationship and to avoid bad publicity and probable eventual insolvency.

The Capital Markets Authority (CMA) could use dividend announcement as a signal of a listed firm's future market performance and give a realistic and objective analysis of dividend announcing companies' future prospects for the benefit of other market participants and to ensure the stability of the exchange. From the results obtained, it is evident that unexpected dividend announcements have information content. Accordingly going by the graphical analysis and the significance of the average cumulative returns, market participants in the NSE could maximize their net returns by making a rational choice whether or not to invest in a listed company's stock after it makes a dividend announcement. In conclusion, all company stakeholders should keep an eye on corporate actions of NSE's listed companies especially dividend announcement, given the significant signal it sends to the market as was found by this study.

5.3 SUGGESTIONS FOR FURTHER RESEARCH

This study was aimed at shedding more light on what a corporate action that starts with a dividend announcement implies to stock market participants, using the event study methodology. There are other methodologies like the Random Coefficient Regression (RCR) model that could be used to establish the relationship between the two variables – Dividend announcement and stock price. Additionally, a host of other variables drawn from theory, apart from the market return as given by the market model, could be added to establish the significance of their influence on the stock return, with an objective of exploring the dynamics of this interesting area of Financial Economics. A lot of ground therefore needs to be covered in this field, and further empirical studies are recommended.

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APPENDICES

Table I. Companies that made final Dividend announcements (1999-2003).

COMPANY	1998	1999	2000	2001	2002	2003
	Sh.	Sh.	Sh.	Sh.	Sh.	Sh.
Rea Vipingo	0.4	0	0	0	0	0.25
EA Cables	2	2	4.5	1.1	1.1	1
Total	2.6	3	3.4	0	0	1.7
BAT	4	5	8	1.65	2.1	0
BAMBURI	0.625	0.75	0.5	0.5	0.75	0.5
BBK	9	8	7.5	7.5	11.25	6
Exp. Kenya	2.2	0	0	0	0	0
Firestone	1.5	0.7	0.5	0.5	0.5	0.5
Limuru Tea	62.5	60	30	30	0	3
Ol-Pejeta	1	2.2	0	0	0	0
SCB	1.75	3	5	6.6	4.25	3.85
KCB	4.5	0	0	0	0	0
Kakuzi	1.75	1.75	1	0	0	0
TPS Serena	0.5	0	1	1.1	1.1	1.1
HFCK	1	1	0.25	0.38	0	0
CFC Bank	0.67	0.67	0.67	0.67	0.67	0.67
Std. News	1	0.1	0	0	0	0
D. Trust	0.6	0	0.4	0.6	0.4	0.6
Kenya Oil	4	0	6	0	0	5.5
NMG	1.75	1.1	0	0	1.6	1.75
Jubilee	1	0	1	1.25	1.25	1.25
A.R Mining	0.3	0	0	0	0	0.1
PAN A.INS.	1.75	0	0	0	0	0
Dunlop	2	0.4	0.4	0.4	0	0
GWK	7.5	0	2.5	5	0.5	3.75
Kapchorua	7.5	0	2.5	2.5	0.5	3.75
KQ	1	0	0.75	0.5	0.6	0.5
Eaagads	4.75	1.25	0	0	0	0
ICDC	2	1.5	2	2	2	2.2
EABL	4	5	5.5	6.75	9	12
A.Baumann	0.75	1.25	1	0	1	0
KPLC	5	50	0	0	0	0
City Trust	2	2	2	2	2	2.25
Uchumi	3.05	2.3	2.3	1	0.5	0
Carbacid	1.3	1.5	1.65	1.65	22	2.25
BOC	2.5	2.55	2.55	2.55	2.75	2.75
EA. Port	1	0	0	1	0.5	1.75
CMC	0.5	0.25	0	0.75	0.75	0
Brooke B.	0	2.3	4	6	2	2.5
Sasini	0	0.5	2.2	0.25	0.5	0
Nic Bank	0	1	1.05	1.05	1	1.4
Crown Ber.	0	0	1	0.5	0.5	1.5
Kenol	0	0	0	6	9.5	0
Mumias Sug	0	0	0	0.71	0.1	0
Total	**39**	**28**	**30**	**30**	**29**	**27**

Legend:

