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SHAREHOLDERS MARKET WEALTH EFFECT AROUND STOCK SPLIT ANNOUNCEMENTS –AN EMPIRICAL SECTORAL EVIDENCE FROM INDIAN STOCK MARKET

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ABSTRACT

Although stock splits seem to be a purely cosmetic event, there exists ample empirical evidence from India, that stock splits are associated with abnormal returns on both the announcement and the execution day, brings change in the shareholders holding value. This paper investigates the market reaction to stock splits using a set of Indian firms. There are several theories that have been advanced to explain why companies split their stock. In previous studies, it is evident that stock returns are significantly affected negatively or positively around split announcement dates. Informed investors market wealth is affected to a greater extent around this event. The purpose of this study is to test whether the investor can make an above normal return by relying on public information impounded in a stock split announcement. Using risk adjusted event study methodology, this study tests "how" and "when" public announcements of forward stock splits affect stock price. Stock split sample observations for the announcement and the corresponding S&P CNX IT SECTOR INDEX were analyzed using standard risk adjusted event study methodology. The event study methodology was employed in the determination of the effects of the split. Abnormal returns were calculated by use of the market model and t-tests are conducted to test the significance. We find that significant positive returns after the announcement date do not persist after the actual date of the stock split. The study found out that the Indian market reacts positively to stock splits, as shown by a general increase in volumes of shares traded around the stock split. There is also an increase in trading activity after the stock split as compared to that before the stock split. This is consistent with the signaling hypothesis, which states that managers of companies split their stock to act as a means of passing information to stock holders and potential investors. The study equally found out that on the split date and on days around the stock split, there was a positive average abnormal return that was very significant at 0.05% significance level. Results of the cumulative abnormal return indicated that there is a positive cumulative abnormal return across the different event windows.

KEYWORDS

Stock Splits, Return, Value, Market Reaction.

INTRODUCTION

Stock splits are a puzzling corporate phenomenon. Stock split announcements have always been very common phenomena among firms and continue to be one of the least understood topics in finance. Stock splits are corporate actions by which a company lowers the face value of its stocks, thereby increasing the number of shares owned by each shareholder. Such action increases the number of outstanding shares without providing any additional cash inflows to the company but there is no change in the shareholders claims on the assets of the firm. A stock split announcement increases the number of shares of a company while decreasing the price per share. The two for one split is most common, for example a company with 100 shares at `10 per share will issue 100 additional shares bringing the total to 200 shares theoretically dropping the stock price to `5 per share. A stock split usually takes place after an increase in the price of the stock, and it carries a positive stock price reaction. This phenomenon has not yet been fully understood, regardless the numerous studies in the field. Stock splits occur frequently; less often firms consolidate their outstanding common shares in a reverse stock split. It is widely believed that stock splits are purely cosmetic events because the corporation's cash flows are unaffected, each shareholder retains his proportionate ownership and the claims of other classes of security holders are unaltered. If stock splits were purely cosmetic it would be surprising to find them associated with real effects. Yet, real effects are associated both with the announcement of the split and with its occurrence – splits are associated with statistically significant stock price revaluations and unusual volumes of trade and return variances around the announcement dates and, even more surprisingly, around the execution dates. These effects have been reported in a number of international studies. These results imply that if managers could increase share prices by splitting their firm's stock, both undervalued and overvalued firms would choose to split their shares, thus eliminating the informational (favorable) content of the decision. However, as the persisting positive market reaction to stock splits indicates, splits must credibly signal such positive company specific information. Since the publication of the classic paper by Fama, Fisher, Jensen and Roll (1969), the signaling hypothesis and the trading range hypothesis have emerged in the finance literature as the leading explanations of stock splits. The Nordic finance literature contains a rather limited number of studies related to shareholder wealth effects of stock distributions such as stock dividends and stock splits. One of the few studies of stock splits on Nordic data is the Liljeblom (1989) doctoral thesis which is conducted on data for the Stockholm Stock Exchange during the period 1977–85. Therefore, I came to the conclusion that there is a need for a more comprehensive study of Finnish and Swedish stock splits using more recent data. More specifically, for the Finnish markets there is no previous research on the possible announcement or execution effect of stock splits. Similarly, there is no previous research on a possible volatility shift caused by stock splits. Only liquidity effects of stock splits have been studied but with a minimal sample. For the Swedish markets, the announcement effect of stock splits has been studied but not the execution effect. Also the volatility shift following stock splits has been studied for the Swedish markets but not the liquidity effects of stock splits.

