



Strathmore
UNIVERSITY

Price and Liquidity Effects of Stock Splits on Shares

Barasa Sandra Akochi

Admission Number 083563

**Submitted in partial fulfilment of the requirements for the Degree of
Bachelor of Business Science in Finance at Strathmore University**

**Strathmore Institute of Mathematical Sciences
Strathmore University
Nairobi, Kenya**

[November, 2017]

This Research Project is available for Library use on the understanding that it is copyright material and that no quotation from the Research Project may be published without proper acknowledgement.

DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Project contains no material previously published or written by another person except where due reference is made in the Research Project itself.

© No part of this Research Project may be reproduced without the permission of the author and Strathmore University

JANDRA AKOCHI BARASA [Name of Candidate]

Jandra [Signature]

08/12/2017. [Date]

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

MELEAH OLECHE [Name of Supervisor]

Meleah [Signature]

08/12/2017 [Date]

Strathmore Institute of Mathematical Sciences

Strathmore University

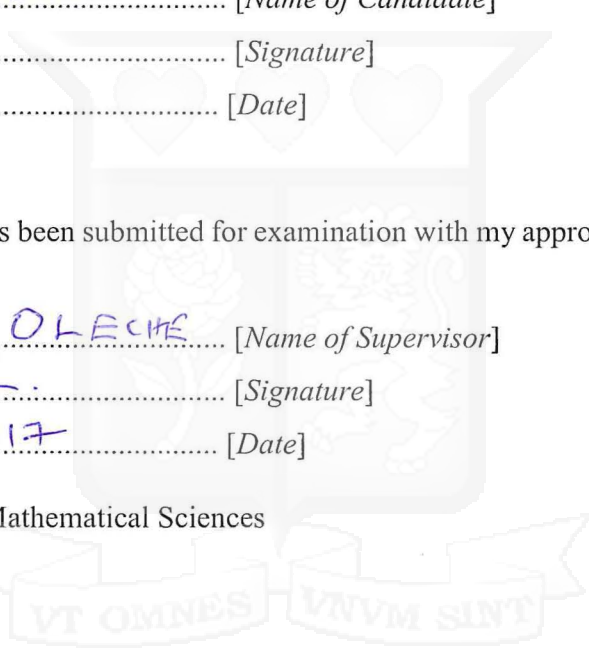


TABLE OF CONTENTS

DECLARATION.....	i
TABLE OF CONTENTS	ii
LIST OF ABBREVIATIONS	iii
ABSTRACT.....	iv
ACKNOWLEDGEMENTS	v
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background to the study	1
1.2 Problem statement	3
1.3 Research objectives.....	4
1.4 Research questions.....	4
1.5 Significance of the study.....	4
CHAPTER TWO: LITERATURE REVIEW.....	5
2.1 Introduction.....	5
2.2 Theoretical Framework.....	5
2.3 Empirical Framework	8
2.4 Conclusion	11
2.5 Conceptual Framework.....	12
CHAPTER THREE: RESEARCH METHODOLOGY.....	13
3.1 Research design.....	13
3.2 Population and sample size	13
3.4 Data collection and analysis	14
CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION.....	17
4.1 Introduction.....	17
4.2 Price effects.....	17
4.3 Liquidity effects.....	19
4.4 Limitations of the study.....	20
CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS.....	21
REFERENCES.....	23
APPENDICES.....	25

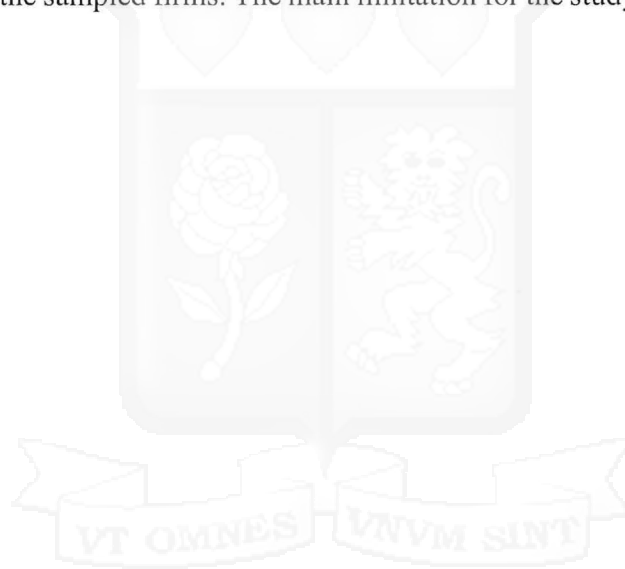
LIST OF ABBREVIATIONS

ASE	- American Stock Exchange
CMA	- Capital Markets Authority
FTSM	- Finite Time Series Model
NASDAQ	- National Association of Securities Dealers Automated Quotations
NSE	- Nairobi Securities Exchange
NYSE	- New York Securities Exchange



ABSTRACT

Fama *et al.* (1969) defined a stock split as an exchange of shares in which at least five shares were distributed for every four formerly outstanding, which means that shareholders get additional shares for every share previously held. Nevertheless, given that splitting is not costless and the result is to multiply the number of shares per shareholder without increasing the shareholder's capital, why then do firms split their shares? This project questions the effects of stock splits with a focus on the price and the liquidity effects. The main objectives of the study were to determine the effect of stock splits on the price of the shares after the split announcement is made and to also determine the liquidity effects of stock splits in the stock market. The study used the event study methodology and the student t-statistic to test for price and liquidity effects on a sample of 7 listed companies from the Nairobi Securities Exchange, using historical prices and trading volume respectively. An event window of 81 days, including the day of announcement was used in the study. For price effects, the study concluded that stock splits cause an increase on the prices of shares as was evidenced by the 7 sampled firms. For liquidity, the findings were inclusive given the varying effects from the sampled firms. The main limitation for the study was the small sample size.



ACKNOWLEDGEMENTS

I would like to thank my supervisor Meleah Oleche, who has been a guide and mentor throughout this dissertation. I would also like to thank John Jumwa who assisted me in my data collection from the Bloomberg portal. I would like to thank my family, my fellow classmates and my friends for their feedback and support. And above all, I would like to thank God for seeing me through this dissertation.



CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Fama *et al.* (1969) defined a stock split as an exchange of shares in which at least five shares were distributed for every four formerly outstanding. This meant that shareholders got additional shares for every share previously held.

A stock split-up is effected when the number of a corporation's shares is increased by the reduction of the par or stated value of the stock. This means that the existing stock is divided into a greater number of shares without any change in the total amount of the company's capital account or surplus account, and without any change in each stockholder's equity in the corporation (Bellemore and Blucher, 1959).

Stock splits usually occur after an increase in stock prices and usually elicit a positive stock price reaction upon the announcement. A stock split results in a reduction of the par value and a consequent increase in the number of shares proportionate to the split. Theoretically, shareholders receive no tangible benefit from a stock split, while there are some costs associated with it, (Katerina *et al.*, 2006). “Splits are at one level only cosmetic change, slicing the same pie into smaller pieces but not changing an investor’s fractional ownership of the equity interest and votes in the company”, (Lamoureux and Poon, 1987).

Fama *et al.* (1969) question the need for stock splits. They argue that given that splitting is not costless and since the only apparent result is to multiply the number of shares per shareholder without increasing the shareholder’s claims to assets, why then do firms split their shares? The arguments offered in favour of the splitting turn out to be two-sided, e.g. a split, by reducing the price of a round lot, will reduce transaction costs for some relatively small traders but increase costs for both large and very small traders, (Fama et al, 1969).

According to Pooja (2013), different studies on stock splits have emphasized different aspects. Some have concentrated on liquidity hypothesis and some on trading range hypothesis. Other studies have emphasized wider markets created by splits while others explain stock splits as a result of signalling hypothesis. Stock split announcement gives a signal to the outsiders that company is confident about its internal operations and split indicates company’s confidence (Copeland, 1979; Angel, 1997; Nayyar and Rozeff, 2001).

Pooja (2013) argues that there are a number of explanations behind the reason for having stock splits. The first reason is due to the trading-range hypothesis, where firms prefer to keep their stock price within a particular (optimal or lower) trading range. This preference for stock price may be because of specific clientele they wish to attract or for dispersed ownership. The hypothesis reflects that greater liquidity for stocks may arise in certain (lower) price range. He goes on to the second reason which postulates that this new (enlarged) clientele provided better liquidity, wider markets and reduces the cost of trading (and investing) in the stock. Third is the signalling hypothesis or reduction of information asymmetries. Splits either directly signal good information that previously was privately known or indirectly signal information by attracting greater attention of analysts to the firm. The explanation for this hypothesis is that number of analysts that follow the stock prices increased after split announcement. His fourth reason suggests that splits rise to create an optimal tick size for stocks. This hypothesis states that companies tend to split their stocks so that institutionally mandated minimum tick size is optimal relative to stock price. Tick size increases as a proportion of stock's price. Thus, increase in proportional spreads accompanying a split induces greater participation by liquidity providers (Pooja, 2013).

According to Dennis (2003), there are many hypotheses that have been proposed to explain stock splits, including signalling, liquidity, corporate control, and taxes. To test the liquidity hypothesis, many studies have compared the liquidity of a stock before and after a stock split. Some studies, such as Muscarella and Vetsuypens (1996) and Schultz (2000), find that volume, especially the small-sized trades, increases following a split, while other studies, such as Lakonishok and Lev (1987), find that volume decreases following a split. A problem arises in the interpretation of such a change in post-split liquidity. Post-split liquidity could be driven by the lower share price, which enables more investors to purchase the stock. However, post-split liquidity could also be driven by signalling. Specifically, the public may interpret a share split as a signal of good news by the manager and subsequently increase their trading of the stock. Hence, the effect of a favourable signal and more liquidity (lower cost of capital) both can result in a positive announcement day return for the firm's stock.

The Nairobi Securities Exchange is a leading African Exchange, based in Kenya. Founded in 1954, NSE has a six decade heritage in listing equity and debt securities. It operates under the jurisdiction of the Capital Markets Authority of Kenya. According to Nkonge (2010), many studies in particular those performed in the Nairobi Securities Exchange (NSE) have failed to consider the important distinction between a stock split and a stock dividend. Stock splits are a recent phenomenon at NSE. Unlike in more established markets where stock splits are more entrenched, firms intending to perform stock splits at NSE must seek additional approval of Capital Markets Authority (CMA) other than that of the shareholders. The first ever stock split to be implemented at NSE was by Kenya Oil Limited (Now Kenol Kobil) which took place in June 2004. The company share price had reached a pitch height of Kenya Shillings 350 per share. On announcement of 10:1 stock split ratio the share price reached a record high of Kenya Shillings 420 per share to the date of splitting. In Kenya, there have been a total of 17 stock splits between 2004 to date as is seen in Appendix I.

1.2 Problem statement

According to Koech (2013), a major problem exists with stock split announcements; the investors view and studies results have been known to vary considerably. Most investors believe that prices of stocks will increase in value after stock split news because share prices are lower. In contrast, advocates of Efficient Market Hypothesis would not expect any changes in stock value. With regard to liquidity, according to Copeland (1979), shareholders may interpret a split as a message of relatively lower liquidity following the split event, but this directly contradicts the hypothesis that splits are motivated by a desire for wider or more liquid markets. Given the various counterarguments on the effects of stock splits, it is unclear what the impact of stock splits is and whether they are feasible ideas to be undertaken by firms, a gap that this study aims to fill. In addition, most studies have been carried out in more developed markets, such as the New York Securities Exchange and NASDAQ (National Association of Securities Dealers Automated Quotations), where stock splits are a common phenomenon but this study is tailored to a developing market, the Nairobi Securities Exchange, where stock splits are still a fairly new concept.

1.3 Research objectives

The objectives of this study are to determine the effect of stock splits on the price of the shares after the split announcement is made and to determine the liquidity effects of stock splits in the stock market.