KCB – Kenya Commercial bank

BAT – British American Tobacco

BBK – Barclays Bank of Kenya

EXP - Express

NMG – Nation Media Group

KQ – Kenya Airways

ICDC- Industrial Commercial Development Company

EABL – East African Breweries Limited

SCB – Standard Chartered Bank

HFCK – Housing Finance Company of Kenya

D. - Diamond

GWK –George Williamson Kenya

KPLC –Kenya Power and Lighting Company

BOC- Boc Kenya

CMC – Cooper Motors Co-operation

EA. - East Africa

Table II. Average Cumulative Return for Barclays bank

Ev. wd	bbk99	bbk00	bbk01	bbk02	bbk03	sbbk	bbkaar	bbkacar
-19	-0.0063	-0.0029	-0.0165	-0.0005	-0.0149	-0.0411	-0.0082	-0.0082
-18	-0.0033	-0.0158	-0.0010	0.0039	0.0036	-0.0126	-0.0025	-0.0108
-17	-0.0042	0.0144	-0.0541	0.0006	-0.0131	-0.0565	-0.0113	-0.0221
-16	-0.0058	-0.0010	-0.0008	0.0090	0.0016	0.0029	0.0006	-0.0215
-15	0.0089	0.0031	0.0144	-0.0035	0.0105	0.0334	0.0067	-0.0148
-14	0.0006	0.0016	0.0082	0.0270	0.0066	0.0441	0.0088	-0.0060
-13	0.0071	-0.0024	0.0257	0.0119	0.0417	0.0840	0.0168	0.0108
-12	0.0010	0.0035	-0.0059	-0.0007	-0.0086	-0.0107	-0.0021	0.0087
-11	0.0064	-0.0027	-0.0068	0.0210	-0.0041	0.0139	0.0028	0.0114
-10	0.0072	-0.0195	0.0089	0.0117	-0.0248	-0.0165	-0.0033	0.0082
-9	0.0155	-0.0322	-0.0210	0.0223	0.0161	0.0007	0.0001	0.0083
-8	0.0033	0.0051	-0.0009	-0.0425	0.0089	-0.0261	-0.0052	0.0031
-7	-0.0039	-0.0223	0.0100	0.0300	0.0033	0.0170	0.0034	0.0065
-6	0.0028	0.0207	0.0050	-0.0210	0.0178	0.0252	0.0050	0.0115
-5	0.0039	0.0095	0.0065	0.0257	0.0049	0.0506	0.0101	0.0216
-4	-0.0022	-0.0027	0.0090	-0.0067	0.0160	0.0135	0.0027	0.0243
-3	-0.0069	-0.0078	-0.0021	-0.0010	0.0189	0.0011	0.0002	0.0246
-2	-0.0014	0.0072	-0.0067	-0.0103	0.0216	0.0104	0.0021	0.0266
-1	-0.0068	0.0016	-0.0055	0.0017	-0.0154	-0.0243	-0.0049	0.0218
0	-0.0328	0.0006	0.0029	-0.0007	-0.0710	-0.1010	-0.0202	0.0016
1	0.0122	0.1015	0.0412	0.0299	0.0024	0.1873	0.0375	0.0390
2	-0.0128	0.0181	-0.0168	0.0016	0.0348	0.0249	0.0050	0.0440
3	0.0003	0.0091	-0.0035	0.0011	0.0189	0.0259	0.0052	0.0492
4	-0.0320	0.0034	0.0041	-0.0040	-0.0005	-0.0291	-0.0058	0.0434
5	0.0065	-0.0132	0.0003	0.0027	0.0028	-0.0009	-0.0002	0.0432
6	-0.0083	0.0332	0.0050	-0.0098	0.0111	0.0312	0.0062	0.0494
7	-0.0058	0.0175	-0.0006	-0.0040	0.0078	0.0149	0.0030	0.0524
8	-0.0126	0.0157	0.0120	-0.0168	-0.0010	-0.0027	-0.0005	0.0519
9	0.0073	-0.0027	-0.0041	-0.0099	0.0000	-0.0095	-0.0019	0.0500
10	0.0031	0.0011	0.0292	0.0021	0.0100	0.0455	0.0091	0.0591
11	0.0000	-0.0220	-0.0019	0.0029	0.0237	0.0028	0.0006	0.0596
12	-0.0110	-0.0116	0.0064	-0.0052	0.0025	-0.0188	-0.0038	0.0559
13	-0.0076	0.0086	0.0076	0.0126	0.0239	0.0453	0.0091	0.0649
14	-0.0125	0.0006	0.0140	0.0069	-0.0269	-0.0179	-0.0036	0.0614
15	-0.0199	0.0087	0.0017	0.0108	-0.0001	0.0012	0.0002	0.0616
16	0.0136	0.0132	0.0057	-0.0072	0.0450	0.0703	0.0141	0.0757
17	-0.1112	-0.0760	0.0001	0.0163	-0.0059	-0.1767	-0.0353	0.0403
18	-0.0152	-0.1170	-0.0074	0.0130	0.0061	-0.1205	-0.0241	0.0162
19	-0.0019	-0.0217	-0.0004	0.0174	0.0035	-0.0030	-0.0006	0.0156
20	0.0101	-0.0070	-0.0066	-0.0103	0.0058	-0.0079	-0.0016	0.0140

Legend:

Ev.wd – event window.

bbk – Barclays Bank Of Kenya.

