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Study of Behaviour of Price, Return, Volume and Trading Activity around the Stock Dividends (Information content in Stock dividend)

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Abstract

Corporate actions can signal good news to the investor or can be fictitious corporate action in order to attract attention of investors, analyst and media. Stock dividends do have a signalling impact and generally it is perceived as a positive signal. This study focuses on behaviour of price, return, volume and trading activity around the stock dividends, impact of stock dividend size and BSE categorization on the variables. Findings are suggestive that stock dividends announcement has no impact on Price and trades. Volume of shares increases before the event date and there is a decrease immediately after the event day. Returns on shares are statistically different pre and post event and returns are higher in the pre-stock dividend period. There is a permanent increase in shareholders wealth (share price) and abnormal returns on the event day is around 3% and majority of the companies reported positive abnormal return.

Keywords: Abnormal Returns, Bonus Shares, BSE Categorization, Stock Dividend

1. Introduction

Stock dividends theoretically should have no impact on company financial position, production efficiency, financial structure efficiency largely remain the same, pro-rata ownership of the original shareholder also remain unchanged[16].

Stock dividend is a process of increasing liquidity and expanding the shareholder base, it is process of offering free share to the shareholder. Empirical evidence suggest that market reacts positively to announcements of stock dividends and splits and one common objective that these two events achieve is to increase tradability and get the share in a preferred trading range[15].

Oldest stock exchange of India BSE[4] categorizes shares into 'A', 'B', 'T' and 'Z'. Shares falling under various categories follow ascoring mechanism which includes parameters like average free float, average turnover, corporate governance, compliance monitoring etc. Stocks in category "T" represents companies which are on surveillance and settled on daily bases, category "Z" represents companies which have not complied with Listing norms.

As there is difference in trading volume and risk profile between different categories of shares, it is possible that stock dividend news may have different impact on different categorization.

The study also focuses if the size of stock dividend has materialistic impact on variables like share price, return, volume and trades.

The study is extended to measure the Price behaviour (Abnormal returns) around the event date and number of days it takes for the price patterns to approaches normality.

The reason for issuing stock dividends have been discussed by various researcher and thee can be clubbed under following heads, signalling hypothesis, liquidity hypothesis, trading range, cash substitution hypothesis and cosmetic event to attract the attention of media. The results of various researches are very varied and have not

been tested in the Indian context and so the study focuses on Indian BSE market which has generated an annualized CAGR of 17% since inception in 1979.

2. Review of Literature

There is great similarity between the impact caused by Stock dividends and share split, both these events increase number of shares available for trading and reduces the price of share proportionately. Theories explaining the rational for issuing Stock dividends and its impact can be discussed under the following heads

2.1 Signalling Hypothesis

Studies have proved that owners and managers as an insider are aware of the future performance and so Stock dividends event generates unexpected and abnormal returns around the Ex-date[9, 11, 21]. Research on share listed on NYSE/AMEX (between 1963-1968) concluded that wealth of the shareholder is created when the abnormal increase in share price is permanent, Stock dividends issues of greater than 20% creates wealth for the shareholder[17]. Study of Woolridge[22] on Stock dividends for companies listed on NYSE (between 1963-1972) concludes that small Stock dividends produce extra value as compared to the large Stock dividends issues, abnormal return are greatest for Stock dividends of 6% or less. Information asymmetries between manager and investors also has a great effect, investor believe that stock dividends are positive signals from managers on the future prospects.

There is also evidence that accounting disclosure are value relevant for investors long after they are published and investors take a signal from past information when companies declare Stock dividends[2].

2.2 Liquidity Hypothesis

Studies on measuring liquidity impact suggest that post Stock dividends there is an increase in volume of number of share traded in the market and this helps the company to ward off potential takeovers[15].

2.3 Trading Range

When Stock dividends is declared there is a definite increase in liquidity and decrease in price, the amount of Stock dividends is a function of trading range and manager's decision on the quantum of Stock dividends is decided on the bases of his perception of preferred trading range[3].

Some studies[13] have also concluded that unlike share split, reason for declaring Stock dividends is not to adjust the share price to Normal levels.