1.4 Research questions

The study aims to answer the following questions:

1. What is the effect of stock splits on the price of shares after the split announcement is made?
2. What is the effect of stock splits on liquidity in the stock market?

1.5 Significance of the study

The concept of stock splits is not as established in the Kenyan stock market as it is in other well-established markets. Given the few number of stock splits carried out, this may still be considered a new concept. Due to this, the number of studies that have been done on stock splits in the Kenyan stock market are few and as such, the impact of the effects may still be unclear. This forms the motivation of this research study.

The study will create a foundation for analysis and understanding of stock splits, with specific concentration on the stock market in Kenya.

It will be beneficial to investors in their decision making as it will give them a better understanding of the theories behind stock splits and the impact they have in the stock market.

The study will also benefit students from higher learning institutions as they will understand what stock splits are and the roles they play in price and liquidity effects on the stocks themselves.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews available theoretical and empirical literature on existence of stock splits in organisations. First, the efficient market hypothesis as postulated by Fama is discussed so as to highlight the contradiction between this theory and the occurrence of stock splits. After this come the theories behind stock splits, which entail reasons why companies or rather managers undertake stock splits in their organisations. Empirical studies done in different countries are then brought out and the results of their studies discussed so as to get a general overview of the effects of stock splits, both in terms of changes in prices and liquidity. The empirical framework first focuses on studies done to test the effects of stock splits on prices of stocks, and thereafter focus is placed on studies done to test the effect of stock splits on liquidity.

2.2 Theoretical Framework

Fama (1970) defines an efficient market as one in which prices always fully reflect available information. He categorised efficient market into three forms, i.e. Strong form efficient markets, semi-strong form efficient markets and weak form efficient markets. Under the weak form efficient market hypothesis, prices fully reflect any past information on stocks. Under the semi-strong-form efficient market hypothesis prices fully reflect publicly available information (e.g., announcements of annual earnings, stock splits and so on). Under the strong-form efficient market hypothesis, there is no room for investors to trade on insider information as this is already reflected in the prices.

He argues that for a market to be considered efficient, it must meet certain sufficient conditions. Thus, in a market where there are no transactions costs in trading securities, all available information is costlessly available to all market participants, and all agree on the implications of current information for the current price and distributions of future prices of each security, the current price of a security will obviously "fully reflect" all available information. But a frictionless market in which all information is freely available and investors agree on its implications is, of course, not descriptive of markets met in practice. Fortunately, these conditions are sufficient for market efficiency, but not necessary.

Since the only apparent result of a stock split is to multiply the number of shares per shareholder without increasing claims to real assets, splits in themselves are not necessarily sources of new information. The presumption of FFJR (Fama, Fisher, Jensen and Roll) is that splits may often be associated with the appearance of more fundamentally important information (Fama, 1970). Since stock splits do not directly affect a company's cash flows, the increase in a company's stock price at the time of these announcements must, assuming market efficiency, reflect the release of new information. In their study of the effect of the announcement of stock splits, Fama *et al.* (1969) present evidence which suggests that investors cannot systematically realize profits from split securities, not only after the effective date of the split, but after the date of the announcement of the split. Security prices thus appear, not only to adjust to new information, but to anticipate new information.

There are several theories advanced as explanations for why companies split their stock, the first of which was suggested by Fama *et al.* (1969) and is known as the "dividend hypothesis". The three most common theories are to achieve a stock price in a range optimal for liquidity (the optimal price range hypothesis), to achieve an optimal tick size (the market maker hypothesis) and to signal management confidence in the future stock price (the signalling hypothesis). Other hypotheses include the reputation hypothesis, which is linked to the signalling hypothesis and the liquidity hypothesis which is linked to the optimal trading range hypothesis.

This study places focus on the optimal price range hypothesis and the liquidity hypothesis as they are deemed to be the most relevant to area of research.

The optimal price range hypothesis states that there is a price range in which trading is most liquid for the stocks of a company (Copeland, 1979). Stocks within this range are presumed to have lower brokerage fees as a percent of value traded. Given the costs associated with splits and reversals, managers with unfavourable inside information might decide not to split, even if their firm's stock price is high, because they expect that future events will force the price of the split shares to fall below the customary trading range. Investors, observing the correlation between splits and subsequent stock performance, could then use the split announcement to draw inferences about this information.

One drawback to this 'trading range hypothesis' is that the managers of some overvalued firms might have little concern about the trading range of their firm's stock and split simply to obtain a temporary increase in its price (e.g. when the firm plans to raise capital or when the manager plans to reduce his stock or stock option holdings in the firm). Thus, the above scenario implicitly rules out such incentives or ascribes to investors the ability to discriminate between these two types of managers. If investors cannot make this distinction, Akerlof's (1970) lemons argument suggests that the average price response cannot be positive. If a positive price effect exists, which can be enjoyed by all splitting firms, the managers with an incentive to increase share prices will split their shares to mimic undervalued firms with no such incentives. They will continue to do so until the market recognizes that false signalling predominate among those firms that split their shares and attach only a trivial price impact to the split announcement (Copeland, 1979).

Still under the same study, Copeland (1979) suggests that splits create wider markets. He argues that following a split, the number of shareholders may increase simply because an individual, who holds one round lot and who is likely to sell it to one buyer before a two-for-one split, may sell two round lots to two people after the split. If the number of shareholders increases after the split, then trading volume increases. A study done by Demsetz (1977) shows that higher volume results in lower bid-ask spreads, which would imply greater liquidity.

However, there are parameters other than simply the number of shareholders which affect volume. In prior years, models developed by Epps (1975) and Copeland (1976) show that volume is determined by the rate of message arrival per unit time (also called information flow), the total number of shareholders, the percent of traders who view new information optimistically, the number of shares outstanding, and transaction costs. Any of these might change, and if the net effect is to reduce trading activity, then bid-ask spreads might increase rather than decrease implying less liquidity.

The liquidity hypothesis is related to the aforementioned optimal trading range hypothesis. The liquidity hypothesis is based on the argument that corporate liquidity is affected by the per-share trading price (Maloney and Mulherin, 1992; Muscarella and Vetsuypens, 1996). If the trading price is too high, then the liquidity may decline. A low per-share trading price attracts more individual investors and reduces trading

costs. However, the evidence for the liquidity hypothesis is mixed. Conroy, Harris and Benet (1990) show an increase in bid-ask spreads after stock split announcements. Ohlson and Penman (1985) and Koski (1995) report an increase in return volatility. These results indicate that corporate liquidity decreases rather than increases after the split. In contrast, Maloney and Mulherin (1992) and Desai, Nimalendran and Venkataraman (1998) observe an increase in trading volume during the post-split period, and hence provide support for the liquidity hypothesis of stock splits.

2.3 Empirical Framework

Stock splits were first popularized in the decade following World War I during which they appeared with increasing frequency, especially in the years of rapidly rising stock prices, 1928 and 1929. A survey of the 837 stocks listed on the New York Stock Exchange on Dec. 31, 1930, revealed that 150 of these stocks, or 18% of the total, had been split once or more since Jan. 1, 1921, with most of the splits occurring in the years 1927, 1928 and 1929. From this account, and from the record of split-ups since then, it may be concluded that stock splits normally occur most frequently in the years of prosperity when earnings are high and prices of common stocks are at high and usually advancing levels (Bellemore, 1959).

Stock splitting has been popularized as one method of enhancing the marketability of a security. The average investor has shown a marked preference for shares priced from \$20 to \$50. That is, most investors would rather purchase 100 shares of a stock selling at \$40 per share, than 20 shares of a stock selling at \$200 per share, although the total market value in each case would be the same. Thus, a split-up broadens the market for a stock by increasing the number of shares outstanding and by making it available at a lower price per share (Bellemore, 1959).

Bellemore (1959) goes on to argue that the frequency with which stock splits have been accompanied by effective dividend increases in the past has led to the expectation of such increases by the investing public following most split-up announcements; and the anticipation of more liberal total dividends has probably been largely responsible for some of the spectacular price advances registered by many stocks as soon as rumours of impending splits have been circulated.

While testing the effects of splits on price, for a sample of 100 randomly selected splits during the period 1946 to 1956, Bellemore and Blucher (1959) found that in general,

price movements associated with a split are over by the day after the split is announced. They found that from eight weeks before the announcement to the day after the announcement, 86 out of 100 stocks registered percentage price increases greater than those of the S&P's stock price index for the relevant industry group. From the day after to eight weeks after the announcement date, however, only 43 stocks registered percentage price increases greater than the relevant industry index, and on the average during this period split shares only increased 2 per cent more in price than non-split shares in the same industry. From this, Fama *et al.* (1969) suggested that even if one purchases as soon as the announcement is made, split shares will not in general provide higher returns than non-split shares.

Fama *et al.* (1969) proposed that the average monthly rates of return on split shares occur in the few months immediately preceding the split and this may suggest that the split itself provides some impetus for increased returns. They however presented evidence that although there may have been a dramatic increase in earnings in the recent past, in the months prior to the split (or its announcement) there may still be considerable uncertainty in the market concerning whether the earnings can be maintained at their new higher level. Investors will attempt to use any information available to reduce this uncertainty and a proposed split may be one source of such information.

Ikenberry (1996) examined a sample of 1,275 two-for-one stock splits announced by NYSE and ASE firms between 1975 and 1990. In this study, splits generally occurred when stocks traded at high prices. In the month preceding the split announcement, nearly four out of five sample firms traded at prices at or above the 80th percentile in comparison to firms of similar size. Post-split prices showed substantial dispersion, but were generally lower than the median price observed for firms of comparable size. This result was consistent with the view that splits are typically used to realign share normal trading range.

When it comes to liquidity, it is a widely held belief, particularly among the practitioners, that stock splits are intended to restore stock prices to a lower or an 'optimal trading range' (Copeland, 1979; Baker and Gallagher, 1980; Baker and Powell, 1992).

A study conducted by Copeland (1979) concluded a permanent decrease in liquidity following a split. In the study, a finite time-series model (FTSM) of trading volume for individual securities was developed from the assumption that trading during the current time period depends on messages arriving during the current and recent calendar intervals. When tested on a random sample 7 of 25 NYSE companies whose stocks had split, the FTSM was used to estimate the speed of adjustment to new information. One hundred percent of the response of volume to new information took place in less than two to three weeks. The FTSM model was then used to show that non-stationarities in trading behaviour follow stock splits, and that volume increases less than proportionately after stock splits. Next, brokerage commissions and taxes paid by small investors were simulated for actual trading behaviour. Results showed that brokerage revenues increased by at least 7.1% following splits. Finally, a sample of 162 OCT bid-ask spreads were collected for 1, 20 and 40 days before a two-for-one stock split and compared with the post-split spreads. The results showed that post-split bid-ask spreads increase significantly as a percentage of the value of the stock.

One possibility as to why liquidity is relatively lower following a split according to Copeland (1979) is that the rate of information arrival is higher before the split because companies which decide to split were doing comparatively well relative to the market. Lower post-split rates of information arrival might imply lower volume. Another possibility is that the portion of volume motivated by portfolio rebalancing may decrease after the split because individuals may buy and sell proportionately fewer shares after the split in order to achieve desired portfolio weights.

Surveys of corporate managers by Baker and Gallagher (1980) reveal that managers use stock splits to bring the share price into an optimal trading range and to enhance the liquidity of their firms' shares. Their survey also suggests that management interested in a broad and heterogeneous stockholder base or in 'wider marketability' tends to adjust stock price to such an optimal price by splitting the stock.

Consistent with liquidity motive, Lamoureux and Poon (1987) provide evidence of an increase in the number of shareholders after the stock splits. Baker and Powell (1992) argue that managerial view of enhanced liquidity is to increase the diversity and number of shareholders. The support for liquidity motive of stock splits is also found in Schultz (2000). Anshuman and Kalay (2002) present a model that maximizes value

in stock splits. Their study finds that the stock splits are intended to move the stock price into an optimal trading range to improve liquidity.