'99, '00, '01 '02, '03 – 1999, 2000, 2001, 2002, 2003.

Sbbk – Sum of the abnormal returns of Barclays Bank.

Bbkaar – Average abnormal returns of Barclays Bank.

Bbkacar – Average Cumulative Abnormal Returns of Barclays Bank.

Table III. Average Cumulative Return for east African Breweries

Ev. wd	eable99	eable00	eable01	eable02	eable03	seabl	eablaar	eablacar
-19	-0.0188	0.0191	-0.0026	-0.0009	-0.0007	-0.0038	-0.0008	-0.0008
-18	0.0123	-0.0023	-0.0080	-0.0067	0.0110	0.0062	0.0012	0.0005
-17	0.0018	0.0120	0.0218	0.0077	-0.0143	0.0291	0.0058	0.0063
-16	0.0140	-0.0261	-0.0098	0.0098	-0.0035	-0.0155	-0.0031	0.0032
-15	-0.0151	0.0212	-0.0013	-0.0130	0.0404	0.0322	0.0064	0.0096
-14	-0.0102	0.0211	-0.1294	0.0010	0.0042	-0.1133	-0.0227	-0.0130
-13	-0.0119	0.0025	0.1309	0.0133	0.0125	0.1473	0.0295	0.0165
-12	0.0376	0.0100	-0.0081	0.0163	0.0035	0.0593	0.0119	0.0283
-11	-0.0035	-0.0387	0.0075	0.0152	-0.0046	-0.0241	-0.0048	0.0235
-10	-0.0120	0.0514	-0.0097	-0.0007	-0.0031	0.0259	0.0052	0.0287
-9	-0.0014	0.0524	-0.0442	-0.0081	0.0014	0.0001	0.0000	0.0287
-8	-0.0132	-0.0071	0.0203	0.0167	0.0165	0.0332	0.0066	0.0353
-7	0.1108	0.0166	0.0137	-0.0043	-0.0061	0.1307	0.0261	0.0615
-6	-0.0992	-0.1897	0.0015	-0.0054	-0.0097	-0.3025	-0.0605	0.0010
-5	-0.0215	0.2043	0.0013	0.0014	-0.0042	0.1813	0.0363	0.0373
-4	0.0096	-0.0461	-0.0154	-0.0035	-0.0125	-0.0680	-0.0136	0.0237
-3	-0.0159	0.0064	0.0123	-0.0042	-0.0023	-0.0038	-0.0008	0.0229
-2	-0.0897	0.0329	-0.0308	0.0130	-0.0074	-0.0820	-0.0164	0.0065
-1	-0.0173	0.0041	-0.0279	0.0095	-0.0018	-0.0333	-0.0067	-0.0002
0	0.0209	0.0103	0.0675	-0.0008	-0.1814	-0.0834	-0.0167	-0.0168
1	0.0970	-0.0081	-0.0009	0.0587	0.0295	0.1763	0.0353	0.0184
2	0.0123	0.0017	0.0129	-0.0065	0.1398	0.1603	0.0321	0.0505
3	-0.0005	0.0237	-0.0058	0.0310	-0.0011	0.0473	0.0095	0.0600
4	-0.0216	0.0041	0.0018	-0.0253	0.0467	0.0057	0.0011	0.0611
5	0.0056	-0.0016	-0.0684	0.0308	0.0430	0.0095	0.0019	0.0630
6	0.0058	0.0033	0.0930	-0.0071	-0.0040	0.0911	0.0182	0.0812
7	-0.0039	0.0066	-0.0049	-0.0004	-0.0185	-0.0210	-0.0042	0.0770
8	-0.0105	-0.0335	0.0066	-0.0131	0.0024	-0.0481	-0.0096	0.0674
9	-0.0043	-0.0351	0.0021	-0.0093	-0.0013	-0.0479	-0.0096	0.0578
10	-0.0052	0.0693	-0.0058	0.0086	-0.0118	0.0550	0.0110	0.0688
11	-0.0085	-0.0010	0.0039	-0.0021	-0.0055	-0.0131	-0.0026	0.0662
12	-0.0093	-0.0040	0.0004	-0.0079	-0.0079	-0.0287	-0.0058	0.0604
13	0.0042	-0.0055	-0.0109	0.0054	-0.0134	-0.0201	-0.0040	0.0564
14	-0.0064	0.0152	-0.0018	-0.0017	0.0054	0.0107	0.0021	0.0585
15	-0.0075	0.0011	0.0086	-0.0008	-0.0081	-0.0067	-0.0013	0.0572
16	-0.0058	-0.0114	0.0011	-0.0019	-0.0019	-0.0198	-0.0040	0.0532
17	-0.0255	0.0105	-0.0033	0.0050	-0.0062	-0.0194	-0.0039	0.0493
18	-0.0015	0.0216	-0.0009	-0.0046	-0.0033	0.0112	0.0022	0.0516
19	-0.0098	0.0003	0.0077	0.0022	-0.0084	-0.0080	-0.0016	0.0500
20	0.0105	-0.0041	-0.0296	-0.0008	-0.0077	-0.0318	-0.0064	0.0436