Balachandran, Faff, & Tanner[1] examined the price behaviour and volatility for Australian companies during (1992-2000) and concluded that positive abnormal returns around ex-date. When the sample were divided according to industries, positive returns were observed only for industrial non-finance companies and this concludes that industry classification can also play a role in price behaviour.

2.4 Cash Substitution Hypothesis

Researchers have found evidence that Stock dividends is a substitution for cash dividend and companies may resort to such techniques when they have a shortage of cash[13]. They concluded that stock dividends between the 20 year period (1963-82) were declared by unsuccessful firms. These companies had paid low cash dividends and assumed that stock dividends would be the substitute for cash.

Research findings also suggest that companies with large free reserveprefer to declare Stock Dividend[22].

2.5 Cosmetic Event/Attention Seeking

Some studies suggest that Stock dividends do not have any additional value, and should not be used as sweeteners. Managers use Stock dividends to highlight their company name in front of investors to seek the attention and improve their valuations[7]. In the long run earnings growth and cash dividends would lead to a real increase in price in comparison to market[3]. Many research have supported the belief that Stock dividends is not a cosmetic event but a strong indicator for future performance and hence there are abnormal return around the Ex date of declaration of Stock dividends[21].

2.6 Size Effect

Chottiner & Young[5] by comparing the ex-date opening price with the theoretical price and with prior day closing price concluded that price adjusted fully with regards to stock dividends between four to twenty per cent but did not fully adjust for stock dividends between zero to three and twenty five to hundred per cent. This would mean that there is abnormal behaviour for few size of stock dividends.

3. Objectives

Research on stock dividends in India have not focussed

on analysing the impact on variables namely price, return, volume and trades, (proxy to wealth and liquidity) by segregating the companies according to BSE categorization. Size effect of stock dividend on variables is also a focus area of this study. The study is extended further by including the Event time methodology and calculating abnormal returns and cumulative average abnormal return for 30 days pre and post event.

4. Sample Selection

All listed companies on BSE were included which declared Stock dividends after 2001.

All companies which declared Stock dividends in year 2015 and companies where trading data was not available for 30 trading days pre or post event were removed.

Bases for 30 day event window isbased on SEBI guidelines which mandate that Stock dividend issues process has to be completed within 15 days of the approval from board (60 days when shareholder approval is required)[20]. Generally the board proposes stock dividend and conveys to the stock exchange (where it is listed) details of board meeting, rational of stock dividend, date of shareholders' approval and record date. Average gap between the board meeting and shareholder meeting is one month after which the Ex-bonus date and record date is communicated to the exchange.

Between 2001-2014 the average gap between the Bonus announcement date and Ex-Bonus date was 9.7days and adding another 21 days as a period between the board approval and shareholder approval would total to 30 days. Hence the impact of stock dividends on variables are measured within -30 to +30 days of the event.

Latest stock dividends declaration was considered where companies declared stock dividends more than once.

Capitaline database was used for extracting all financial data.

5. Statistical Test

To test the significance level of variables price, return, volume and trade before and after stock dividends this study relies on t-test for event studies[6, 12, 14, 18, 21].

Volume (total number of shares traded in a day) and trades (number of trades in a day) are proxy to liquidity and share price and returns are proxy to increase in shareholders wealth. Paired t-test is used to test the hypothesis concerning the significance of impact of stock dividends on variables namely price, return, volume and trades.

Non-parametric test (The sign test for paired data) proposed by Ohlson & Penman[19]. Dravid[8] is used to validate the results. Z-test is used to measure the change in price, return, volume and trades.

In this methodology variables price, return, volume and trades are matched with the corresponding data points pre-stock dividends. This matching continues for the 30 days period before and after event date.

$$p = \overline{X}2_2 > \overline{X}1_2 \sum_{>.\ under\ Alternate\ hypothesis}^{=.5\ under\ Null\ hypothesis}$$

$\overline{X}2_2$ = *Mean Post stock dividend and* $\overline{X}1_2$ = *Mean Pre - Stock dividend*

Test statistics is simply computed as tallying proportion of cases where the mean return after stock dividends is greater than before Stock dividends, assuming independence across N observations.