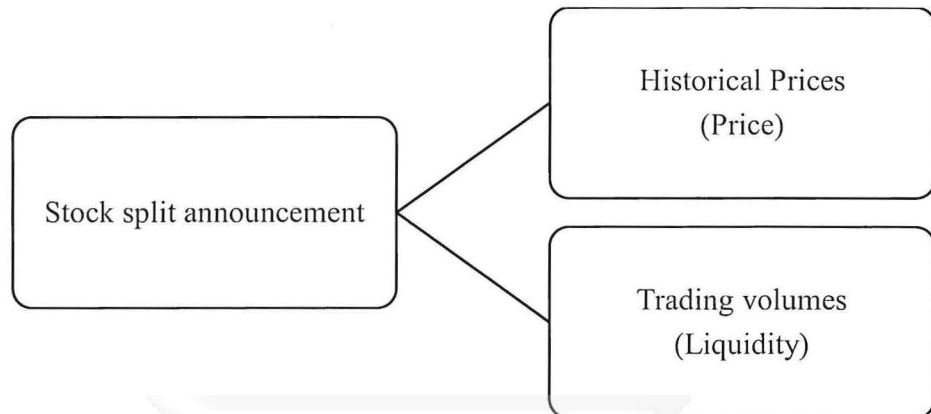
Goyonke *et al.* (2006) carried out a research on stock split and liquidity over an after-event window extending to six years and found that split firms initially experienced worse liquidity. They noted that there was worsening liquidity of split firms, which was temporary and was experienced within the first 9 to 12 months. They also noted that splits experienced gains in liquidity in the long run, often observed 24 months after the split.

2.4 Conclusion

Evidently, and in conclusion, there are several theories that attempt to explain the reasons for undertaking a stock split. Studies undertaken in various stock markets produced mixed results. In most of these however, particularly those done in the United States, stock split announcements elicited positive results. Needless to say, there are instances when the markets reacted negatively to stock splits or did not react at all. For example, a study conducted by Copeland (1979) concluded a permanent decrease in liquidity following a split. Gupta and Kumar (2007) found that there was no effect on the market associated with stock splits in India. The uncertainty in the outcome of these events, is what forms the basis of this research because through this uncertainty, it is not very clear as to whether stock splits are a good strategy or should be avoided. One may conclude, that in advance capital markets, they elicit positive results but this may not necessarily be the same for a developing capital market such as the Nairobi Securities Exchange. It is not possible to generalize the market reaction elicited by stock splits to the Kenyan market, hence there existed a gap which this study aims to fill. In addition, compared to more advanced markets such as the New York Stock Exchange, the Nairobi Securities Exchange is still in the process of adapting the concept of stock splits, having only conducted 17 splits within a period of 12 years (2004 – 2015).

2.5 Conceptual Framework

The independent variable in this study is the stock split announcement whereas the dependent variables are historical stock prices and trading volumes for liquidity.



CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Research design

This study is largely descriptive in nature as it seeks to describe the effects of stock splits on price and liquidity. The object of descriptive research is to portray an accurate profile of persons, events or situations and such studies provide descriptions of phenomena associated with a subject population (the who, what, when, where and how of a topic), (Cooper, 2014). This study aims to answer the question what are the effects of stock splits on price and liquidity.

3.2 Population and sample size

Given the study is confined to companies listed in the Nairobi Securities Exchange, the population size is the 68 listed companies.

Out of the 68 companies, 15 of them have conducted stock splits with Kenol Kobil and Barclays having each split their shares twice in different years. Of the 15 companies, two (CMC Holdings and City Trust) were excluded as they are no longer listed in the Nairobi Securities Exchange. The 13 companies left behind were stratified into 7 different sectors. Barclays and KenolKobil were given priority of choice since they had conducted their stock splits twice. For the remaining 11 companies, the study used a simple random sampling technique to choose one company in each of the now 5 represented sectors.

The final sample thus consisted of 7 companies, for which sufficient data was available and with each picked from a different sector of the listed companies. The seven companies used were:

1. Sasini - Agricultural sector
2. Nation Media Group - Commercial and services sector
3. KenolKobil - Energy and petroleum sector
4. Barclays - Banking sector
5. ICDC (Now Centum) - Investment sector
6. EA Cables - Construction and allied sector
7. EABL - Manufacturing and allied sector

3.4 Data collection and analysis

The main type of data in this study was secondary data where stock prices of the sample firms and relevant information were obtained from the financial statements of the companies. The sources of this data were mainly from Bloomberg portal, the Nairobi Securities Exchange and financial statements and annual reports of the sampled companies.

The study used the event study methodology to examine the market reaction to stock split announcements. The objective of an event study is to assess whether there are any abnormal returns or excess returns earned by security holders accompanying specific events (for example earnings announcements, merger announcements, stock splits) where an abnormal or excess return is the difference between observed return and the appropriate given a particular return generating model (Peterson, 1989).

The study made use of daily adjusted prices for sample stocks for the event window of 81 days consisting of 40 days before and 40 days after the event date. A study by Dhar and Chhaochharia (2008) thought 81 days was sufficient as such the study used the same duration of days. The time for the event study was then determined as $t = -40$ to $t = +40$ relative to the event date $t = 0$. The estimation window was taken as $t_0 = -40$ to $t_1 = -1$, while the post-event window was taken as $t_2 = +1$ to $t_3 = +40$ relative to the event day $t = 0$.

The event of interest in the study was the share split and the event window included the date of the announcement. The event date was the stock split date and the time period around the event date was used to aggregate abnormal returns on the individual stock.

The abnormal returns for a given security consists of the difference between the actual returns and the expected returns.

$$AR_{it} = R_{it} - E(R_{it})$$

Where,

$$E(R_{it}) = \text{Expected Return on security } i \text{ for day } t$$

$$R_{it} = \text{Return on security } i \text{ for day } t$$

$$AR_{it} = \text{Abnormal Return on security } i \text{ for day } t$$

To measure the expected returns, the following market model was used:

$$E(R_{it}) = \alpha_i + \beta_i * R_{mt} + \varepsilon_{it}$$

Where,

α_i

= Ordinary Least Square estimate of the intercept of the market model regression

β_i

= Slope of the line representing sensitivity of return on security to market return

R_{mt} = Return on the market(NSE) at time t

The daily average abnormal return (AAR_t) of split announcement and ex day in 40 days window period for companies belonging to various industries were estimated by taking arithmetic mean of the abnormal returns (AR_{it}) at each day t within the event window.

$$AAR_t = \sum_{i=1}^N AR_{it} / N$$

Where,

AAR_t = Average abnormal returns

N = Total number of securities

The Cumulative Average Abnormal Returns ($CAAR_t$) in a 40 days window period were then calculated as the summation of average abnormal returns (AAR_t) in the respective window:

$$CAAR_t = \sum_{-40}^{+40} AAR_{it}$$

Where,

$CAAR_t$

= Cumulative Average Abnormal Return of stock split announcement

The CAAR was then used to test the hypotheses:

H_0 : Abnormal returns = 0

H_1 : Abnormal returns \neq 0

Accepting the null hypothesis, would imply that there was no change as a result of the occurrence of the stock splits. However, rejecting the null hypothesis would imply that there are abnormal returns resulting from stock splits, resulting in a conclusion that there is an effect of stock splits on the price of shares.

To test for liquidity, student paired t-statistics are used in the present study, to analyse whether the changes in average daily trading volume before and after the stock split ex-date are significantly different. The paired t-test tests that the differences between the two observations is 0. So, if D represents the difference between observations, the hypotheses are:

$$H_0: D = 0 \text{ (The difference between the two observations is zero)}$$

$$H_1: D \neq 0$$

(The difference between the two observations is greater than or less than zero)

The test statistic is calculated as:

$$t = \bar{d} / \sqrt{s^2/n}$$

Where,

$$\bar{d} = \text{Mean Difference}$$

$$s^2 = \text{Sample Variance}$$

$$n = \text{Sample Size}$$

T = Student t quantile with n – 1 degrees of freedom

If the p-value associated with t is low (< 0.05), there is evidence to reject the null hypothesis, and thereby conclude that there is a difference in means across the paired observations. In order to examine the effect of stock split on liquidity, the measure of trading volume was considered.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter focuses on interpretation of results obtained in the data analysis. It is divided into two parts. The first section focuses on the analysis and interpretation of the effects stock splits on the shares of the sampled companies while the second part focuses on analysis and interpretation of the effect of stock splits on liquidity.

4.2 Price effects

For this, the event study process was used in the data analysis. The process was as follows:

First, using the historical prices within the estimation window period, actual returns of the shares were calculated. The market index used in the study was the Nairobi Securities Exchange 20 share index (NSE-20) of which adjusted prices were tabulated.

Expected returns were then calculated using the market model, as explained in the previous chapter. Regressions done in Stata, gave the estimates of the beta and alpha parameters which were necessary in calculating the expected returns. The expected returns are the returns that would have been obtained if a stock split had not been done.

Abnormal returns were then obtained for each period, as the difference between the actual returns and the expected returns and a summary of the data from the above steps, for each of the stocks is found in Appendix II.

For EABL and Sasini, it was observed that during the pre-event window, 24 and 29 days out of the 40 in total, elicited negative abnormal returns respectively. After the stock split, however, the negative abnormal returns were almost as much as there were positive for both stocks.

For Centum, it was observed that during the pre-event window, 29 days out of the 40 in total, elicited negative abnormal returns. However, it was noted that for this particular stock, the positive abnormal returns during the post-event window were significantly higher than the negative abnormal returns.

For EA Cables, it was observed that during the pre-event window, 28 days out of the 40 in total, elicited negative abnormal returns. After the stock split, the negative abnormal returns were slightly higher than the positive. In addition, it was observed that the abnormal returns during the post-event window were clustered, for example,

after the stock split, the abnormal returns were negative for 3 days, then positive for 5 days, then negative for 4 days, and so on.

For Nation Media Group and KenolKobil, it was observed that during the pre-event window, for 23 and 24 days out of the 40, the shares elicited negative abnormal returns respectively. During the post-event window however, there were slightly more positive abnormal returns than there were negative.

For Barclays, however, during both the pre-event and post event window, it was observed that the negative abnormal returns were significantly higher than the positive abnormal returns.

Generally, it was noted that in 6 out of the 7 sampled companies, there were positive abnormal returns in the post-event window than there were negative abnormal returns. Positive abnormal returns imply that the effects of the stock splits were positive to the value of the stock whereas negative abnormal returns were negative to the value of the stock.

The cumulative abnormal returns were then used to calculate the average abnormal returns of each stock and whose summation resulted in the cumulative abnormal return as shown in the table below:

Stock	Abnormal return	Average Abnormal Return
Sasini	-0.21426849	-0.03060978
NMG	0.01129415	0.00161345
KenolKobil	-0.15370051	-0.02195722
Barclays	-0.13208930	-0.01886990
Centum	-0.44403862	-0.06343409
EA Cables	-0.69823629	-0.09974804
EABL	-0.15034001	-0.02147714
CAAR		-0.25448272

Obtaining the Cumulative Average Abnormal Return was essential in testing of hypothesis. Statistically, the null hypothesis tests that the abnormal returns are equal

to zero whereas the alternative hypothesis tests that the abnormal returns are not equal to zero.

In this study, ignoring the negative sign, the cumulative average abnormal return is 0.25448272. Therefore, we reject the null hypothesis; which means that stock splits do have an effect on the prices of shares.

4.3 Liquidity effects

To test for the effects on liquidity, the t-statistic was used. Trading volumes for each period in the event window were first obtained. The pre-event window and the post event window, each had a total of 40 observations before and after the stock split respectively.