LITERATURE REVIEW

Fama defined market efficiency in terms of how quick the stock market reacts to the information and suggested three kinds of market efficiency: Weak form, semi-strong and strong form efficiency. FFJR (1969) examined the behavior of cumulative abnormal returns (CARs) surrounding the execution dates of stock splits. Bar-Yosef & Brown (1977) discovered that the measured excess returns caused by stock splits were in fact due to a temporary increase in the systematic risk (beta coefficient) of the stock. In the following year, however, Charest (1978) documented that some excess returns did remain regardless of how risk was measured. Subsequent literature links stock splits more directly to earnings information. Lakonishok & Lev (1987) and Asquith et al. (1989) document significant earnings increases before and after split announcements. Liljeblom (1989) confirms the presence of stock split announcement effects for stocks traded on the Stockholm Stock Exchange. Doran & Nachtmann (1988) find that analysts' pre-split earnings forecasts underestimate post-split earnings. Klein & Peterson (1989) find that analysts revise earnings forecasts upward following split announcements. McNichols & Dravid (1990) and Asquith et al. (1989) document a positive relationship between split announcement period abnormal returns and earnings forecast errors. Klein & Peterson (1989) document a positive relationship

between split announcement period abnormal returns and analysts' earnings forecast revisions. Foster & Scribner (1991) find announcement effects after controlling for beta non-stationarities. Lamoureux & Poon (1987) argue that split announcement effects are due to the increase in the tax-option value of the split.

DATA DESCRIPTION

To test the effect of stock split announcement on shareholders market wealth, the companies that went for stock split in last 10 years (Announcement Date Between Dec 1999 to Dec 2009 has been taken from a sample frame of current constituents of CNX IT. The reason behind selecting CNX IT is that, Information Technology (IT) industry has played a major role in the Indian economy during the last few years. A number of large, profitable Indian companies today belong to the IT sector and a great deal of investment interest is now focused on the IT sector. CNX IT Index stocks represent about 80.33% of the total market capitalization of the IT sector as on March 31, 2009. Companies in this index are those that have more than 50% of their turnover from IT related activities like software development, hardware manufacture, vending, support and maintenance. The Base Value of the index is being revised from 1000 to 100 w.e.f. 28 May 2004.

The initial sample consists of all stock splits by firms listed on the S&P CNXIT official market segment of National Stock Exchange (NSE), from 1999 through 2009. Of these 20 companies 14 companies have announced and executed the stock splits. 4 cases are excluded because the split ex-date coincided with the ex-date of another corporate event of the same stock such as a stock dividend or a rights issue. Three other events are excluded because prices were unavailable, leaving a final sample of 7 splits (ex-dates). Announcement dates could be obtained for 7 splits by searching the National stock exchange official website and economic times of India daily for the first public announcement. Daily stock returns are calculated from the daily stock price file of the National stock exchange.

PRICE AND RETURN REACTION ANALYSIS

The price reaction to Indian IT companies' stock splits is examined by applying the standard event study methodology as described in Brown and Warner (1985). Market-and-risk adjusted simple daily returns are calculated as follows:

$$ABi\ ,t\ =\ Ri\ ,t\ -\ \alpha i\ -\ \beta iRm\ ,t,$$

Where,

ARi,t is the abormal return for firm i at day t,

Ri,t denotes the return on security i at day t,

Rm,t is the return on the CNXIT which is a value-weighted index of all NSE listed shares, and

i aˆ and i bˆ are estimates from the market model regression.