Legend:
Ev.wd – event window.
eabl – East African Breweries.
'99, '00, '01 '02, '03 – 1999, 2000, 2001, 2002, 2003.
Seabl- Sum of the abnormal returns of East African Breweries.
Eablaar-Average abnormal returns of East African Breweries.
Eabacar - Average Cumulative Abnormal Returns for East African Breweries.

Table IV. Average Cumulative Return for NIC Bank

Ev. wd	nice99	nice00	nice01	nice02	nice03	snic	nicaar	nicacar
-19	0.0095	0.0107	-0.0621	0.0027	-0.0195	-0.0588	-0.0118	-0.0118
-18	-0.0166	0.0122	0.0817	0.0028	-0.0086	0.0715	0.0143	0.0025
-17	0.0182	0.0112	-0.0433	0.0058	0.1498	0.1418	0.0284	0.0309
-16	-0.0130	-0.0402	-0.0720	0.0304	-0.0289	-0.1238	-0.0248	0.0062
-15	0.0137	0.0058	-0.0058	0.0171	-0.0028	0.0279	0.0056	0.0117
-14	0.0121	0.0101	-0.0022	0.0265	-0.0250	0.0216	0.0043	0.0161
-13	-0.1049	-0.0276	0.0916	0.0032	-0.0162	-0.0540	-0.0108	0.0053
-12	0.1028	0.0391	-0.0144	-0.0149	0.0141	0.1266	0.0253	0.0306
-11	0.0035	-0.0100	0.0034	-0.0056	0.0033	-0.0053	-0.0011	0.0295
-10	-0.0230	-0.0140	0.0057	0.0032	0.0068	-0.0214	-0.0043	0.0252
-9	0.0104	0.0151	-0.0005	0.0001	0.0324	0.0576	0.0115	0.0368
-8	-0.0244	-0.0150	-0.0074	0.0027	-0.0055	-0.0497	-0.0099	0.0268
-7	0.0026	0.0036	0.0220	0.0016	0.0477	0.0775	0.0155	0.0423
-6	0.0241	-0.0109	-0.0183	-0.0761	0.0343	-0.0468	-0.0094	0.0330
-5	-0.0206	-0.0033	-0.0441	0.0568	-0.0152	-0.0262	-0.0052	0.0277
-4	-0.0475	-0.0229	-0.0168	0.0061	0.0249	-0.0562	-0.0112	0.0165
-3	0.0204	0.0266	0.0014	-0.0010	-0.0024	0.0451	0.0090	0.0255
-2	0.0138	0.0108	0.0165	-0.0349	0.0129	0.0191	0.0038	0.0293
-1	-0.0433	0.0083	-0.0042	0.0325	-0.0305	-0.0372	-0.0074	0.0219
0	0.0051	0.0244	0.0287	0.0222	0.0948	0.1752	0.0350	0.0569
1	0.1461	-0.0084	0.0172	0.0068	-0.1040	0.0579	0.0116	0.0685
2	-0.0254	0.0024	0.0087	-0.0220	-0.0395	-0.0758	-0.0152	0.0534
3	0.0214	0.0059	0.0002	0.0020	0.0123	0.0418	0.0084	0.0617
4	-0.0097	0.0528	0.0192	-0.0077	-0.0228	0.0319	0.0064	0.0681
5	0.0114	0.0231	0.0106	-0.0076	-0.0397	-0.0023	-0.0005	0.0676
6	-0.0793	-0.0624	0.0000	0.0167	0.0179	-0.1072	-0.0214	0.0462
7	-0.0170	0.0058	-0.0181	0.0216	0.0238	0.0160	0.0032	0.0494
8	0.0334	0.0040	-0.0137	-0.0210	0.0019	0.0046	0.0009	0.0503
9	0.0007	-0.0150	-0.0517	0.0113	-0.0379	-0.0926	-0.0185	0.0318
10	0.0554	-0.0072	-0.0377	-0.0091	-0.0219	-0.0205	-0.0041	0.0277
11	0.0128	0.0096	-0.0164	0.0007	0.0099	0.0166	0.0033	0.0310
12	0.0017	-0.0119	0.0008	0.0070	0.0045	0.0020	0.0004	0.0314
13	0.0208	0.0002	-0.0024	-0.0084	0.0812	0.0913	0.0183	0.0497
14	-0.0017	0.0079	0.0048	0.0122	-0.0036	0.0197	0.0039	0.0536
15	-0.0173	-0.0087	-0.0078	-0.0014	0.0164	-0.0188	-0.0038	0.0499
16	-0.0424	-0.0003	-0.0041	0.0043	-0.0008	-0.0433	-0.0087	0.0412
17	0.0108	-0.0050	0.1591	0.0187	0.0085	0.1922	0.0384	0.0797
18	0.0146	-0.0161	-0.1794	-0.0024	-0.0519	-0.2352	-0.0470	0.0326
19	-0.0086	0.0116	-0.0268	0.0095	-0.0543	-0.0685	-0.0137	0.0189
20	0.0114	-0.0190	0.0041	-0.0121	0.0094	-0.0063	-0.0013	0.0177