A mean comparison test between data from the pre- and post-event windows was conducted and the summarized results are shown in the table below:

<u>Company</u>	<u>t-statistic</u>	<u>P-value</u>
Barclays	3.2640	0.0023
Sasini	-7.2853	0.0000
Nation Media Group	-2.5084	0.0164
EABL	-2.6119	0.0127
EA Cables	2.7174	0.0098
KenolKobil	0.9416	0.3522
Centum	-0.6084	0.5464

The P-values for Barclays, Sasini, Nation Media Group and EABL were all less than 0.05. There is therefore evidence to reject the null hypothesis, which states that the difference between the means of the pre-event and post-event windows is zero. There is therefore a significant difference between trading volumes before and after the split.

The sign from the t-statistic assists in identifying whether the change in trading volumes was positive or negative. Barclays and EA Cables both had a significant increase in their trading volumes whereas Sasini, Nation Media Group and EABL had a significant decrease in their trading volumes.

KenolKobil and Centum however, recorded P-values that were higher than 0.05. Therefore, in both cases, we fail to reject the null hypothesis. There is therefore no significant difference between the trading volumes before and after the split. Despite there being a change in the trading volumes, statistically this change was not significant enough to warrant a change in liquidity.

When it came to percentage change in the trading volumes from the pre-event to post-event window, the following results were obtained:

For Barclays, EA Cables and KenolKobil, it was noted that there was a 116.07%, 94.01% and 34.59% change increase in trading volume between the pre- and post-event windows, respectively. The remaining four however, recorded a decline in the trading volumes between the two periods. Sasini recorded a 50.69% decline, Nation Media Group a 42.68% decline, EABL a 49.99% decline and Centum a 13.92% decline in trading volumes. This is consistent with the aforementioned analysis.

4.4 Limitations of the study

Inconsistencies in the available data made it difficult to analyze some of the sampled firms. In addition, the sample used was small (7 companies), which resulted in inconclusive findings especially when it came to liquidity.



CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

The study analysed the price and liquidity effects of stock splits on shares in the Nairobi Securities exchange by taking a sample of 7 listed companies that split their stock between 2004 and 2011.

The study found that stock splits cause an increase in the price of shares. For all the stocks except KenolKobil and Barclays, the immediate effect after the announcement was first a decline in prices but this later changed to an increase. Generally, after the stock split the positive effects were more than the negative effects on the price of the shares and it was concluded that stock splits result in an increase in the prices of shares after the announcement.

In terms of liquidity, it was observed that 2 companies recorded a significant percentage increase in trading volumes, 3 companies recorded a significant decrease in trading volumes and the final two showed no significant difference in trading volumes between the pre-event and the post-event windows. The results are significant at a 1% significance level. Therefore, there was an increase in liquidity for 2 companies, a decrease in liquidity for 3 and no significant change in 2 companies. Given this varying results, the liquidity effects in the study were inconclusive. Further research could look into more firms to give a precise conclusion.

In addition, suggested avenues for further research are:

The study focused on the effects of stock splits regardless of the stock split ratio. Given that the firms have different stock split ratios, further studies could look into establishing whether there is a relationship between the stock split ratio and the magnitude of the effects of the stock splits.

For cases where a company had split their shares twice in different periods, the study picked only one split. Nevertheless, future studies could do a comparison of the two different splits of the same company so as to establish which was of more benefit to the company and perhaps the reason behind this.

The study focused on the effects of stock splits on firms that had actually split their shares. A study could be conducted to establish whether there are any effects of stock

splits on companies listed on the Nairobi Securities Exchange that have not split their shares.

Lastly, when testing for liquidity, the study mainly focused on trading volumes. Other measures that could be used include daily turnover and average number of trades in a day.



REFERENCES

- Akerlof, G. (1970). The market for lemons: Quality uncertainty and the market mechanism. *Quarterly Journal of Finance*, 448-500.
- Angel, J. J. (1997). Tick Size, Share Prices and Stock Splits. *Journal of Finance*, Vol. 52, 655-681.
- Blucher, D. B. (1988). Stock splits, stock prices and transaction costs. *Journal of Financial Economics*, Vol. 22, 83-101.
- Chhaochharia, S. D. (2008). Market reactions around stock splits and bonus issues: Some Indian Evidence.
- Cooper. (2014). *Business Research Methods*.
- Copeland, E. T. (1979). Liquidity changes following stock splits. *Journal of Finance*, Vol. 34, 115-141.
- Copeland, M. B. (1988). Stock splits, stock prices and transaction costs. *Journal of Financial Economics*, 83-101.
- D. Ikenberry, G. R. (1996). What do stock splits really signal? *The Journal of Financial and Quantitative Analysis*, 31(3), 357-375.
- Dennis, P. (2003). Stock splits and liquidity: The case of Nasdaq-100 Index Tracking Stock. *Financial Review*, Vol. 38(3), 415-433.
- E. F. Fama, L. F. (1969). The adjustment of stock prices to new information. *International Economic Review*, 7, 20-23.
- Fama, E. (1970). Efficient Capital Markets: A review of Theory and Empirical work. *The Journal of Finance*, 25(2), 383-417.
- Kalay, V. R. (2002). Can splits create market liquidity? Theory and Evidence. *Journal of Financial Markets*, Vol. 5, 83-125.
- Koech, P. K. (2013). The effects of stock splits announcements on stock prices of publicly quoted firms in Kenya.
- Kumar, G. a. (2007). A re-examination of factors affecting returns in the Indian stock market. *Journal of Finance*, 3, 20-24.

- Lev, J. L. (1987). Stock Splits and Stock Dividends: Why, Who and When. *The Journal of Finance*, Vol. 42, 913-932.
- Lyrودي Katerina, D. A. (2006). The valuation effects of sock splits in NADAQ. *Managerial Finance*, 32, 401-414.
- Mulherin, M. M. (1992). The effects of splitting on the ex: A microstructure reconciliation. *Financial Management*, 21, 44-59.
- Nkonge, T. N. (2010). Effects of stock splits on securities returns of companies listed in Nairobi Securities Exchange.
- Peterson, P. P. (1989). Event Studies: A review of Issues and Methodology. *Quarterly Journal of Business and Economics*, Vol. 28, 36-66.
- Pooja. (2013). Stock split announcement and liquidity effect: Evidence fom India. *The XIMB Journalof Management*, 10(1), 135-148.
- Poon, C. L. (1987). The Market Reaction to Stock Splits. *The Journal of Finance*. 42(5), 1347-1370.
- Powell, H. K. (1992). Further evidence on managerial motives for stock splits. *Quarterly Journal of Business and Economics*, Vol 32, 20-31.
- Pyle, H. L. (1977). Informational Asymmetries, Financial Structure and Financial Intermediation. *The Journal of Finance*. 32(2), 371-387.
- Ross, S. (1977). The determination of financial structure: The incentive signalling approach. *Journal of Economics*, 8, 23-40.
- Rozeff, N. N. (2001). Recor-date. when-issued and ex-date effects in stock splits. *Journal of Financial and Quantitative Analysis*, 36, 119-139.
- S. A. Desai, M. N. (1998). Changes in trading activity following stock splits and their effect on volatility and the adverse-information component of th bid-ask spread. *Journal of Financial Research*, 11, 159-183.
- Schultz, P. (2000). Stock splits, tick size and sponsorship. *The Journal of Finance*, 55(1), 429-450.
- Vetsuypens, C. M. (1996). Stock splits: signalling or liquidity? The case of ADR 'solo-splits'. *Journal of Financial Economics*, 42, 3-26.

APPENDICES

1. Appendix I

Company	Ratio of split	Date of Announcement
Kenya Oil	10:1	23 rd June, 2004
E.A. Breweries	5:1	27 th August, 2004
EA Cables	10:1	10 th August, 2006
ICDC	10:1	19 th October, 2006
Barclays	1:5	8 th November, 2006
Sasini	5:1	18 th December, 2006
CMC Holdings	10:1	11 th January, 2007
KCB	10:1	5 th March, 2007
Nation Media Group	2:1	18 th March, 2008
Equity	1:10	12 th February, 2009
KenolKobil	10:1	20 th May, 2010
KPLC	1:8	7 th October, 2010
Barclays	4:1	22 nd February, 2011
Athi River Mining	5:1	14 th May, 2012
City Trust	5:1	23 rd January, 2013
Carbacid	1:5	23 rd October, 2013
Limuru Tea	1:2	12 th May 2015

Source: The Nairobi Securities Exchange

2. Appendix II

BARCLAYS 2011

<u>Estimation Period</u>	<u>Last Price</u>	<u>NSE 20</u>	<u>NSE 20 Adjusted</u>	<u>Actual stock Returns</u>	<u>Expected Returns</u>	<u>Abnormal Returns</u>
	15.88	4013.38	200.67			
40	15.75	4007.86	200.39	-0.0081864	-0.0013754	-0.0068110
39	15.75	4035.26	201.76	0.0000000	0.0068366	-0.0068366
38	15.75	4036.35	201.82	0.0000000	0.0002701	-0.0002701
37	15.63	4031.78	201.59	-0.0076190	-0.0011322	-0.0064868
36	15.88	4032.16	201.61	0.0159949	0.0000943	0.0159006
35	16.25	4031.44	201.57	0.0232997	-0.0001786	0.0234783
34	16.13	4029.23	201.46	-0.0073846	-0.0005482	-0.0068364
33	15.88	4005.78	200.29	-0.0154991	-0.0058200	-0.0096791
32	15.75	4037.49	201.87	-0.0081864	0.0079161	-0.0161025
31	15.38	4025.91	201.30	-0.0234921	-0.0028681	-0.0206239
30	15.13	4023.19	201.16	-0.0162549	-0.0006756	-0.0155793
29	14.75	4007.73	200.39	-0.0251157	-0.0038427	-0.0212729
28	14.63	4017.42	200.87	-0.0081356	0.0024178	-0.0105534
27	14.38	4032.06	201.60	-0.0170882	0.0036441	-0.0207323
26	14.50	4006.94	200.35	0.0083449	-0.0062301	0.0145750
25	14.50	4019.14	200.96	0.0000000	0.0030447	-0.0030447
24	14.38	4001.50	200.08	-0.0082759	-0.0043890	-0.0038869
23	14.25	3993.07	199.65	-0.0090403	-0.0021067	-0.0069336
22	14.25	4010.22	200.51	0.0000000	0.0042949	-0.0042949
21	14.38	3998.38	199.92	0.0091228	-0.0029525	0.0120753
20	14.38	3966.89	198.34	0.0000000	-0.0078757	0.0078757
19	14.63	3924.55	196.23	0.0173853	-0.0106733	0.0280586
18	14.88	3870.97	193.55	0.0170882	-0.0136525	0.0307407
17	14.88	3891.97	194.60	0.0000000	0.0054250	-0.0054250
16	15.00	3882.96	194.15	0.0080645	-0.0023150	0.0103795
15	16.75	3873.45	193.67	0.1166667	-0.0024492	0.1191158
14	16.75	3881.89	194.09	0.0000000	0.0021789	-0.0021789
13	16.63	3899.85	194.99	-0.0071642	0.0046266	-0.0117908
12	16.63	3922.24	196.11	0.0000000	0.0057412	-0.0057412
11	16.75	3983.49	199.17	0.0072159	0.0156161	-0.0084002
10	16.75	3993.53	199.68	0.0000000	0.0025204	-0.0025204
9	16.88	4017.80	200.89	0.0077612	0.0060773	0.0016839
8	17.00	4026.78	201.34	0.0071090	0.0022351	0.0048740
7	16.88	3986.59	199.33	-0.0070588	-0.0099807	0.0029219
6	16.75	3928.25	196.41	-0.0077014	-0.0146341	0.0069326
5	17.13	3915.01	195.75	0.0226866	-0.0033705	0.0260570
4	17.25	4028.88	201.44	0.0070053	0.0290855	-0.0220802
3	17.50	4136.55	206.83	0.0144928	0.0267245	-0.0122318
2	17.38	4163.65	208.18	-0.0068571	0.0065514	-0.0134085