Denoting the event date as day 0, regression coefficients are estimated over a period of 200 days, from day -230 to day -31.

According to the trade-to-trade approach, stock returns are calculated between adjacent trades. The corresponding market return is measured over the same calendar period to match the stock return. The market model parameters to calculate abnormal trade-to-trade returns are estimated from the trade-to-trade regression as described in Dimson/Marsh (1983):

$$\frac{R_{i,n_t}}{\sqrt{n_t}} = a_i \frac{1}{\sqrt{n_t}} + \beta_i \frac{R_{mi,n_t}}{\sqrt{n_t}} + u_{i,t},$$

Where *i nt R* , is the return on security i over the period between two recorded trades, *m nt R* , is the market return over the same period and *nt* is the length of the return measurement interval in days, ending at day *t*.

Similar to eq. (1) abnormal trade-to-trade returns are obtained as follows:

$$AR_{i,n_t} = R_{i,n_t} - \alpha_i - \beta iR_{mi,n_t},$$

To determine statistical significance, three test statistics are computed. The first one is the t-test recommended by Brown and Warner (1985) in the presence of event clustering to take into account cross-sectional correlation. The second one is the standardized cross-sectional test of Boehmer, Musumeci and Poulsen (1991), henceforth denoted as BMP-test, which controls for event induced increases in variance, and the third one is the nonparametric Wilcoxon signed rank test. Details of the test statistics are provided in the appendix. To examine the change in variance we employ two different methods. The first one follows Koski (1998) in estimating pre- and postsplit variance for each security from time series return data. A t-test is computed to test the hypothesis that the paired differences have mean zero. The second one is the nonparametric test initially proposed by Ohlson and Penman (1985) and also used by Dravid (1987), Dubofsky (1991) and Koski (1998).

The t-test statistic proposed by Brown and Warner (1985) to take cross sectional correlation into account is calculated in the following way:

$$\mathrm{T}t = \frac{\overline{ARt}}{s\left(\overline{ARt}\right)}$$

HOLDING PERIOD RETURN

Holding Period Return was calculated for all the companies as well as for the S&P CNX IT SECTOR INDEX on the event period days (-180 to +30). HPR was obtained from the following formula:

Current Daily Return = (current day close price – previous day close price) / prev. Day close price

VALUATION EFFECTS OF STOCK SPLIT ANNOUNCEMENTS

The theory of stock splits suggests that the split announcement is interpreted as a positive signal about the future prospects and dividends of the company. To ascertain the existence of such positive announcement effect on the Finnish and Swedish markets, standard event-time methodology is employed. For the days surrounding an event excess returns are estimated using three different models. The most widely used of these models is the market model. An estimate of the excess return for the common stock of the firm engaging in event i on day t is the abnormal return:

$$ARi\ ,t\ =\ R_{i,t}\ -\ (a_i\ +\ \beta_i R_{mt})$$

Where,

Rit = The rate of return on day t on the common stock of the firm engaging in event i

Rmt = The rate of return on the market value-weighted market index on day t17 αi and βi, = The Ordinary Least Squares (OLS) estimates of the market model from a regression estimated over a 200 day estimation period, beginning 250 days prior to the split announcement, used for each announcement.

EMPIRICAL RESULTS

ABNORMAL RETURNS AROUND THE ANNOUNCEMENT OF STOCK SPLIT

The results of the event study concerning the announcement dates are presented in table 2 and 3. Exactly at the announcement date the abnormal return is very low and insignificant, but the following day exhibits an abnormal return of 0.52% which is significant according to all test statistics, partly even at the 1% level. Using trade-to-trade returns the abnormal return on day +1 is even higher yielding 0.56 %. Moreover, the BMP- and Wilcoxon test statistics indicate that the results are neither driven by event-induced variance nor by outliers. Abnormal returns remain positive and partly significant up to four days after the

announcement. In the interval from day –2 to day +3, the cumulative abnormal return is 0.74 % from simple daily returns. Thus, there clearly is an announcement effect associated with stock splits in Indian IT index.