The Binomial Statistics is: $z \equiv 2(p-0.5)(\sqrt{N})$

Alternatively $$Z = \frac{\overline{x} - \mu}{\sigma}$$

$$\mu = np$$

$$\sigma = \sqrt{npq}$$

For all four variables a comparison of average Post-split values greater than pre-split values is denoted by "Pr." proportion of cases where Post is greater than Pre.

Scores of T-test and Z-test would help in concluding if the variables are statistically different pre an post stock dividends

6. Event Time Methodology

Standard event time methodology is used as in earlier studies [9, 21].

The market-model is assumed for approximating security price movement, also assuming the standard Gauss-Markov assumptions.

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta\tau_{m,t})$$

$AR_{i,t}$ *abnormal return for firm i at day t*
$R_{i,t}$ *Actual Return* on Security i at day t
$\alpha+\beta$ = are OLS estimate from the market model regression

Event day is denoted as day-0 for calculating the

Alpha and Beta, regression coefficients are calculated for 335 days (365 days less 30 days event window) before day-30.Alpha and beta values obtained are used in the pre and post stock dividend window for calculating abnormal return.

The Average Abnormal Return (AAR)is the average of abnormal return given by equation :

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \qquad 2$$

Daily Abnormal Return (AR) is summed over period for obtaining the Cumulative Average Abnormal Return (CAAR) over the pre specified time period starting at τ_i . through τ_2.

$$CAAR_t(\tau_i,\tau_2) = \sum_{t=t_1}^{t_2} AAR_{it}$$

Daily Abnormal Return (AR) is summed over period for obtaining the Cumulative Abnormal Return (CAR). (CAR). Subsequently the average Expected return and Actual return for the period +30 to -30 is tested to determine the significance levels[14].

AAR= Average Abnormal return/ also referred as Average residual[10].

CAR= Cumulative Average Abnormal return/ also referred as cumulative average residual

7. Analysis

As can be seen return and volumes are significantly different before and after the event date. And there is a decrease in return and volumes. Only 25% companies reported an increase in return, 30 days after the Stock dividends.

Price and trade are not significantly different pre and post stock dividends. Only 54% companies have increase in average price post stock dividends.

Z-test results indicate that after stock dividends there is no impact on share price. Return volume and trades are significantly different and lower after ex-date of Stock dividends.

Table 2. z-test (nonparametric)

Variables	N	Pr.	-Z-test
Price	522	0.5383142	-1.750752
Return	522	0.2528736	11.292353
Volume	522	0.2030651	13.568331
Trades	522	0.3390805	7.3531602
z critical at .05 is 1.96			

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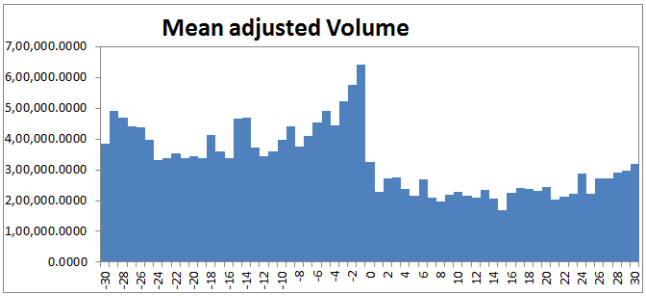

Figure 1. Indicates that Mean volume increase before the event date and there is a sudden fall after the event date.

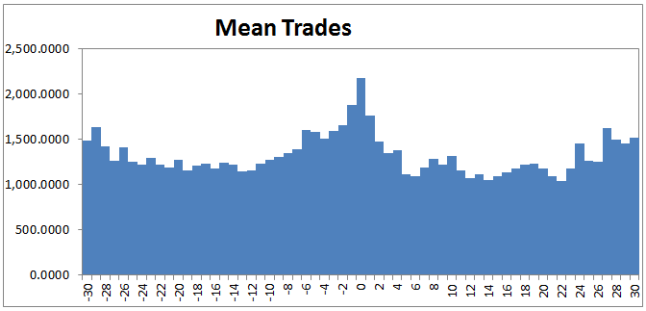

Figure 2. Suggest that there is no change in number of trades pre and post Stock dividends.