Legend:

Ev.wd – event window.

nic – NIC Bank.

'99, '00, '01 '02, '03 – 1999, 2000, 2001, 2002, 2003.

Snic - Sum of the abnormal returns of NIC Bank.

Nicaar - Average abnormal returns of NIC Bank.

Nicacar - Average Cumulative Abnormal Returns of NIC Bank.

Table V. Average Cumulative Return for Standard Chartered Bank

Ev. wd	scbe99	scbe00	scbe01	scb02	scbe03	sscb	scbaar	scbacar
-19	0.0066	-0.0035	0.0158	-0.0335	-0.0050	-0.0196	-0.0039	-0.0039
-18	-0.0007	-0.0065	0.0107	0.0312	-0.0047	0.0300	0.0060	0.0021
-17	0.0034	-0.0213	-0.0081	-0.0003	0.0079	-0.0184	-0.0037	-0.0016
-16	0.0128	-0.0118	0.0307	0.0052	-0.0047	0.0322	0 0064	0.0048
-15	-0.0047	-0.0125	0.0093	0.0125	0.0242	0.0289	0.0058	0.0106
-14	0.0177	0.0002	0.0251	0.0079	0.0464	0.0972	0.0194	0.0300
-13	-0.0052	0.0161	0.0061	-0.0141	0.0236	0.0266	0.0053	0.0354
-12	-0.0032	0.0106	0.0034	-0.0140	-0.0004	-0.0035	-0.0007	0.0347
-11	0.0117	0.0085	-0.0057	0.0016	-0.0050	0.0111	0.0022	0.0369
-10	-0.0059	-0.0035	0.0057	0.0021	-0.0116	-0.0131	-0.0026	0.0343
-9	0.0046	0.0063	-0.0090	-0.0073	0.0145	0.0091	0.0018	0.0361
-8	0.0265	0.0021	-0.0061	-0.0152	0.0067	0.0139	0.0028	0.0389
-7	0.0020	0.0025	-0.0024	0.0115	0.0050	0.0186	0.0037	0.0426
-6	-0.0051	0.0053	0.0052	-0.0117	0.0096	0.0033	0.0007	0.0432
-5	-0.0187	0.0867	0.0040	-0.0078	0.0025	0.0667	0.0133	0.0566
-4	0.0010	0.0207	0.0032	0.0404	0.0036	0.0689	0.0138	0.0704
-3	-0.0118	0.0002	0.0066	0.0193	0.0087	0.0231	0.0046	0.0750
-2	-0.0062	-0.0181	0.0074	0.0115	-0.0204	-0.0258	-0.0052	0.0698
-1	-0.0044	0.0151	0.0038	0.0079	0.0087	0.0311	0.0062	0.0761
0	0.0015	-0.0008	0.0013	0.0126	-0.0050	0.0095	0.0019	0.0780
1	0.0351	0.0335	0.1431	-0.0392	0.0026	0.1751	0.0350	0.1130
2	-0.0136	0.1609	-0.0183	-0.0262	0.0108	0.1135	0.0227	0.1357
3	-0.0018	-0.0025	-0.0041	-0.0047	-0.0069	-0.0199	-0.0040	0.1317
4	0.0074	-0.0664	-0.0019	-0.0305	-0.0078	-0.0991	-0.0198	0.1119
5	-0.0024	0.0153	-0.0126	-0.0545	-0.0136	-0.0678	-0.0136	0.0983
6	0.0114	-0.0085	0.0002	0.0028	0.0100	0.0160	0.0032	0.1015
7	-0.0028	0.0025	-0.0064	0.0123	0.0102	0.0157	0.0031	0.1046
8	-0.0135	-0.0006	0.0049	0.0054	-0.0067	-0.0105	-0.0021	0.1025
9	0.0018	0.0060	0.0054	-0.0014	0.0049	0.0167	0.0033	0.1059
10	-0.0276	0.0085	0.0073	0.0057	0.0035	-0.0025	-0.0005	0.1054
11	-0.0046	-0.0003	-0.0008	0.0047	-0.0072	-0.0082	-0.0016	0.1037
12	-0.0044	0.0042	0.0116	0.0023	0.0098	0.0236	0.0047	0.1085
13	0.0196	0.0055	0.0182	-0.0102	-0.0084	0.0247	0.0049	0.1134
14	-0.0016	-0.0088	-0.0034	0.0183	0.0132	0.0178	0.0036	0.1170
15	0.0300	0.0154	-0.0010	-0.0077	0.0346	0.0714	0.0143	0.1312
16	0.0043	-0.5261	0.0088	-0.0168	0.0050	-0.5249	-0.1050	0.0262
17	-0.0009	0.0078	0.0102	0.0260	-0.0087	0.0344	0.0069	0.0331
18	0.0001	-0.0057	-0.0014	0.0064	0.0135	0.0129	0.0026	0.0357
19	-0.0096	0.0245	-0.1291	0.0098	0.0049	-0.0996	-0.0199	0.0158
20	-0.0157	0.0274	-0.0019	0.0136	0.0009	0.0243	0.0049	0.0206