BARCLAYS						
1	17.25	4182.58	209.13	-0.0074799	0.0045465	-0.0120264
0	17.13	4240.18	212.01	-0.0069565	0.0137714	-0.0207279
-1	15.63	4269.51	213.48	-0.0875657	0.0069172	-0.0944828
-2	15.50	4264.66	213.23	-0.0083173	-0.0011360	-0.0071814
-3	15.50	4261.58	213.08	0.0000000	-0.0007222	0.0007222
-4	15.38	4258.58	212.93	-0.0077419	-0.0007040	-0.0070380
-5	15.38	4246.91	212.35	0.0000000	-0.0027404	0.0027404
-6	15.38	4267.87	213.39	0.0000000	0.0049354	-0.0049354
-7	15.25	4284.90	214.25	-0.0084525	0.0039903	-0.0124428
-8	15.13	4295.12	214.76	-0.0078689	0.0023851	-0.0102540
-9	15.13	4311.24	215.56	0.0000000	0.0037531	-0.0037531
-10	15.13	4327.54	216.38	0.0000000	0.0037808	-0.0037808
-11	15.25	4361.82	218.09	0.0079313	0.0079214	0.0000099
-12	15.50	4390.46	219.52	0.0163934	0.0065661	0.0098274
-13	15.63	4386.69	219.33	0.0083871	-0.0008587	0.0092458
-14	15.75	4399.99	220.00	0.0076775	0.0030319	0.0046456
-15	15.88	4431.04	221.55	0.0082540	0.0070568	0.0011971
-16	15.75	4464.92	223.25	-0.0081864	0.0076461	-0.0158325
-17	15.88	4497.14	224.86	0.0082540	0.0072163	0.0010377
-18	15.88	4526.78	226.34	0.0000000	0.0065909	-0.0065909
-19	15.88	4516.40	225.82	0.0000000	-0.0022930	0.0022930
-20	15.88	4498.29	224.91	0.0000000	-0.0040098	0.0040098
-21	15.88	4501.88	225.09	0.0000000	0.0007981	-0.0007981
-22	16.00	4514.59	225.73	0.0075567	0.0028233	0.0047334
-23	15.88	4537.30	226.87	-0.0075000	0.0050304	-0.0125304
-24	16.00	4547.14	227.36	0.0075567	0.0021687	0.0053880
-25	16.00	4540.31	227.02	0.0000000	-0.0015020	0.0015020
-26	16.13	4541.70	227.09	0.0081250	0.0003061	0.0078189
-27	16.13	4551.07	227.55	0.0000000	0.0020631	-0.0020631
-28	16.13	4563.65	228.18	0.0000000	0.0027642	-0.0027642
-29	16.25	4547.34	227.37	0.0074396	-0.0035739	0.0110134
-30	16.25	4579.52	228.98	0.0000000	0.0070767	-0.0070767
-31	16.63	4610.92	230.55	0.0233846	0.0068566	0.0165280
-32	16.88	4621.66	231.08	0.0150331	0.0023293	0.0127038
-33	16.50	4594.45	229.72	-0.0225118	-0.0058875	-0.0166244
-34	16.25	4531.11	226.56	-0.0151515	-0.0137862	-0.0013653
-35	16.00	4486.49	224.32	-0.0153846	-0.0098475	-0.0055371
-36	16.00	4495.41	224.77	0.0000000	0.0019882	-0.0019882
-37	15.63	4432.60	221.63	-0.0231250	-0.0139720	-0.0091530
-38	15.25	4396.49	219.82	-0.0243122	-0.0081465	-0.0161658
-39	15.00	4396.37	219.82	-0.0163934	-0.0000273	-0.0163661
-40	14.88	4347.90	217.40	-0.0080000	-0.0110250	0.0030250
						-0.1320893

KENOL KOBIL 2010						
<u>Estimation Period</u>	<u>Last Price</u>	<u>NSE 20</u>	<u>NSE 20 Adjusted</u>	<u>Actual Returns</u>	<u>Expected Returns</u>	<u>Abnormal Returns</u>
	9.85	4325.20	216.26			
40	10.15	4326.01	216.30	0.0304569	0.0001873	0.0302696
39	10.15	4329.92	216.50	0.0000000	0.0009038	-0.0009038
38	10.20	4345.86	217.29	0.0049261	0.0036814	0.0012447
37	10.05	4329.95	216.50	-0.0147059	-0.0036610	-0.0110449
36	10.30	4345.30	217.27	0.0248756	0.0035451	0.0213305
35	10.60	4332.52	216.63	0.0291262	-0.0029411	0.0320673
34	10.80	4372.53	218.63	0.0188679	0.0092348	0.0096331
33	10.90	4344.84	217.24	0.0092593	-0.0063327	0.0155920
32	10.90	4329.95	216.50	0.0000000	-0.0034271	0.0034271
31	10.95	4310.81	215.54	0.0045872	-0.0044204	0.0090075
30	10.75	4322.99	216.15	-0.0182648	0.0028255	-0.0210903
29	10.65	4308.35	215.42	-0.0093023	-0.0033865	-0.0059158
28	10.40	4321.39	216.07	-0.0234742	0.0030267	-0.0265009
27	10.00	4304.38	215.22	-0.0384615	-0.0039362	-0.0345253
26	9.90	4309.41	215.47	-0.0100000	0.0011686	-0.0111686
25	9.90	4323.85	216.19	0.0000000	0.0033508	-0.0033508
24	9.85	4324.63	216.23	-0.0050505	0.0001804	-0.0052309
23	9.85	4313.01	215.65	0.0000000	-0.0026869	0.0026869
22	9.15	4339.28	216.96	-0.0710660	0.0060909	-0.0771569
21	9.60	4339.52	216.98	0.0491803	0.0000553	0.0491250
20	9.85	4318.80	215.94	0.0260417	-0.0047747	0.0308164
19	9.65	4296.61	214.83	-0.0203046	-0.0051380	-0.0151666
18	9.70	4309.51	215.48	0.0051813	0.0030024	0.0021790
17	9.55	4277.64	213.88	-0.0154639	-0.0073953	-0.0080686
16	9.70	4272.97	213.65	0.0157068	-0.0010917	0.0167985
15	9.55	4284.62	214.23	-0.0154639	0.0027264	-0.0181904
14	9.80	4312.44	215.62	0.0261780	0.0064930	0.0196850
13	9.75	4327.40	216.37	-0.0051020	0.0034690	-0.0085711
12	9.90	4337.63	216.88	0.0153846	0.0023640	0.0130206
11	9.95	4315.31	215.77	0.0050505	-0.0051457	0.0101962
10	9.85	4298.84	214.94	-0.0100503	-0.0038166	-0.0062336
9	9.55	4272.72	213.64	-0.0304569	-0.0060761	-0.0243808
8	9.90	4263.06	213.15	0.0366492	-0.0022609	0.0389101
7	10.00	4247.09	212.35	0.0101010	-0.0037461	0.0138471
6	9.90	4257.58	212.88	-0.0100000	0.0024699	-0.0124699
5	9.95	4249.44	212.47	0.0050505	-0.0019119	0.0069624
4	9.95	4242.10	212.11	0.0000000	-0.0017273	0.0017273
3	10.00	4234.29	211.71	0.0050251	-0.0018411	0.0068662
2	10.00	4212.22	210.61	0.0000000	-0.0052122	0.0052122
1	10.00	4241.81	212.09	0.0000000	0.0070248	-0.0070248

KENOL KOBIL						
0	9.95	4221.11	211.06	-0.0050000	-0.0048800	-0.0001200
-1	9.80	4203.40	210.17	-0.0150754	-0.0041956	-0.0108798
-2	9.95	4262.24	213.11	0.0153061	0.0139982	0.0013079
-3	10.00	4320.06	216.00	0.0050251	0.0135656	-0.0085405
-4	10.20	4319.66	215.98	0.0200000	-0.0000926	0.0200926
-5	10.80	4314.90	215.75	0.0588235	-0.0011019	0.0599255
-6	10.40	4306.30	215.32	-0.0370370	-0.0019931	-0.0350439
-7	10.50	4305.85	215.29	0.0096154	-0.0001045	0.0097199
-8	10.60	4299.50	214.98	0.0095238	-0.0014747	0.0109985
-9	10.50	4285.61	214.28	-0.0094340	-0.0032306	-0.0062034
-10	10.70	4288.84	214.44	0.0190476	0.0007537	0.0182939
-11	10.00	4251.20	212.56	-0.0654206	-0.0087763	-0.0566443
-12	9.55	4241.79	212.09	-0.0450000	-0.0022135	-0.0427865
-13	9.10	4226.63	211.33	-0.0471204	-0.0035740	-0.0435465
-14	9.35	4237.35	211.87	0.0274725	0.0025363	0.0249362
-15	10.30	4277.63	213.88	0.1016043	0.0095059	0.0920983
-16	10.20	4270.74	213.54	-0.0097087	-0.0016107	-0.0080980
-17	9.35	4243.57	212.18	-0.0833333	-0.0063619	-0.0769714
-18	9.05	4205.54	210.28	-0.0320856	-0.0089618	-0.0231238
-19	8.45	4217.18	210.86	-0.0662983	0.0027678	-0.0690661
-20	8.40	4233.24	211.66	-0.0059172	0.0038082	-0.0097254
-21	8.40	4270.87	213.54	0.0000000	0.0088892	-0.0088892
-22	8.40	4280.80	214.04	0.0000000	0.0023251	-0.0023251
-23	8.25	4289.85	214.49	-0.0178571	0.0021141	-0.0199712
-24	8.45	4278.31	213.92	0.0242424	-0.0026901	0.0269325
-25	8.25	4226.03	211.30	-0.0236686	-0.0122198	-0.0114489
-26	8.00	4181.41	209.07	-0.0303030	-0.0105584	-0.0197447
-27	7.85	4148.09	207.40	-0.0187500	-0.0079686	-0.0107814
-28	7.85	4109.86	205.49	0.0000000	-0.0092163	0.0092163
-29	7.75	4095.56	204.78	-0.0127389	-0.0034794	-0.0092594
-30	7.80	4111.49	205.57	0.0064516	0.0038896	0.0025620
-31	7.65	4099.44	204.97	-0.0192308	-0.0029308	-0.0163000
-32	7.90	4073.86	203.69	0.0326797	-0.0062399	0.0389196
-33	7.75	4060.17	203.01	-0.0189873	-0.0033604	-0.0156269
-34	7.45	4074.02	203.70	-0.0387097	0.0034112	-0.0421209
-35	7.50	4067.40	203.37	0.0067114	-0.0016249	0.0083363
-36	7.65	4062.91	203.15	0.0200000	-0.0011039	0.0211039
-37	8.00	4059.15	202.96	0.0457516	-0.0009254	0.0466771
-38	7.80	4061.93	203.10	-0.0250000	0.0006849	-0.0256849
-39	7.80	4060.03	203.00	0.0000000	-0.0004678	0.0004678
-40	7.70	4072.93	203.65	-0.0128205	0.0031773	-0.0159978
						-0.1537005

