ANALYSIS OF CORPORATE ACTIONS AND MARKET EFFICIENCY IN INDIA

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Abstract

Corporate actions of a company play a pivotal role in determining the fluctuations of share prices in and around the record date. A rational investor can use these actions for a buy or sell decision. Corporate actions are events by corporate that directly or indirectly affect the total value of holdings for the investor. Corporate actions are aimed at increasing shareholders value in return on their investment with the company based on their shareholding ratio. These actions are the issue of bonus, splits, dividends, buybacks etc. The literature depicts that there is an impact of these corporate actions on the share prices of the listed companies. The earlier studies focussed individually on a corporate action, (say the issue of bonus and its effect on share prices). The current study focuses on all the major corporate actions such as bonus issues, stock splits, and rights issues of companies listed at National stock exchange during 2014-2016. An attempt is made to envisage the combined effect of these corporate actions using the 31-day event period. This study focuses on testing the market efficiency of these corporate actions using tools such as Variance ratio test, Runs test and T-Test. The analysis suggests that the Indian stock follows a Weak form of Efficiency based on the analysis.

Key words: Corporate action, returns, market efficiency, variance ratio test, Runs test.

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Introduction

Research on corporate actions and market efficiency is dominant and one of the interesting topics in the academic world. Conducting research on corporate actions would enable the academicians and practitioners to acknowledge the pattern of securities during the event period and also enable to assess those using different models. By conducting the research the practitioners can delineate the strategies to gain the advantage over the market with the knowledge of market timings and announcement of corporate actions. Although there are many studies in the field of market efficiency, this study of market efficiency and its effects of all corporate actions on listed companies in National Stock Exchange for the period of three years using tools such as Variance Ratio test, Runs test and also test the significance of the returns generated during the event period. The pioneer in market efficiency (Fama) has identified three forms of market efficiency namely: strong form, semi-strong form, weak form. This paper makes an attempt to identify the effect of Indian corporate actions on the NSE listed companies.

Review of literature

Rajesh Khorana et al (2016), examined the stock price prior to and after the bonus issue announcements of 34 companies from 11 sectors. The results indicate a significant positive abnormal return for an eight-day period prior to bonus issue announcement in line with evidence from the developed stock market. On the announcement day, there is negative AAR of -0.01% which is very low and significant at 1% level (z value = 3.84). The results provide stronger evidence of the semi-strong efficiency of the Indian stock market.

Raja Mohan et al (2014), has attempted to examine the impact of corporate announcements like bonus shares, right shares, on the stock prices of bank nifty using the non –parametric test(Wilcoxon matched paired test). The authors observed a significant impact on price movements of shares & it also gives an opportunity to the investors to make the profit during such announcements.

Subhendu Kumar Pradhan et al (2014), the authors investigated the impact of bonus announcements on share prices of ten listed companies on BSE-200 INDEX. Their results reveal that companies earn positive abnormal returns before bonus announcement and negative abnormal returns after bonus announcement in short

period. Further results reveal that share price changes are irrelevant to market changes. Agnes Ogada (2014 adopted an event study methodology which attempted to establish the information content of rights issue on share returns. The population of this study was 18 companies listed in the NSE. Secondary data collected spans 7 years from 2005-2012. The expected returns, as well as the market returns, were significantly higher after rights issue than before rights issue concluding prediction.

Babitha rohith(2013), investigated the short-term behavior of stock prices due to stock splits of listed companies in BSE for the period from January 2009 to December 2013. The results exhibit that there is a positive abnormal return on the date of announcement with the use of statistical tools like AAR, CAAR, and T-TEST. 37 out of 56 sample companies show a positive abnormal average return on the announcement day of the split. Applying hypothesis testing, the study concludes that there are abnormal returns on the day of the stock split announcement.

Fakru Khan, Thoufiqualla (2013), the authors have tried to analyze the impact of bonus issue on market by taking 12 companies listed in NSE in different sectors from December 2012 to November 2013. On conducting T-test, the authors found that 9 out of 12 companies showed a positive result, 2 companies negative, 1 company unchanged. From this, we could make out that there were no abnormal returns. The reasons for stock prices to come down before the date of the announcement could be information leakage or actual anticipation. & also cautions investors.