Legend:

Ev.wd – event window.

scb – Standard Chartered Bank

'99, '00, '01 '02, '03 – 1999, 2000, 2001, 2002, 2003.

Sscb - Sum of the abnormal returns of Standard Chartered Bank.

Scbaar - Average abnormal returns of Standard Chartered Bank.

Scbacar - Average Cumulative Abnormal Returns of Standard Chartered Bank.

Table VI. Average Cumulative Return for the whole sample

Ev. wd	bbk01	bbk02	bbk03	eable99	eable00	eable01	eable02	eable03	nice99	nice00	nice01	nice02	nice03	scbe99	scbe00
-19	-0.0165	-0.0005	-0.0149	-0.0188	0.0191	-0.0026	-0.0009	-0.0007	0 0095	0.0107	-0.0621	0.0027	-0.0195	0.0066	-0.0035
-18	-0.0010	0.0039	0.0036	0.0123	-0.0023	-0.0080	-0.0067	0.0110	-0.0166	0.0122	0.0817	0.0028	-0.0086	-0.0007	-0.0065
-17	-0.0541	0.0006	-0.0131	0.0018	0.0120	0.0218	0.0077	-0.0143	0.0182	0.0112	-0.0433	0.0058	0.1498	0.0034	-0.0213
-16	-0.0008	0.0090	0.0016	0.0140	-0.0261	-0.0098	0.0098	-0.0035	-0.0130	-0.0402	-0.0720	0.0304	-0.0289	0.0128	-0.0118
-15	0.0144	-0.0035	0.0105	-0.0151	0.0212	-0.0013	-0.0130	0.0404	0.0137	0.0058	-0.0058	0.0171	-0.0028	-0.0047	-0.0125
-14	0.0082	0.0270	0.0066	-0.0102	0.0211	-0.1294	0.0010	0.0042	0.0121	0.0101	-0.0022	0.0265	-0.0250	0.0177	0.0002
-13	0.0257	0.0119	0.0417	-0.0119	0.0025	0.1309	0.0133	0.0125	-0.1049	-0.0276	0.0916	0.0032	-0.0162	-0.0052	0.0161
-12	-0.0059	-0.0007	-0.0086	0.0376	0.0100	-0.0081	0.0163	0.0035	0.1028	0.0391	-0.0144	-0.0149	0.0141	-0.0032	0.0106
-11	-0.0068	0.0210	-0.0041	-0.0035	-0.0387	0.0075	0.0152	-0.0046	0.0035	-0.0100	0.0034	-0.0056	0.0033	0.0117	0.0085
-10	0.0089	0.0117	-0.0248	-0.0120	0.0514	-0.0097	-0.0007	-0.0031	-0.0230	-0.0140	0.0057	0.0032	0.0068	-0.0059	-0.0035
-9	-0.0210	0.0223	0.0161	-0.0014	0.0524	-0.0442	-0.0081	0.0014	0.0104	0.0151	-0.0005	0.0001	0.0324	0.0046	0.0063
-8	-0.0009	-0.0425	0.0089	-0.0132	-0.0071	0.0203	0.0167	0.0165	-0.0244	-0.0150	-0.0074	0.0027	-0.0055	0.0265	0 0021
-7	0.0100	0.0300	0.0033	0.1108	0.0166	0.0137	-0.0043	-0.0061	0.0026	0.0036	0.0220	0.0016	0.0477	0.0020	0.0025
-6	0.0050	-0.0210	0.0178	-0.0992	-0.1897	0.0015	-0.0054	-0.0097	0.0241	-0.0109	-0.0183	-0.0761	0.0343	-0.0051	0.0053
-5	0.0065	0.0257	0.0049	-0.0215	0.2043	0.0013	0.0014	-0.0042	-0.0206	-0.0033	-0.0441	0.0568	-0.0152	-0.0187	0.0867
-4	0.0090	-0.0067	0.0160	0.0096	-0.0461	-0.0154	-0.0035	-0.0125	-0.0475	-0.0229	-0.0168	0.0061	0.0249	0.0010	0.0207
-3	-0.0021	-0.0010	0.0189	-0.0159	0.0064	0.0123	-0.0042	-0.0023	0.0204	0.0266	0.0014	-0.0010	-0.0024	-0.0118	0.0002
-2	-0.0067	-0.0103	0.0216	-0.0897	0.0329	-0.0308	0.0130	-0.0074	0.0138	0.0108	0.0165	-0.0349	0.0129	-0.0062	-0.0181