EABL						
<u>Estimation Period</u>	<u>Last Price</u>	<u>NSE 20</u>	<u>NSE 20 Adjusted</u>	<u>Actual Returns</u>	<u>Expected Returns</u>	<u>Abnormal Returns</u>
	76.67	2802.37	140.12			
40	77.17	2792.80	139.64	0.0065215	-0.0034150	0.0099364
39	76.67	2778.29	138.91	-0.0064792	-0.0051955	-0.0012837
38	76.67	2764.10	138.21	0.0000000	-0.0051075	0.0051075
37	76.50	2731.07	136.55	-0.0022173	-0.0119496	0.0097323
36	76.67	2740.16	137.01	0.0022222	0.0033284	-0.0011061
35	76.33	2745.83	137.29	-0.0044346	0.0020692	-0.0065038
34	76.33	2724.13	136.21	0.0000000	-0.0079029	0.0079029
33	76.33	2712.97	135.65	0.0000000	-0.0040967	0.0040967
32	76.33	2683.94	134.20	0.0000000	-0.0107005	0.0107005
31	76.33	2673.54	133.68	0.0000000	-0.0038749	0.0038749
30	76.50	2673.54	133.68	0.0022272	0.0000000	0.0022272
29	76.83	2671.33	133.57	0.0043137	-0.0008266	0.0051403
28	76.67	2664.60	133.23	-0.0020825	-0.0025193	0.0004368
27	76.67	2650.07	132.50	0.0000000	-0.0054530	0.0054530
26	75.56	2647.39	132.37	-0.0144776	-0.0010113	-0.0134663
25	73.61	2648.71	132.44	-0.0258073	0.0004986	-0.0263059
24	73.33	2670.69	133.53	-0.0038038	0.0082984	-0.0121022
23	71.39	2670.69	133.53	-0.0264557	0.0000000	-0.0264557
22	70.83	2660.19	133.01	-0.0078442	-0.0039316	-0.0039127
21	70.83	2642.68	132.13	0.0000000	-0.0065822	0.0065822
20	70.83	2652.27	132.61	0.0000000	0.0036289	-0.0036289
19	70.83	2650.20	132.51	0.0000000	-0.0007805	0.0007805
18	70.83	2641.31	132.07	0.0000000	-0.0033545	0.0033545
17	70.83	2643.76	132.19	0.0000000	0.0009276	-0.0009276
16	70.83	2648.11	132.41	0.0000000	0.0016454	-0.0016454
15	70.83	2645.73	132.29	0.0000000	-0.0008988	0.0008988
14	70.69	2652.64	132.63	-0.0019766	0.0026118	-0.0045883
13	70.83	2652.05	132.60	0.0019805	-0.0002224	0.0022029
12	70.83	2652.05	132.60	0.0000000	0.0000000	0.0000000
11	70.69	2671.89	133.59	-0.0019766	0.0074810	-0.0094576
10	70.83	2689.60	134.48	0.0019805	0.0066283	-0.0046478
9	70.83	2704.15	135.21	0.0000000	0.0054097	-0.0054097
8	70.83	2708.22	135.41	0.0000000	0.0015051	-0.0015051
7	70.97	2711.72	135.59	0.0019766	0.0012924	0.0006842
6	70.83	2699.99	135.00	-0.0019727	-0.0043257	0.0023530
5	70.83	2713.44	135.67	0.0000000	0.0049815	-0.0049815
4	70.83	2710.73	135.54	0.0000000	-0.0009987	0.0009987
3	70.83	2710.78	135.54	0.0000000	0.0000184	-0.0000184
2	70.83	2717.51	135.88	0.0000000	0.0024827	-0.0024827

EABL						
1	70.97	2708.86	135.44	0.0019766	-0.0031831	0.0051596
0	72.78	2711.53	135.58	0.0255037	0.0009857	0.0245181
-1	69.31	2712.65	135.63	-0.0476779	0.0004131	-0.0480910
-2	69.44	2698.85	134.94	0.0018756	-0.0050873	0.0069629
-3	68.75	2688.51	134.43	-0.0099366	-0.0038313	-0.0061054
-4	68.61	2678.45	133.92	-0.0020364	-0.0037418	0.0017055
-5	68.61	2682.03	134.10	0.0000000	0.0013366	-0.0013366
-6	68.75	2700.15	135.01	0.0020405	0.0067561	-0.0047156
-7	68.61	2716.45	135.82	-0.0020364	0.0060367	-0.0080731
-8	68.75	2724.16	136.21	0.0020405	0.0028383	-0.0007977
-9	69.03	2703.17	135.16	0.0040727	-0.0077051	0.0117779
-10	68.06	2707.53	135.38	-0.0140519	0.0016129	-0.0156648
-11	67.36	2715.34	135.77	-0.0102850	0.0028845	-0.0131696
-12	67.08	2730.29	136.51	-0.0041568	0.0055058	-0.0096625
-13	66.11	2735.62	136.78	-0.0144603	0.0019522	-0.0164125
-14	66.53	2746.29	137.31	0.0063530	0.0039004	0.0024527
-15	66.67	2754.39	137.72	0.0021043	0.0029494	-0.0008451
-16	66.67	2757.28	137.86	0.0000000	0.0010492	-0.0010492
-17	66.67	2749.48	137.47	0.0000000	-0.0028289	0.0028289
-18	64.72	2733.17	136.66	-0.0292485	-0.0059320	-0.0233165
-19	64.86	2720.09	136.00	0.0021632	-0.0047857	0.0069488
-20	64.17	2697.14	134.86	-0.0106383	-0.0084372	-0.0022011
-21	63.75	2708.03	135.40	-0.0065451	0.0040376	-0.0105827
-22	63.06	2671.30	133.57	-0.0108235	-0.0135634	0.0027398
-23	62.50	2658.53	132.93	-0.0088804	-0.0047804	-0.0041000
-24	62.50	2636.35	131.82	0.0000000	-0.0083430	0.0083430
-25	62.36	2635.06	131.75	-0.0022400	-0.0004893	-0.0017507
-26	62.36	2614.95	130.75	0.0000000	-0.0076317	0.0076317
-27	62.36	2640.84	132.04	0.0000000	0.0099008	-0.0099008
-28	62.22	2657.41	132.87	-0.0022450	0.0062745	-0.0085195
-29	62.50	2636.35	131.82	0.0045002	-0.0079250	0.0124252
-30	61.81	2670.32	133.52	-0.0110400	0.0128852	-0.0239252
-31	61.81	2674.56	133.73	0.0000000	0.0015878	-0.0015878
-32	61.81	2686.14	134.31	0.0000000	0.0043297	-0.0043297
-33	61.67	2689.32	134.47	-0.0022650	0.0011839	-0.0034489
-34	61.81	2680.08	134.00	0.0022701	-0.0034358	0.0057060
-35	61.81	2676.62	133.83	0.0000000	-0.0012910	0.0012910
-36	61.81	2657.76	132.89	0.0000000	-0.0070462	0.0070462
-37	61.67	2648.90	132.45	-0.0022650	-0.0033336	0.0010686
-38	61.67	2638.97	131.95	0.0000000	-0.0037487	0.0037487
-39	61.81	2631.63	131.58	0.0022701	-0.0027814	0.0050515
-40	61.81	2632.14	131.61	0.0000000	0.0001938	-0.0001938
						-0.1503400

CENTUM						
<u>Estimation period</u>	<u>Last Price</u>	<u>NSE 20</u>	<u>NSE 20 Adjusted</u>	<u>Actual Returns</u>	<u>Expected Returns</u>	<u>Abnormal Returns</u>
	26.07	5525.40	276.27			
40	25.77	5572.10	278.61	0.00000000	0.0084519	- 0.0084519
39	26.15	5624.84	281.24	0.01474583	0.0094650	0.0052808
38	26.30	5589.64	279.48	0.00573614	- 0.0062580	0.0119941
37	26.30	5582.42	279.12	0.00000000	- 0.0012917	0.0012917
36	26.37	5525.38	276.27	0.00266160	- 0.0102178	0.0128794
35	26.15	5516.98	275.85	-0.00834281	- 0.0015203	- 0.0068226
34	26.22	5477.86	273.89	0.00267686	- 0.0070908	0.0097677
33	26.30	5429.02	271.45	0.00305111	- 0.0089159	0.0119670
32	26.52	5417.50	270.88	0.00836502	- 0.0021219	0.0104869
31	26.37	5490.20	274.51	-0.00565611	0.0134195	- 0.0190756
30	26.45	5553.08	277.65	0.00303375	0.0114531	- 0.0084194
29	27.42	5615.20	280.76	0.03667297	0.0111866	0.0254864
28	27.05	5656.67	282.83	-0.01349380	0.0073853	- 0.0208791
27	27.42	5762.20	288.11	0.01367837	0.0186559	- 0.0049775
26	28.25	5791.00	289.55	0.03026988	0.0049981	0.0252718
25	29.45	5752.57	287.63	0.04247788	- 0.0066362	0.0491140
24	28.70	5676.52	283.83	-0.02546689	- 0.0132202	- 0.0122467
23	29.23	5665.07	283.25	0.01846690	- 0.0020171	0.0204840
22	28.78	5667.30	283.37	-0.01539514	0.0003936	- 0.0157888
21	29.30	5676.05	283.80	0.01806810	0.0015439	0.0165242
20	30.65	5642.04	282.10	0.04607509	- 0.0059918	0.0520669
19	28.17	5602.40	280.12	-0.08091354	- 0.0070258	- 0.0738877
18	26.97	5603.03	280.15	-0.04259851	0.0001125	- 0.0427110
17	27.05	5585.81	279.29	0.00296626	- 0.0030733	0.0060396
16	26.75	5608.25	280.41	-0.01109057	0.0040173	- 0.0151079
15	29.30	5662.46	283.12	0.09532710	0.0096661	0.0856610
14	29.00	5654.46	282.72	-0.01023891	- 0.0014128	- 0.0088261
13	29.68	5656.18	282.81	0.02344828	0.0003042	0.0231441
12	29.98	5638.00	281.90	- 0.01010782	- 0.0032142	0.0133220
11	30.05	5604.48	280.22	0.00233489	- 0.0059454	0.0082803
10	30.43	5555.23	277.76	0.01264559	- 0.0087876	0.0214332
9	31.10	5515.34	275.77	0.02201775	- 0.0071806	0.0291984
8	32.08	5529.50	276.48	0.03151125	0.0025674	0.0289439
7	31.78	5403.96	270.20	-0.00935162	- 0.0227037	0.0133521
6	30.43	5314.36	265.72	-0.04247955	- 0.0165804	- 0.0258991
5	30.20	5177.90	258.90	-0.00755833	- 0.0256776	0.0181193
4	30.20	5106.65	255.33	0.00000000	- 0.0137604	0.0137604
3	30.80	5061.77	253.09	0.01986755	- 0.0087885	0.0286561
2	34.03	4963.22	248.16	0.10487013	- 0.0194695	0.1243396
1	37.49	4910.60	245.53	0.10167499	- 0.0106020	0.1122770

CENTUM						
0	41.55	4864.02	243.20	0.10829555	- 0.0094856	0.1177811
-1	29.38	4875.58	243.78	-0.29290012	0.0023766	- 0.2952768
-2	26.75	4851.97	242.60	-0.08951668	- 0.0048425	- 0.0846742
-3	24.42	4857.58	242.88	-0.08710280	0.0011562	- 0.0882590
-4	25.17	4906.49	245.32	0.03071253	0.0100688	0.0206437
-5	26.00	4882.14	244.11	0.03297576	- 0.0049628	0.0379386
-6	25.32	4893.03	244.65	-0.02615385	0.0022306	- 0.0283844
-7	25.85	4889.68	244.48	0.02093207	- 0.0006846	0.0216167
-8	24.94	4903.90	245.20	-0.03520309	0.0029082	- 0.0381113
-9	24.04	4946.12	247.31	-0.03608661	0.0086095	- 0.0446961
-10	23.67	4937.20	246.86	-0.01539101	- 0.0018034	- 0.0135876
-11	23.07	4910.61	245.53	-0.02534854	- 0.0053856	- 0.0199629
-12	22.16	4843.23	242.16	-0.03944517	- 0.0137213	- 0.0257239
-13	20.21	4879.86	243.99	-0.08799639	0.0075631	- 0.0955595
-14	19.68	4881.10	244.06	-0.02622464	0.0002541	- 0.0264787
-15	18.33	4829.04	241.45	-0.06859756	- 0.0106656	- 0.0579319
-16	17.96	4781.37	239.07	-0.02018549	- 0.0098715	- 0.0103140
-17	17.96	4728.12	236.41	0.00000000	- 0.0111370	0.0111370
-18	17.81	4778.35	238.92	-0.00835189	0.0106237	- 0.0189756
-19	18.41	4769.13	238.46	0.03368894	- 0.0019295	0.0356185
-20	19.76	4876.13	243.81	0.07332971	0.0224360	0.0508938
-21	21.71	4871.76	243.59	0.09868421	- 0.0008962	0.0995804
-22	19.83	4839.24	241.96	-0.08659604	- 0.0066752	- 0.0799208
-23	18.03	4750.80	237.54	-0.09077156	- 0.0182756	- 0.0724960
-24	16.45	4684.57	234.23	-0.08763172	- 0.0139408	- 0.0736909
-25	15.10	4645.56	232.28	-0.08206687	- 0.0083273	- 0.0737395
-26	13.82	4601.22	230.06	-0.08476821	- 0.0095446	- 0.0752236
-27	13.52	4585.94	229.30	-0.02170767	- 0.0033209	- 0.0183868
-28	13.45	4523.80	226.19	-0.00517751	- 0.0135501	0.0083726
-29	12.77	4508.02	225.40	-0.05055762	- 0.0034882	- 0.0470694
-30	12.70	4507.99	225.40	-0.00548160	- 0.0000067	- 0.0054749
-31	12.55	4496.47	224.82	-0.01181102	- 0.0025555	- 0.0092556
-32	12.47	4481.70	224.09	-0.00637450	- 0.0032848	- 0.0030897
-33	12.55	4490.84	224.54	0.00641540	0.0020394	0.0043760
-34	12.17	4486.07	224.30	-0.03027888	- 0.0010622	- 0.0292167
-35	12.10	4507.15	225.36	-0.00575185	0.0046990	- 0.0104508
-36	11.65	4489.60	224.48	-0.03719008	- 0.0038938	- 0.0332963
-37	11.80	4476.07	223.80	0.01287554	- 0.0030136	0.0158892
-38	11.65	4469.60	223.48	-0.01271186	- 0.0014455	- 0.0112664
-39	11.57	4488.56	224.43	-0.00686695	0.0042420	- 0.0111089
-40	11.72	4467.36	223.37	0.01296456	- 0.0047231	0.0176877
						- 0.4440386