8. Risk

Mean standard deviation pre Stock dividends and post Stock dividends of all variables would indicate the change in risk.

Table 1. Analysis pre and post stock dividends

Variables	N	Mean Pre-Stock dividends	Mean Std. Dev. Pre-Stock dividends	Mean Post-Stock dividends	Mean Std. Dev. Post-Stock dividends	P (T<=t) two-tail	Pr.
Price	522	146.7	11.6	149.7	11.7	0.13	0.54
Return	522	0.00	0.03	0.00	0.03	0.00	0.25
Volume	522	414282.3	367502.7	241167.6	229162.2	0.00	0.20
Trades	522	1371.0	896.9	1288.0	915.7	0.15	0.34

Table 3. Comparison pre and post stock dividends

Variables	N	Mean Std. Dev. Pre-Stock dividends	Mean Std. Dev. Post-Stock dividends	Pr.
Price	522	11.6	11.7	0.58
Return	522	0.033	0.034	0.56
Volume	522	367502.7	229162.2	0.25
Trades	522	896.9	915.7	0.36

Table 3 concludes that after stock dividends the mean standard deviation of all the variables except volume and trade increase. Standard deviation of price is higher for 58% of companies. Standard deviation of Return is higher for 56% of companies. Standard deviation for variables (Volume and trade) which represent liquidity is decreasing, thereby suggesting lower variability after event.

9. Impact on Variables According to BSE Categorization

Bombay stock exchange[4] categorizes shares into following four 'A', 'B', 'T' and 'Z'. Shares falling under various categories follow ascoring mechanism which includes parameters like corporate governance, average free float, average turnover, compliance monitoring etc. Stocks in category "T" (Trading or T to T) represents companies which are on surveillance and settled on daily bases, category "Z" represents companies which are not compliant on listing norms of Bombay stock exchange.

As there is difference in trading volume and risk profile between different category of shares, it is possible that Stock dividends may have different impact on different categorization.

Findings of BSE categorization "A Group" and "All others" are similar to the overall findings. Findings for "B group" of BSE is different for variable 'trade' and issuggestive of decrease in trades after stock dividend.

10. Stock Dividends Size Impact

Stock dividends size classification is as under

Large Stock dividends is classified as distributions more than 2 for 1 or 2/1.

Small Stock dividends is classified as distributions less than 1:1 or 1/1.

Medium Stock dividends includes everything except stocks under small and large classification

Stock dividends Size effect do not have any impact on the variables and the findings are similar to overall findings. For large Stock dividends 59% companies have an increase in Price after Stock dividends whereas for small Stock dividends only 49% companies have an increase in Price.

Table 4. BSE group wise analysis

Variables	N	Mean Pre-Stock dividends	Mean Std. Dev. Pre-Stock dividends	Mean Post-Stock dividends	Mean Std. Dev. Post-Stock dividends	P(T<=t) two-tail	Pr.
A Group BSE							
Price	103	292.28	16.22	293.60	17.97	0.78	0.56
Return	103	0.00	0.03	0.00	0.03	0.00	0.30
Volume	103	619958.76	482874.00	421266.53	352997.61	0.00	0.27
Trades	103	4298.77	2306.47	4400.31	2765.38	0.68	0.47
B Group BSE							
Price	367	119.63	11.23	123.28	10.93	0.13	0.53
Return	367	0.00	0.03	0.00	0.04	0.00	0.24
Volume	367	288730.49	290782.16	149396.68	167589.14	0.00	0.19
Trades	367	670.79	573.05	535.58	480.38	0.00	0.30
All other Groups except A and B							
Price	52	49.61	5.27	51.22	4.31	0.62	0.56
Return	52	0.00	0.04	0.00	0.04	0.00	0.27
Volume	52	892990.45	680448.91	532124.20	418436.63	0.01	0.17
Trades	52	513.40	390.83	434.06	324.12	0.17	0.38