-1	-0.0055	0.0017	-0.0154	-0.0173	0.0041	-0.0279	0.0095	-0.0018	-0.0433	0.0083	-0.0042	0.0325	-0.0305	-0.0044	0.0151
0	0.0029	-0.0007	-0.0710	0.0209	0.0103	0.0675	-0.0008	-0.1814	0.0051	0.0244	0.0287	0.0222	0.0948	0.0015	-0.0008
1	0.0412	0.0299	0.0024	0.0970	-0.0081	-0.0009	0.0587	0.0295	0.1461	-0.0084	0.0172	0.0068	-0.1040	0.0351	0.0335
2	-0.0168	0.0016	0.0348	0.0123	0.0017	0.0129	-0.0065	0.1398	-0.0254	0.0024	0.0087	-0.0220	-0.0395	-0.0136	0.1609
3	-0.0035	0.0011	0.0189	-0.0005	0.0237	-0.0058	0.0310	-0.0011	0.0214	0.0059	0.0002	0.0020	0.0123	-0.0018	-0.0025
4	0.0041	-0.0040	-0.0005	-0.0216	0.0041	0.0018	-0.0253	0.0467	-0.0097	0.0528	0.0192	-0.0077	-0.0228	0.0074	-0.0664
5	0.0003	0.0027	0.0028	0.0056	-0.0016	-0.0684	0.0308	0.0430	0.0114	0.0231	0.0106	-0.0076	-0.0397	-0.0024	0 0153
6	0.0050	-0.0098	0.0111	0.0058	0.0033	0.0930	-0.0071	-0.0040	-0.0793	-0.0624	0.0000	0.0167	0.0179	0.0114	-0 0085
7	-0.0006	-0.0040	0.0078	-0.0039	0.0066	-0.0049	-0.0004	-0.0185	-0.0170	0.0058	-0.0181	0.0216	0.0238	-0.0028	0.0025
8	0.0120	-0.0168	-0.0010	-0.0105	-0.0335	0.0066	-0.0131	0.0024	0.0334	0.0040	-0.0137	-0.0210	0.0019	-0.0135	-0.0006
9	-0.0041	-0.0099	0.0000	-0.0043	-0.0351	0.0021	-0.0093	-0.0013	0.0007	-0.0150	-0.0517	0.0113	-0.0379	0.0018	0.0060
10	0.0292	0.0021	0.0100	-0.0052	0.0693	-0.0058	0.0086	-0.0118	0.0554	-0.0072	-0.0377	-0.0091	-0.0219	-0.0276	0.0085
11	-0.0019	0.0029	0.0237	-0.0085	-0.0010	0.0039	-0.0021	-0.0055	0.0128	0.0096	-0.0164	0.0007	0.0099	-0.0046	-0.0003
12	0.0064	-0.0052	0.0025	-0.0093	-0.0040	0.0004	-0.0079	-0.0079	0.0017	-0.0119	0.0008	0.0070	0.0045	-0.0044	0.0042
13	0.0076	0.0126	0.0239	0.0042	-0.0055	-0.0109	0.0054	-0.0134	0.0208	0.0002	-0.0024	-0.0084	0.0812	0.0196	0.0055
14	0.0140	0.0069	-0.0269	-0.0064	0.0152	-0.0018	-0.0017	0.0054	-0.0017	0.0079	0.0048	0.0122	-0.0036	-0.0016	-0.0088
15	0.0017	0.0108	-0.0001	-0.0075	0.0011	0.0086	-0.0008	-0.0081	-0.0173	-0.0087	-0.0078	-0.0014	0.0164	0.0300	0.0154
16	0.0057	-0.0072	0.0450	-0.0058	-0.0114	0.0011	-0.0019	-0.0019	-0.0424	-0.0003	-0.0041	0.0043	-0.0008	0.0043	-0.5261
17	0.0001	0.0163	-0.0059	-0.0255	0.0105	-0.0033	0.0050	-0.0062	0.0108	-0.0050	0.1591	0.0187	0.0085	-0.0009	0.0078
18	-0.0074	0.0130	0.0061	-0.0015	0.0216	-0.0009	-0.0046	-0.0033	0.0146	-0.0161	-0.1794	-0.0024	-0.0519	0.0001	-0.0057
19	-0.0004	0.0174	0.0035	-0.0098	0.0003	0.0077	0.0022	-0.0084	-0.0086	0.0116	-0.0268	0.0095	-0.0543	-0.0096	0.0245
20	-0.0066	-0.0103	0.0058	0.0105	-0.0041	-0.0296	-0.0008	-0.0077	0.0114	-0.0190	0.0041	-0.0121	0.0094	-0.0157	0.0274