But comparable figures reported form the other developed markets are usually much higher. In most cases the abnormal returns in a small event window around the split announcement exceed 2 % (e.g. Ikenberry, Rankine, and Stice (1996)); Pilotte and Manuel (1996)), often even 4 % (e.g. Grinblatt, Masulis, and Titman (1984); Arbel and Swanson (1993).

Also, market reaction to stock dividends is much more pronounced than to stock splits both in the U.S. and in India. Gebhardt/Entrup/Heiden (1999) for example reports an abnormal return of 2.47 % on the announcement day of a Indian stock dividend. The cumulative abnormal return in the event window [-2; +3] they find reaches even 3.22 %. This finding is expected from a signaling hypothesis point of view because of the institutional restrictions to use stock splits to signal information in India. In this findings Stock split results are in line with those of Rankine and Stice (1997), who show that most of the usually observed market reaction to stock splits stems from wrongly classified stock dividends. They interpret this result as (indirectly) supportive for the signaling hypothesis proposed by Grinblatt, Masulis and Titman (1983) which is based on the retained earnings constraint. The abnormal return to a stock split announcement is much lower in absence of signaling costs in form of diminished retained earnings in India as in the U.S., but it is still significant.

ABNORMAL RETURNS AROUND THE EXECUTION DAY

Table 4 and 5 report abnormal returns in the event window [-10; +10] around the ex-day of Indian stock splits. Using simple daily returns the ex-day abnormal return of 0.25 % fails to be significant, but employing trade-to-trade returns yields an abnormal return of 0.5 %, significant at the 10% level, according to the BMP-test even at the 5% level. Regardless of the return calculation method positive and partly significant abnormal returns can be observed on the four days preceding the split execution. The cumulative abnormal return from day –2 to +3 ranges from 0.83 % to 1.16 % depending on the return measurement. Significance is indicated by all statistical tests, therefore the results cannot be attributed to either event induced variance or outliers.

Like the announcement effect, the ex-day effect is much less pronounced in India compared to the U.S. This can be due to the absence of a bid-ask-effect which is at least partly held responsible for the ex-day market reaction in the India. Also, both return measurements employed yield essentially the same results. This indicates that the abnormal returns are not elicited by an inappropriate treatment of thin trading. The abnormal returns are real and could have been earned by an investor.

The existence of an ex-day effect is not confined to the short period from 1999 to 2009, but is also observed in the years 1999 to 2009, as shown in table 3. Further analysis reveals that the similarity between simple daily returns and trade-to-trade returns is confined only to short event windows. If longer event periods are studied not only the return generating model matters but also the method of return calculation. The cumulative abnormal return over the extended event window [-30; +30] differs by almost 4% depending on the method employed. This result is not surprising and related to the well known joint hypothesis problem in market efficiency tests. As Dimson and Marsh (1986) show this problem is only neglectable in event studies focusing on short event periods. Therefore our findings confirm the results of Dimson and Marsh (1986) but raise general doubts on results based on daily cumulative abnormal returns over relatively long event periods when no sensitivity tests concerning the influence of the return generating model and thin trading are conducted. Examining the development of the ex-day effect throughout the years it shows signs of decrease. In particular no abnormal returns can be detected in the split sub sample of the year 2009 anymore. This can be seen as the result of a learning effect of the market to overcome inefficient stock market valuation. Thus, market inefficiency as an explanation of the ex-day effect cannot be ruled out.