EA CABLES						
<u>Estimation Period</u>	<u>Last Price</u>	<u>NSE 20</u>	<u>NSE 20 Adjusted</u>	<u>Actual Returns</u>	<u>Expected Returns</u>	<u>Abnormal Returns</u>
	54.80	4903.90	245.20			
40	56.00	4946.12	247.31	0.0218978	0.0086095	0.0132883
39	56.00	4937.20	246.86	0.0000000	-0.0018034	0.0018034
38	57.60	4910.61	245.53	0.0285714	-0.0053856	0.0339571
37	55.20	4843.23	242.16	-0.0416667	-0.0137213	-0.0279454
36	60.80	4879.86	243.99	0.1014493	0.0075631	0.0938861
35	62.40	4881.10	244.06	0.0263158	0.0002541	0.0260617
34	62.40	4829.04	241.45	0.0000000	-0.0106656	0.0106656
33	61.20	4781.37	239.07	-0.0192308	-0.0098715	-0.0093592
32	56.80	4728.12	236.41	-0.0718954	-0.0111370	-0.0607584
31	54.00	4778.35	238.92	-0.0492958	0.0106237	-0.0599194
30	49.60	4769.13	238.46	-0.0814815	-0.0019295	-0.0795519
29	49.20	4876.13	243.81	-0.0080645	0.0224360	-0.0305005
28	50.40	4871.76	243.59	0.0243902	-0.0008962	0.0252864
27	55.60	4839.24	241.96	0.1031746	-0.0066752	0.1098498
26	61.60	4750.80	237.54	0.1079137	-0.0182756	0.1261893
25	68.40	4684.57	234.23	0.1103896	-0.0139408	0.1243304
24	75.60	4645.56	232.28	0.1052632	-0.0083273	0.1135905
23	84.00	4601.22	230.06	0.1111111	-0.0095446	0.1206557
22	82.40	4585.94	229.30	-0.0190476	-0.0033209	-0.0157268
21	80.00	4523.80	226.19	-0.0291262	-0.0135501	-0.0155761
20	73.60	4508.02	225.40	-0.0800000	-0.0034882	-0.0765118
19	67.60	4507.99	225.40	-0.0815217	-0.0000067	-0.0815151
18	62.00	4496.47	224.82	-0.0828402	-0.0025555	-0.0802848
17	51.60	4481.70	224.09	-0.1677419	-0.0032848	-0.1644571
16	48.16	4490.84	224.54	-0.0666667	0.0020394	-0.0687061
15	47.60	4486.07	224.30	-0.0116279	-0.0010622	-0.0105657
14	47.36	4507.15	225.36	-0.0050420	0.0046990	-0.0097410
13	47.36	4489.60	224.48	0.0000000	-0.0038938	0.0038938
12	46.96	4476.07	223.80	-0.0084459	-0.0030136	-0.0054323
11	45.60	4469.60	223.48	-0.0289608	-0.0014455	-0.0275154
10	42.16	4488.56	224.43	-0.0754386	0.0042420	-0.0796806
9	38.40	4467.36	223.37	-0.0891841	-0.0047231	-0.0844609
8	38.24	4442.50	222.13	-0.0041667	-0.0055648	0.0013981
7	40.08	4467.40	223.37	0.0481172	0.0056050	0.0425122
6	42.00	4451.08	222.55	0.0479042	-0.0036531	0.0515573
5	46.24	4424.17	221.21	0.1009524	-0.0060457	0.1069981
4	46.88	4423.60	221.18	0.0138408	-0.0001288	0.0139697
3	46.80	4429.49	221.47	-0.0017065	0.0013315	-0.0030380
2	45.68	4414.88	220.74	-0.0239316	-0.0032983	-0.0206333

EA CABLES						
1	41.92	4407.54	220.38	-0.0823117	-0.0016626	-0.0806492
0	38.16	4396.61	219.83	-0.0896947	-0.0024798	-0.0872148
-1	31.92	4396.09	219.80	-0.1635220	-0.0001183	-0.1634037
-2	31.92	4390.95	219.55	0.0000000	-0.0011692	0.0011692
-3	30.72	4384.35	219.22	-0.0375940	-0.0015031	-0.0360909
-4	29.12	4340.88	217.04	-0.0520833	-0.0099148	-0.0421685
-5	29.04	4340.88	217.04	-0.0027473	0.0000000	-0.0027473
-6	28.24	4314.44	215.72	-0.0275482	-0.0060909	-0.0214573
-7	26.48	4277.30	213.87	-0.0623229	-0.0086083	-0.0537146
-8	26.56	4242.50	212.13	0.0030211	-0.0081360	0.0111571
-9	26.40	4271.68	213.58	-0.0060241	0.0068780	-0.0129021
-10	26.56	4260.64	213.03	0.0060606	-0.0025845	0.0086451
-11	26.48	4268.00	213.40	-0.0030120	0.0017274	-0.0047395
-12	26.48	4245.29	212.26	0.0000000	-0.0053210	0.0053210
-13	26.48	4244.16	212.21	0.0000000	-0.0002662	0.0002662
-14	26.40	4242.51	212.13	-0.0030211	-0.0003888	-0.0026324
-15	26.56	4246.44	212.32	0.0060606	0.0009263	0.0051343
-16	26.48	4246.38	212.32	-0.0030120	-0.0000141	-0.0029979
-17	26.40	4271.37	213.57	-0.0030211	0.0058850	-0.0089062
-18	26.40	4272.50	213.63	0.0000000	0.0002646	-0.0002646
-19	26.40	4276.43	213.82	0.0000000	0.0009198	-0.0009198
-20	26.48	4271.10	213.56	0.0030303	-0.0012464	0.0042767
-21	26.32	4278.18	213.91	-0.0060423	0.0016577	-0.0076999
-22	26.08	4271.99	213.60	-0.0091185	-0.0014469	-0.0076717
-23	24.08	4271.72	213.59	-0.0766871	-0.0000632	-0.0766239
-24	24.00	4246.38	212.32	-0.0033223	-0.0059320	0.0026098
-25	22.40	4274.25	213.71	-0.0666667	0.0065632	-0.0732299
-26	21.84	4263.59	213.18	-0.0250000	-0.0024940	-0.0225060
-27	21.60	4273.17	213.66	-0.0109890	0.0022469	-0.0132359
-28	22.24	4260.49	213.02	0.0296296	-0.0029674	0.0325970
-29	21.60	4239.96	212.00	-0.0287770	-0.0048187	-0.0239583
-30	21.36	4250.20	212.51	-0.0111111	0.0024151	-0.0135262
-31	21.68	4218.10	210.91	0.0149813	-0.0075526	0.0225339
-32	21.52	4227.16	211.36	-0.0073801	0.0021479	-0.0095280
-33	21.52	4246.80	212.34	0.0000000	0.0046461	-0.0046461
-34	21.60	4286.30	214.32	0.0037175	0.0093011	-0.0055836
-35	21.28	4285.23	214.26	-0.0148148	-0.0002496	-0.0145652
-36	21.60	4284.19	214.21	0.0150376	-0.0002427	0.0152803
-37	21.28	4288.31	214.42	-0.0148148	0.0009617	-0.0157765
-38	21.20	4272.43	213.62	-0.0037594	-0.0037031	-0.0000563
-39	21.20	4264.53	213.23	0.0000000	-0.0018491	0.0018491
-40	20.80	4216.79	210.84	-0.0188679	-0.0111947	-0.0076733
						-0.6982363

NATION MEDIA GROUP

<u>Estimation Period</u>	<u>Last Price</u>	<u>NSE 20</u>	<u>NSE 20 Adjusted</u>	<u>Actual Returns</u>	<u>Expected Returns</u>	<u>Abnormal Returns</u>
	125.38	5163.87	258.19			
40	126.14	5153.13	257.66	0.0060616	-0.0020798	0.0081414
39	132.58	5170.55	258.53	0.0510544	0.0033805	0.0476739
38	133.71	5169.22	258.46	0.0085232	-0.0002572	0.0087804
37	133.33	5199.38	259.97	-0.0028420	0.0058345	-0.0086765
36	131.44	5229.28	261.46	-0.0141754	0.0057507	-0.0199260
35	136.74	5257.86	262.89	0.0403226	0.0054654	0.0348572
34	139.77	5274.44	263.72	0.0221588	0.0031534	0.0190055
33	144.32	5324.55	266.23	0.0325535	0.0095005	0.0230529
32	138.26	5384.81	269.24	-0.0419900	0.0113174	-0.0533074
31	130.68	5356.24	267.81	-0.0548242	-0.0053057	-0.0495186
30	129.92	5355.02	267.75	-0.0058157	-0.0002278	-0.0055880
29	128.03	5364.72	268.24	-0.0145474	0.0018114	-0.0163588
28	129.55	5336.03	266.80	0.0118722	-0.0053479	0.0172201
27	125.38	5255.42	262.77	-0.0321883	-0.0151067	-0.0170816
26	123.86	5240.39	262.02	-0.0121231	-0.0028599	-0.0092632
25	123.11	5207.23	260.36	-0.0060552	-0.0063278	0.0002725
24	123.11	5184.06	259.20	0.0000000	-0.0044496	0.0044496
23	123.48	5156.53	257.83	0.0030054	-0.0053105	0.0083160
22	122.73	5126.26	256.31	-0.0060739	-0.0058702	-0.0002036
21	121.97	5126.15	256.31	-0.0061925	-0.0000215	-0.0061710
20	121.21	5141.62	257.08	-0.0062310	0.0030179	-0.0092489
19	120.83	5141.29	257.06	-0.0031351	-0.0000642	-0.0030709
18	120.83	5107.23	255.36	0.0000000	-0.0066248	0.0066248
17	120.83	5109.94	255.50	0.0000000	0.0005306	-0.0005306
16	120.83	5070.81	253.54	0.0000000	-0.0076576	0.0076576
15	120.83	5021.82	251.09	0.0000000	-0.0096612	0.0096612
14	120.83	5035.08	251.75	0.0000000	0.0026405	-0.0026405
13	121.21	5010.42	250.52	0.0031449	-0.0048976	0.0080426
12	121.97	5015.29	250.76	0.0062701	0.0009720	0.0052981
11	121.21	4996.14	249.81	-0.0062310	-0.0038183	-0.0024127
10	121.21	4951.73	247.59	0.0000000	-0.0088889	0.0088889
9	120.83	4892.25	244.61	-0.0031351	-0.0120120	0.0088769
8	121.21	4838.08	241.90	0.0031449	-0.0110726	0.0142175
7	122.35	4839.14	241.96	0.0094052	0.0002191	0.0091861
6	121.21	4843.17	242.16	-0.0093175	0.0008328	-0.0101503
5	120.83	4855.36	242.77	-0.0031351	0.0025169	-0.0056520
4	122.73	4835.26	241.76	0.0157246	-0.0041398	0.0198643
3	123.86	4851.29	242.56	0.0092072	0.0033152	0.0058920
2	124.24	4905.77	245.29	0.0030680	0.0112300	-0.0081620
1	124.24	4907.29	245.36	0.0000000	0.0003098	-0.0003098