Table 5. Analysis pre and post stock dividends

Variables	N	Mean Pre-Stock dividends	Mean Std. Dev. Pre-Stock dividends	Mean Post-Stock dividends	Mean Std. Dev. Post-Stock dividends	P(T<=t) two-tail	Pr.
Large Stock dividends							
Price	78	97.65	9.81	104.13	11.52	0.06	0.59
Return	78	0.01	0.03	0.00	0.04	0.00	0.19
Volume	78	630,622.87	576,059.32	297,799.29	301,280.01	0.01	0.19
Trades	78	858.40	588.61	867.59	700.17	0.96	0.33
Medium Stock dividends							
Price	265	160.67	11.58	163.93	11.29	0.27	0.55
Return	265	0.00	0.03	0.00	0.03	0.00	0.27
Volume	265	346,822.59	333,082.87	214,991.02	228,582.70	0.00	0.15
Trades	265	1,467.54	1,059.40	1,343.36	1,041.32	0.06	0.36
Small Stock dividends							
Price	179	147.46	12.47	148.52	12.27	0.75	0.49
Return	179	0.00	0.03	0.00	0.03	0.00	0.26
Volume	179	419,881.44	327,580.06	255,243.16	198,594.50	0.00	0.28
Trades	179	1,451.37	790.76	1,389.37	823.61	0.56	0.31

11. Event Time Methodology Findings for Stock Dividends

Table concludes that maximum AAR is on the Event date (3%) and two days after the event day it is (0%). t-test indicates that there is a significant difference between expected return and actual return starting 10 days before the event date. 62% to 64% companies have abnormal positive returns in the period on 30 days before event date, this number falls below 50% after two days of the event date.

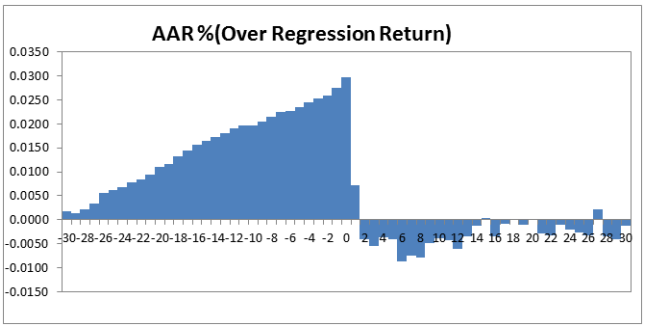

Figure 3. AAR % (Over Regression Return for firms declaring Stock dividends).

As is evident that (average) abnormal return increases for all stocks as the share approaches the event date. On the event date there is almost 3% abnormal return which is very significant. There is a sudden fall in AAR after the event date and this fall starts on second day of the event date (Figure 3).

Figure 4 indicates that the CAR is maximum on the event date and there is a fall over the next 30 days but the decrease is not significant and there is a permanent increase in shareholders wealth.

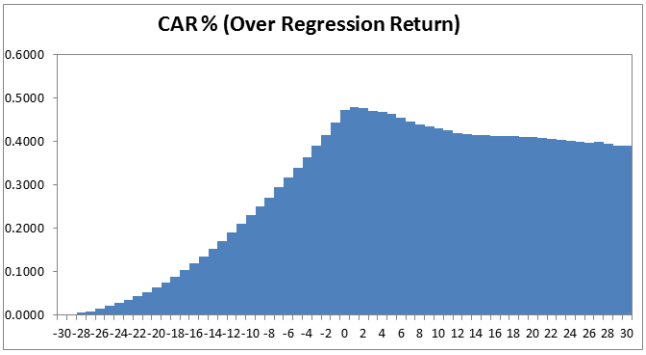

Figure 4. CAR % (Over Regression Return for firms declaring Stock dividends).

Tables concludes that AAR and CAR are statistically different in the two periods and there is a decrease after the Stock dividends.

Table 6. AAR and CAR after the Stock dividends.