HOLDING PERIOD RETURN AND VARIANCE ANALYSIS OF STOCK SPLIT ANNOUNCEMENT AROUND +5 AND -5 SHORT RUN AND +50 -50 DAYS LONG RUN HOLDING WINDOW

Shareholders holding the stock around the announcement and execution date of +50 and -50 window have experienced significant portfolio value change individually as compared to the index value. It is evident that HPR 0.42 with variance of 2.5689. There was a significant persistent value change in the short run ±5 as compared to the long run window of ± 50 days.

SHAREHOLDERS VALUATION EFFECTS OF STOCK SPLIT EXECUTION DATES

In an efficient market, traders are unable to earn abnormal profits by trading on the public announcement of a stock split. However, an article by Charest (1978) first suggested that traders could have earned an excess return of approximately 1.5% by purchasing shares at the end of the announcement month of a stock split and holding then for three months. A paper by Woolridge (1983) documented a related anomaly on the ex-dates of securities that predominantly pay small stock dividends. He found that share prices increase, on average, approximately 1% on the ex-dates of these stock dividends. Other evidence includes the paper by Choi & Strong (1983) on when-issued shares. For stock splits, when-issued split shares are sometimes traded between the announcement and the ex-date. These contracts entitle the holder to receive the newly distributed shares when they are issued. Choi & Strong found that the split factor adjusted prices of when-issued shares were about 1% above the price of the unsplit shares. This difference is of the same magnitude as the ex-date returns of stock splits. The event study of stock split ex-dates is conducted using the post-split period to estimate the market model (1). The 200 days starting 51 days after the ex-date and ending 250 days following the ex-date are used to estimate the market model parameters because it is assumed that by then the systematic risk of the company has stabilized on the new post-split level. The portfolio error variance is calculated in a similar way to that of the announcement date excess returns, except that the portfolio event window for the variance is the +1 through +50 days following the ex-date because of a possible shift in volatility.

CONCLUSION

Although stock splits seem to be a purely cosmetic event, there exists ample empirical evidence from the United States that stock splits are associated with abnormal returns on both the announcement and the execution day, and additionally with an increase in variance after the ex-day. Using a data set of Indian stock splits I show that similar effects occur in the Indian capital market as well. Thin trading is identified as a potential source of measurement errors and its effect on event study results is examined. Using trade-to-trade returns increases the significance of the market reaction as predicted by Maynes and Rumsey (2009) but the difference between return measurement methods is relatively small in short event periods. This changes dramatically when longer event periods are considered. Then the already existing difference between return generating models is magnified by adjusting for thin trading.

Institutional differences between India and the U.S. allow disentangling the three main hypotheses on the announcement effect - signaling, liquidity and neglected firm hypothesis – to gain further insights into their relative explanation power. Consistent with the argued absence of signaling content in Indian stock splits market reaction around the announcement day is much lower than in the U.S. Despite a substantial increase in liquidity after the split no support for the liquidity hypothesis can be found. Improved liquidity seems not to be valued by market participants in India. The theoretical explanation of the announcement effect which is predominantly supported by the Indian evidence is the neglected firm hypothesis. Still, the unfavorable evidence on the liquidity hypothesis does not necessarily mean that there is no link between equity value and liquidity. Recent work by Dennis and Strickland (1998) suggests that it is not liquidity per se but liquidity conditional on changes in institutional ownership around stock splits which explains abnormal announcement returns. This indicates a possible direction for further research into the nature and causes of market reaction to stock splits.

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TABLES

TABLE 1: MCAR (PERIOD) SHOWS THE EVENT WINDOW OVER WHICH THE MEAN CUMULATIVE ABNORMAL RETURN IS CALCULATED.
MCAR is the Mean Cumulative Abnormal Return obtained for the specified event days. The first t-value is based on the time-series standard deviation of the mean daily abnormal returns. The second t-statistics is based on the cross-sectional standard deviation of the stock specific daily abnormal returns. T-Prob indicates the significance level of the t-value.
(one-sided test). *Significant at 5% level, **Significant at 1% level. Sample size is 60.