	scbe01	scb02	scbe03	sar	aar	car
-19	0.0158	-0.0335	-0.0050	-0.1234	-0.0062	-0.0062
-18	0.0107	0.0312	-0.0047	0.0951	0.0048	-0.0014
-17	-0.0081	-0.0003	0 0079	0.0960	0.0048	0.0034
-16	0.0307	0.0052	-0.0047	-0.1042	-0.0052	-0.0018
-15	0.0093	0.0125	0.0242	0.1224	0.0061	0.0043
-14	0.0251	0.0079	0 0464	0.0496	0.0025	0.0068
-13	0.0061	-0.0141	0.0236	0.2039	0.0102	0.0170
-12	0.0034	-0.0140	-0.0004	0.1716	0.0086	0.0256
-11	-0.0057	0.0016	-0.0050	-0.0045	-0.0002	0.0253
-10	0.0057	0.0021	-0.0116	-0.0250	-0.0013	0.0241
-9	-0 0090	-0.0073	0.0145	0.0676	0.0034	0.0275
-8	-0.0061	-0.0152	0.0067	-0.0287	-0.0014	0.0260
-7	-0.0024	0.0115	0.0050	0.2439	0.0122	0.0382
-6	0.0052	-0.0117	0.0096	-0.3207	-0.0160	0.0222
-5	0.0040	-0.0078	0.0025	0.2724	0.0136	0.0358
-4	0.0032	0.0404	0.0036	-0.0418	-0.0021	0.0337
-3	0.0066	0.0193	0.0087	0.0656	0.0033	0.0370
-2	0.0074	0.0115	-0.0204	-0.0783	-0.0039	0.0331
-1	0.0038	0.0079	0 0087	-0.0637	-0.0032	0.0299
0	0.0013	0.0126	-0.0050	0.0003	0.0000	0.0299
1	0.1431	-0.0392	0.0026	0.5965	0.0298	0.0597
2	-0.0183	-0.0262	0.0108	0.2229	0.0111	0.0709
3	-0.0041	-0.0047	-0.0069	0.0951	0.0048	0.0756
4	-0.0019	-0.0305	-0.0078	-0.0906	-0.0045	0.0711
5	-0.0126	-0.0545	-0.0136	-0.0615	-0 0031	0 0680
6	0.0002	0.0028	0 0100	0.0311	0.0016	0.0696
7	-0.0064	0.0123	0.0102	0.0256	0.0013	0.0709
8	0.0049	0.0054	-0.0067	-0.0567	-0.0028	0.0680
9	0.0054	-0.0014	0.0049	-0.1333	-0.0067	0.0614
10	0.0073	0.0057	0.0035	0.0775	0.0039	0.0652
11	-0.0008	0.0047	-0.0072	-0.0020	-0.0001	0.0651
12	0.0116	0.0023	0.0098	-0.0219	-0.0011	0.0640
13	0.0182	-0.0102	-0.0084	0.1411	0.0071	0.0711
14	-0.0034	0.0183	0.0132	0.0303	0.0015	0.0726
15	-0.0010	-0.0077	0 0346	0.0470	0.0023	0.0750
16	0.0088	-0.0168	0.0050	-0.5177	-0.0259	0.0491
17	0.0102	0.0260	-0.0087	0.0305	0 0015	0.0506
18	-0.0014	0.0064	0.0135	-0.3315	-0.0166	0.0340
19	-0.1291	0.0098	0.0049	-0.1790	-0.0090	0 0251
20	-0.0019	0.0136	0.0009	-0.0217	-0.0011	0.0240

Legend:

Ev.wd – event window.

Sar - Sum of the abnormal returns of the selected sample.

Aar - Average abnormal returns of the selected sample.

Car - Average Cumulative Abnormal Returns of the selected sample.

'99, '00, '01 '02, '03 – 1999, 2000, 2001, 2002, 2003.