Trading Day	Mean daily return after Stock dividends	AAR Regression (%)	P (T<=t)	CAR- Regression	% of Daily AER >0
-30	0.00	0.00	0.67	0.00	0.59
-28	0.00	0.00	0.74	0.01	0.60
-26	0.00	0.01	0.63	0.01	0.62
-24	0.00	0.01	0.37	0.03	0.61
-22	0.00	0.01	0.50	0.04	0.62
-20	0.00	0.01	0.59	0.06	0.64
-18	0.00	0.01	0.76	0.09	0.64
-16	0.00	0.02	0.34	0.12	0.64
-14	0.00	0.02	0.98	0.15	0.62
-12	0.00	0.02	0.16	0.19	0.63
-10	0.01	0.02	0.00	0.23	0.62
-9	0.00	0.02	0.27	0.25	0.62
-8	0.01	0.02	0.00	0.27	0.62
-7	0.00	0.02	0.01	0.29	0.62
-6	0.01	0.02	0.01	0.32	0.63
-5	0.01	0.02	0.00	0.34	0.62
-4	0.01	0.02	0.03	0.36	0.62
-3	0.00	0.03	0.30	0.39	0.62
-2	0.00	0.03	0.66	0.42	0.63
-1	0.00	0.03	0.01	0.44	0.63
0	0.03	0.03	0.00	0.47	0.63
1	0.01	0.01	0.00	0.48	0.53
2	0.00	0.00	0.04	0.48	0.42
3	0.00	-0.01	0.00	0.47	0.41
4	0.00	0.00	0.05	0.47	0.43
5	0.00	0.00	0.03	0.46	0.45
6	-0.01	-0.01	0.00	0.45	0.40
7	-0.01	-0.01	0.00	0.45	0.38
8	-0.01	-0.01	0.00	0.44	0.39
9	0.00	0.00	0.00	0.43	0.44
10	0.00	0.00	0.03	0.43	0.40
12	0.00	-0.01	0.00	0.42	0.43
14	0.00	0.00	0.51	0.42	0.47
16	0.00	0.00	0.03	0.41	0.41
18	0.00	0.00	0.96	0.41	0.44
20	0.00	0.00	0.92	0.41	0.45
22	0.00	0.00	0.05	0.41	0.42
24	0.00	0.00	0.24	0.40	0.46
26	0.00	0.00	0.05	0.40	0.44
28	0.00	0.00	0.02	0.40	0.44
30	0.00	0.00	0.45	0.39	0.45

Table 7. CAR Comparison pre and post stock dividends

Variables	N	Mean Pre-Stock dividends	Std. Deviation Pre-Stock dividends	Mean Post-Stock dividends	Std. Deviation Post-Stock dividends	P(T<=t) two-tail
Abnormal return	522	0.02	0.10	0.00	0.04	0.00
CAR	522	0.17	1.22	-0.05	0.22	0.00

12. Conclusion

Average prices of shares after stock dividends are higher for 54% companies, mean of returns, volume and trades decreases after stock dividends and this contradict the liquidity hypothesis.

There is an abnormal increase in volume of shares between the period of board decision for stock dividend and the Record date / Book closure date, indicating that this news is recognized by the investors and speculators as a major event and this supports the attention seeking hypothesis. Volumes were higher for 80% of the shares in the pre-stock dividend period.

Increase in price is higher for large stock dividends. Size of stock dividends and BSE categorization of shares has no material effect on the overall findings thereby suggesting that across all size and risk levels the impact of stock dividends is similar.

Existence of abnormal returns indicates that markets are not efficient. A gain of 3% in a day is a substantial abnormal return on the Ex-day the average abnormal return is around 0.45% (Australia)[21] to 1% (U.S.)[22] .

The abnormal gains accumulated over 30 days prior to the stock dividend record date, continues in +30 day window. Cumulative abnormal return in the event window is close to 39%, which signifies a permanent increase in wealth of shareholder and supports the signalling hypothesis.

For maximum gains share of the company should be acquired when the Board proposes stock dividend and should be sold on the Ex-day, this technique can yield almost 39% return during the period with a success rate of ~ 62%.

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