STATISTICAL TESTS OF THE ANNOUNCEMENT EFFECT AT THE S&PCNX IT SECTORAL INDICES OF NATIONAL STOCK EXCHANGE

MCAR(Period)	MCAR	t-value time series	t-prob	t-value cross-sectional	t-prob
Market model					
MCAR(0)	0,03287	4.0125	0.0000**	3,64849	0.0003**
MCAR(–1,+1)	0,04819	4.2319	0.0000**	5,95201	0.0000**
MCAR(–5,+5)	0,05125	2.2501	0.0077**	10,4257	0.0000**
MCAR(–10,+10)	0,05285	1.0816	0.0336	8,8461	0.0000

TABLE 2: ABNORMAL RETURNS AROUND THE ANNOUNCEMENT OF STOCK SPLITS BASED ON SIMPLE DAILY RETURNS 1999-2009
Mean abnormal returns (AR) and cumulative abnormal returns (CAR) around the announcement date of a sample of 7 stock splits, from 1999 to 2009. Abnormal returns are calculated using an OLS market model regression. Test-statistics used are the t-test adjusted for cross-sectional correlation as proposed by Brown and Warner (1985), denoted t(BW), the t-test of Boehmer, Musumeci and Poulsen (1991), denoted t (BMP), and the Wilcoxon signed rank test.
Significance levels: *** 1 % level, ** 5 % level, * 10 % level.

I. EVENT PERIOD ABNORMAL RETURNS

Event date	AR in %	t(BW)	Percentage of negative AR	t(BMP)	p-value Wilcoxon-Test
-10	-0.02	-0.09	48.72	0.29	0.46
-9	0.5	2.92***	41.03	3.07***	0.01
-8	0.17	1.02	44.87	1.73*	0.27
-7	0.19	1.11	48.72	1.32	0.32
-6	-0.04	-0.23	58.97	0.31	0.34
-5	-0.02	-0.13	51.28	-0.19	0.8
-4	0.11	0.67	54.55	0.37	0.77
-3	0.06	0.38	49.35	0.85	0.76
-2	0.02	0.11	46.15	0.63	0.75
-1	-0.15	-0.9	57.69	-1.15	0.23
0	0.01	0.08	46.15	-0.19	0.8
1	0.52	2.79***	47.44	2.57**	0.1
2	0.19	1.14	43.59	1.66	0.23
3	0.2	1.15	51.28	1.55	0.48
4	0.31	1.81*	42.31	1.82*	0.11
5	-0.22	-1.29	57.69	-0.84	0.17
6	-0.14	-0.85	51.28	-0.5	0.41
7	-0.07	-0.4	57.69	0.02	0.51
8	-0.09	-0.51	51.28	0.22	0.43
9	0.18	1.06	46.15	0.86	0.27
10	0.09	0.51	50	0.72	0.91

II. CUMULATIVE ABNORMAL RETURNS (CAR)

Event Window	CAR	t(BW)	Percentage of negative CAR	t(BMP)	p-value Wilcoxon-test
Day –1 to day +1	0.33	1.14	51.28	1.16	0.51
Day –2 to day +2	0.55	1.44	51.28	1.90*	0.23
Day –2 to day +3	0.74	1.78*	46.15	2.15**	0.12

TABLE 3: ABNORMAL RETURNS AROUND THE EXECUTION OF INDIAN STOCK SPLITS BASED ON SIMPLE DAILY RETURNS 1999-2009
Mean abnormal returns (AR) and cumulative abnormal returns (CAR) around the execution date of a sample of Indian stock splits, from 1999 to 2009. Abnormal returns are calculated using an OLS market model regression. Test-statistics used are the t-test adjusted for cross-sectional correlation as proposed by Brown and Warner (1985), denoted t(BW), the t-test of Boehmer, Musumeci and Poulsen 1991), denoted t (BMP), and the Wilcoxon signed rank test.
Significance levels: *** 1 % level, ** 5 % level, * 10 % level.