NATION MEDIA GROUP						
0	123.11	4809.26	240.46	-0.0090953	-0.0199764	0.0108811
-1	123.11	4759.77	237.99	0.0000000	-0.0102906	0.0102906
-2	124.62	4886.98	244.35	0.0122655	0.0267261	-0.0144606
-3	125.76	4959.44	247.97	0.0091478	0.0148272	-0.0056793
-4	126.52	5111.01	255.55	0.0060433	0.0305619	-0.0245187
-5	128.03	5159.32	257.97	0.0119349	0.0094521	0.0024827
-6	128.41	5205.38	260.27	0.0029681	0.0089275	-0.0059595
-7	128.41	5317.34	265.87	0.0000000	0.0215085	-0.0215085
-8	131.44	5354.68	267.73	0.0235963	0.0070223	0.0165740
-9	129.55	5405.38	270.27	-0.0143792	0.0094684	-0.0238475
-10	126.14	5377.60	268.88	-0.0263219	-0.0051393	-0.0211826
-11	121.59	5268.04	263.40	-0.0360710	-0.0203734	-0.0156976
-12	120.83	5142.27	257.11	-0.0062505	-0.0238742	0.0176236
-13	115.15	5072.41	253.62	-0.0470082	-0.0135854	-0.0334228
-14	114.39	4843.75	242.19	-0.0066001	-0.0450792	0.0384791
-15	114.39	4858.47	242.92	0.0000000	0.0030390	-0.0030390
-16	115.15	4909.76	245.49	0.0066439	0.0105568	-0.0039129
-17	114.39	4933.08	246.65	-0.0066001	0.0047497	-0.0113498
-18	115.15	4924.35	246.22	0.0066439	-0.0017697	0.0084136
-19	115.53	4929.78	246.49	0.0033000	0.0011027	0.0021974
-20	115.91	4951.86	247.59	0.0032892	0.0044789	-0.0011897
-21	116.29	4932.52	246.63	0.0032784	-0.0039056	0.0071840
-22	117.42	4958.80	247.94	0.0097171	0.0053279	0.0043892
-23	116.29	4986.06	249.30	-0.0096236	0.0054973	-0.0151209
-24	115.91	4996.08	249.80	-0.0032677	0.0020096	-0.0052773
-25	113.64	4947.54	247.38	-0.0195842	-0.0097156	-0.0098685
-26	114.02	4857.64	242.88	0.0033439	-0.0181706	0.0215145
-27	111.36	4784.00	239.20	-0.0233292	-0.0151596	-0.0081696
-28	107.95	4657.60	232.88	-0.0306214	-0.0264214	-0.0042000
-29	109.09	4651.94	232.60	0.0105604	-0.0012152	0.0117757
-30	109.09	4637.45	231.87	0.0000000	-0.0031148	0.0031148
-31	109.47	4677.47	233.87	0.0034834	0.0086297	-0.0051464
-32	110.61	4724.57	236.23	-0.0104138	0.0100695	0.0003443
-33	110.23	4795.96	239.80	-0.0034355	0.0151104	-0.0185459
-34	113.26	4712.71	235.64	0.0274880	-0.0173584	0.0448463
-35	115.53	4690.72	234.54	0.0200424	-0.0046661	0.0247085
-36	116.29	4576.31	228.82	0.0065784	-0.0243907	0.0309691
-37	119.32	4811.79	240.59	0.0260556	0.0514563	-0.0254008
-38	119.32	4967.88	248.39	0.0000000	0.0324391	-0.0324391
-39	120.83	4912.25	245.61	0.0126550	-0.0111979	0.0238530
-40	120.83	4942.30	247.12	0.0000000	0.0061174	-0.0061174
						0.0112942

SASINI						
<u>Estimation Period</u>	<u>Last Price</u>	<u>NSE 20</u>	<u>NSE 20 Adjusted</u>	<u>Actual Returns</u>	<u>Expected Returns</u>	<u>Abnormal Returns</u>
	16.70	5766.46	288.32			
40	16.75	5798.73	289.94	0.0029940	0.0055962	-0.0026021
39	15.25	5773.29	288.66	-0.0895522	-0.0043872	-0.0851651
38	21.67	5867.03	293.35	0.4209836	0.0162368	0.4047468
37	21.83	5884.26	294.21	0.0073835	0.0029367	0.0044467
36	21.83	5895.18	294.76	0.0000000	0.0018558	-0.0018558
35	21.83	5817.04	290.85	0.0000000	-0.0132549	0.0132549
34	21.83	5710.21	285.51	0.0000000	-0.0183650	0.0183650
33	22.33	5649.99	282.50	0.0229043	-0.0105460	0.0334503
32	22.00	5628.88	281.44	-0.0147783	-0.0037363	-0.0110420
31	22.67	5633.61	281.68	0.0304545	0.0008403	0.0296142
30	22.50	5663.65	283.18	-0.0074989	0.0053323	-0.0128312
29	22.33	5739.05	286.95	-0.0075556	0.0133130	-0.0208685
28	23.33	5774.27	288.71	0.0447828	0.0061369	0.0386459
27	24.00	5870.68	293.53	0.0287184	0.0166965	0.0120219
26	23.83	5949.71	297.49	-0.0070833	0.0134618	-0.0205451
25	23.67	5961.61	298.08	-0.0067142	0.0020001	-0.0087143
24	24.00	6010.17	300.51	0.0139417	0.0081455	0.0057962
23	24.17	6016.47	300.82	0.0070833	0.0010482	0.0060351
22	23.67	6060.21	303.01	-0.0206868	0.0072700	-0.0279568
21	24.17	6027.17	301.36	0.0211238	-0.0054520	0.0265757
20	24.33	6025.41	301.27	0.0066198	-0.0002920	0.0069118
19	24.00	6030.83	301.54	-0.0135635	0.0008995	-0.0144630
18	23.33	6041.42	302.07	-0.0279167	0.0017560	-0.0296726
17	25.67	6066.66	303.33	0.1003000	0.0041778	0.0961222
16	24.83	6125.28	306.26	-0.0327230	0.0096626	-0.0423857
15	24.67	6161.46	308.07	-0.0064438	0.0059067	-0.0123505
14	24.00	6117.35	305.87	-0.0271585	-0.0071590	-0.0199995
13	23.33	6085.59	304.28	-0.0279167	-0.0051918	-0.0227249
12	22.33	6026.51	301.33	-0.0428633	-0.0097082	-0.0331551
11	23.17	5962.46	298.12	0.0376176	-0.0106280	0.0482456
10	24.00	5895.68	294.78	0.0358222	-0.0112001	0.0470223
9	22.50	5811.58	290.58	-0.0625000	-0.0142647	-0.0482353
8	23.33	5679.79	283.99	0.0368889	-0.0226771	0.0595660
7	23.50	5645.65	282.28	0.0072868	-0.0060108	0.0132975
6	23.00	5560.44	278.02	-0.0212766	-0.0150930	-0.0061836
5	23.33	5522.81	276.14	0.0143478	-0.0067675	0.0211153
4	21.83	5487.73	274.39	-0.0642949	-0.0063518	-0.0579431
3	23.67	5509.97	275.50	0.0842877	0.0040527	0.0802350
2	24.33	5525.40	276.27	0.0278834	0.0028004	0.0250830
1	26.67	5572.10	278.61	0.0961776	0.0084519	0.0877257

SASINI						
0	29.50	5624.84	281.24	0.1061117	0.0094650	0.0966467
-1	25.17	5589.64	279.48	-0.1467797	-0.0062580	-0.1405217
-2	23.00	5582.42	279.12	-0.0862137	-0.0012917	-0.0849221
-3	21.00	5525.38	276.27	-0.0869565	-0.0102178	-0.0767387
-4	21.00	5516.98	275.85	0.0000000	-0.0015203	0.0015203
-5	20.67	5477.86	273.89	-0.0157143	-0.0070908	-0.0086234
-6	20.67	5429.02	271.45	0.0000000	-0.0089159	0.0089159
-7	20.33	5417.50	270.88	-0.0164490	-0.0021219	-0.0143270
-8	20.33	5490.20	274.51	0.0000000	0.0134195	-0.0134195
-9	20.67	5553.08	277.65	0.0167241	0.0114531	0.0052709
-10	21.00	5615.20	280.76	0.0159652	0.0111866	0.0047786
-11	20.83	5656.67	282.83	-0.0080952	0.0073853	-0.0154805
-12	21.17	5762.20	288.11	0.0163226	0.0186559	-0.0023332
-13	21.17	5791.00	289.55	0.0000000	0.0049981	-0.0049981
-14	20.83	5752.57	287.63	-0.0160605	-0.0066362	-0.0094243
-15	21.50	5676.52	283.83	0.0321651	-0.0132202	0.0453853
-16	21.00	5665.07	283.25	-0.0232558	-0.0020171	-0.0212387
-17	21.67	5667.30	283.37	0.0319048	0.0003936	0.0315111
-18	21.17	5676.05	283.80	-0.0230734	0.0015439	-0.0246173
-19	20.50	5642.04	282.10	-0.0316486	-0.0059918	-0.0256567
-20	19.83	5602.40	280.12	-0.0326829	-0.0070258	-0.0256571
-21	19.33	5603.03	280.15	-0.0252143	0.0001125	-0.0253268
-22	19.50	5585.81	279.29	0.0087946	-0.0030733	0.0118680
-23	19.17	5608.25	280.41	-0.0169231	0.0040173	-0.0209404
-24	19.50	5654.46	282.72	0.0172144	0.0082396	0.0089748
-25	19.17	5654.46	282.72	-0.0169231	0.0000000	-0.0169231
-26	20.00	5656.18	282.81	0.0432968	0.0003042	0.0429926
-27	22.17	5638.00	281.90	0.1085000	-0.0032142	0.1117142
-28	24.33	5604.48	280.22	0.0974290	-0.0059454	0.1033743
-29	22.83	5555.23	277.76	-0.0616523	-0.0087876	-0.0528647
-30	20.83	5515.34	275.77	-0.0876040	-0.0071806	-0.0804234
-31	19.00	5529.50	276.48	-0.0878541	0.0025674	-0.0904214
-32	17.33	5403.96	270.20	-0.0878947	-0.0227037	-0.0651911
-33	15.83	5314.36	265.72	-0.0865551	-0.0165804	-0.0699747
-34	14.42	5177.90	258.90	-0.0890714	-0.0256776	-0.0633938
-35	13.25	5106.65	255.33	-0.0811373	-0.0137604	-0.0673769
-36	12.25	5061.77	253.09	-0.0754717	-0.0087885	-0.0666832
-37	11.25	4963.22	248.16	-0.0816327	-0.0194695	-0.0621632
-38	10.58	4910.60	245.53	-0.0595556	-0.0106020	-0.0489536
-39	9.67	4864.02	243.20	-0.0860113	-0.0094856	-0.0765257
-40	9.58	4875.58	243.78	-0.0093071	0.0023766	-0.0116838
						-0.2142685