I. EVENT PERIOD ABNORMAL RETURNS

Event date	AR in %	t(BW)	Percentage of negative AR	t(BMP)	p-value Wilcoxon-Test
-10	0.1	0.57	53.01	0.72	0.96
-9	-0.17	-1.01	62.65	-1.37	0.06
-8	-0.16	-0.94	57.83	-0.33	0.2
-7	-0.11	-0.67	61.45	-0.17	0.26
-6	0.06	0.35	49.4	0.56	0.57
-5	-0.06	-0.33	55.42	-0.56	0.19
-4	0.26	1.52	49.4	0.95	0.48
-3	0.07	0.38	48.19	0.57	0.72
-2	0.38	2.21**	42.17	2.06**	0.08
-1	0.28	1.62	39.76	1.84*	0.2
0	0.25	1.44	43.37	1	0.29
1	0.04	0.21	61.45	0.87	0.38
2	-0.13	-0.78	59.04	-0.87	0.07
3	0.02	0.13	45.78	0.53	0.52
4	-0.17	-1	51.81	-0.63	0.71
5	0.05	0.29	55.42	-0.72	0.31
6	-0.06	-0.33	60.24	-0.92	0.04
7	-0.19	-1.1	68.67	-1.3	0
8	-0.01	-0.04	61.73	-0.52	0.25
9	0.08	0.49	53.09	0.39	1
10	0.42	2.46**	54.32	1	0.77

II. CUMULATIVE ABNORMAL RETURNS (CAR)

Event Window	CAR	t(BW)	Percentage of	t(BMP)	p-value Wilcoxon-test
Day –1 to day +1	0.56	1.89*	45.78	1.99*	0.23
Day –2 to day +2	0.81	2.10**	43.37	2.01**	0.08
Day –2 to day +3	0.83	1.97*	39.76	2.10**	0.04

TABLE 4: ABNORMAL RETURNS AROUND THE ANNOUNCEMENT OF INDIAN STOCK SPLITS BASED ON TRADE-TO-TRADE RETURNS 1999-2009

Abnormal and cumulative abnormal returns around the announcement date of a sample of indian stock splits, from 1999 to 2009. Abnormal returns are calculated using the trade-to-trade regression of Dimson and Marsh (1983). Test-statistics used are the t-test adjusted for cross-sectional correlation as proposed by Brown and Warner (1985), denoted t(BW), the t-test of Boehmer, Musumeci and Poulsen (1991), denoted t (BMP), and the Wilcoxon signed rank test. Significance levels: *** 1 % level, ** 5 % level, * 10 % level.

I. EVENT PERIOD ABNORMAL RETURNS

Event date	AR in %	t(BW)	Percentage of negative AR	t(BMP)	p-value Wilcoxon-Test
-10	-0.03	-0.16	43.75	0.41	0.42
-9	0.49	2.23**	39.39	2.34**	0.02
-8	0.43	1.98*	43.08	1.52	0.34
-7	0.26	1.17	47.54	1.27	0.36
-6	-0.05	-0.21	53.85	0.3	0.66
-5	-0.02	-0.09	50	-0.08	0.99
-4	-0.12	-0.57	57.81	-0.26	0.45
-3	0.29	1.32	48.48	1.41	0.51
-2	-0.06	-0.28	48.48	0.41	0.93
-1	-0.16	-0.72	56.34	-1.33	0.23
0	-0.06	-0.29	47.06	-0.55	0.98
1	0.56	2.58**	40.32	2.68***	0.03
2	0.25	1.13	41.54	1.49	0.34
3	0.27	1.24	50.77	1.55	0.61
4	0.56	2.56**	40.63	1.97	0.06
5	-0.2	-0.91	58.46	-0.6	0.18
6	-0.07	-0.3	55.38	-0.62	0.31
7	-0.06	-0.26	55.56	-0.04	0.45
8	-0.13	-0.6	53.85	-0.48	0.27
9	-0.13	-0.59	46.27	1.22	0.29
10	-0.06	-0.28	53.85	-0.05	0.56

II. CUMULATIVE ABNORMAL RETURNS (CAR)

Event Window	CAR	t(BW)	Percentage of	t(BMP)	p-value Wilcoxon-test
Day –1 to day +1	0.34	0.9	48.39	1.18	0.28
Day –2 to day +2	0.53	1.08	50.77	1.79*	0.19
Day –2 to day +3	0.8	1.49	47.69	1.86*	0.22

TABLE 5: ABNORMAL RETURNS AROUND THE EXECUTION OF INDIAN STOCK SPLITS BASED ON TRADE-TO-TRADE-RETURNS

Abnormal and cumulative abnormal returns around the announcement date of a sample of Indian stock splits, from 1999 to 2009. Abnormal returns are calculated using the trade-to-trade regression of Dimson and Marsh (1983). Test-statistics used are the t-test adjusted for cross-sectional correlation as proposed by Brown and Warner (1985), denoted t(BW), the t-test of Boehmer, Musumeci and Poulsen (1991), denoted t (BMP), and the Wilcoxon signed rank test. Significance levels: *** 1 % level, ** 5 % level, * 10 % level.

I. EVENT PERIOD ABNORMAL RETURNS

Event date	AR in %	t(BW)	Percentage of negative AR	t(BMP)	p-value Wilcoxon-Test
-10	0.18	0.73	49.28	1.29	0.62
-9	-0.17	-0.71	58.21	-1.07	0.14
-8	-0.23	-0.94	60.87	-0.24	0.14
-7	-0.3	-1.24	59.09	-1.09	0.19
-6	0.19	0.78	40.91	1.52	0.26
-5	-0.18	-0.73	57.58	-1.17	0.08
-4	0.15	0.62	45.71	0.97	0.5
-3	0.07	0.3	44.29	0.78	0.67
-2	0.4	1.64	38.24	1.88*	0.06
-1	0.45	1.84*	38.24	2.31**	0.14
0	0.5	2.07**	38.03	1.69*	0.08
1	-0.04	-0.17	61.11	-0.05	0.31
2	-0.06	-0.24	57.14	-0.38	0.1
3	-0.09	-0.36	46.38	-0.19	0.75
4	-0.13	-0.54	52.78	0.01	0.93
5	-0.12	-0.51	55.56	-1.05	0.23
6	-0.2	-0.8	63.38	-1.5	0.01
7	-0.27	-1.09	66.18	-0.89	0.02
8	0.51	2.10**	57.53	-0.93	0.18
9	-0.09	-0.36	56	0.13	0.76
10	0.17	0.72	52.94	0.45	0.73

II. CUMULATIVE ABNORMAL RETURNS (CAR)

Event Window	CAR	t(BW)	Percentage of	t(BMP)	p-value Wilcoxon-test
Day –1 to day +1	0.91	2.15**	45.83	2.07**	0.15
Day –2 to day +2	1.25	2.29**	42.86	1.89*	0.12
Day –2 to day +3	1.16	1.95*	39.13	1.82*	0.06

TABLE 6: HOLDING PERIOD RETURN AND VARIANCE ANALYSIS OF STOCK SPLIT ANNOUNCEMENT AROUND +50 -50 DAYS HOLDING WINDOW

Symbol	HPR	HPR (Variance)
HCL-INSYS	0.04105	3.256
HCLTECH	0.03125	4.2689
HEXAWARE	0.04215	2.5689
INFOSYSTCH	0.03225	2.3658
MASTEK	0.03805	1.2569
POLARIS	0.01325	2.3568
SATYAMCOMP	0.02405	0.23658

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