Suresha.B et al (2012), the authors examined the presence of any abnormal volume on issue of bonus shares for the period using an event study methodology for Nifty stocks from 1995 to 2011, with a view to test the efficiency of the market in absorbing the material information on bonus issue& to understand the price pressure & liquidity around the announcement date. The study found out that the Indian market reacts positively to bonus issues& increase in volumes of shares traded around the bonus issues date.

Sujith Kumar S H et al,(2011) The paper examined the announcement effects of bonus announcement and right issue on the Indian stock market during the period April 1996 to March 2011. An event study is using a 31-day event window comprising the companies

forming a part of NIFTY are considered for the study. The authors focused to test the speed with which the Bonus announcement and Right issue information are impounded in the share prices of nifty constituent companies, which resulted in generating of abnormal returns for a shorter period which is beneficial for the investor to make positive abnormal returns.

Prithul Chakraborty (2011), the author has examined that Indian stock market is pricing efficient in semi-strong form. The Author has made the examination of 17 stocks in S&P CNX NIFTY during the period February 2000 to January 2010. In this paper, the author has used the market model of event study methodology. The CAAR for most of the time intervals in the pre- and post-announcement periods are statistically significant. However, it is observed that the CAAR for the shorter time intervals around the announcement day is statistically insignificant. Thus the study fails to provide any strong and consistent evidence in support of the semi-strong form of pricing efficiency of the Indian stock market.

Raja et al (2010), the authors made an attempt to examine the information content of bonus issue management, & also to suggest the investment strategies for investors, fund managers, analysts. The t-test method was used & results depicted that security prices reacted to announcement of bonus issue (IT) companies.to conclude the study the result showed a semi-efficient reaction to bonus announcements.

Roji George et al (2007), the authors' study investigates impacts on prices of bonus issues around announcement dates using daily return in India with the help of Market Adjusted Excess Return Model (Balachandran and Sally (2001). It also investigates the impact of bonus ratio on price behavior so as to find whether large size bonus issues have more information content than small size issues. The period of event study was January 2004 to March 2005 which collected 54 bonus issues of 50 companies listed in BSE. On conducting ANOVA, the results didn't influence short-term price behavior but may influence long-term price behavior.

A.K. Mishra (2004), the author has investigated the effect of bonus announcement on Indian stock market. The period of study was from June 1998 to August 2004, a sample of 46 bonus issue was used in this study. By using AAR method, the author found that

there is positive abnormal returns 9 days prior to the announcement date, this has given an evidence that Indian market is semi-strong.

Statement of problem

Although there has been studies on corporate actions globally, the combined effect of major corporate actions such as bonus issues, rights issue, stock splits collectively have not yet been analysed deeply. This gap paves the way to observe whether corporate events have an effect on shares prices by using the tools such as Variance ratio test, Runs test and T-test.

Objectives of the Study

1. To investigate the short-term behavior of stock prices of bonus, splits, rights, around the announcement date using data from the National Stock Exchange.
2. To test the significance of the returns around the announcement date.
3. To examine the information content of Bonus, splits, rights announcement made by the NSE constituent companies.
4. To envisage whether corporate actions can be treated as events?

Research Methodology- Sample Selection

The study covers all companies listed in National Stock Exchange (NSE), which issued bonus, splits, rights during the period from January 1st, 2014 to December 31st, 2016 (188) companies which satisfy the following criteria were selected for the purpose of the study.

Limitations of the Study

1. This study is restricted with only NSE listed companies.
2. The period of study is limited to 3 years (1st Jan 2014 to 31st December 2016).
3. The event window consists of 61 days, which can be extended.

Data

This empirical study is based on the daily closing values of companies which announced Bonus, Stock splits, Rights, listed on National Stock Exchange during the period January 2014- December 31st, 2016. The tests used in this study were:

1. Variance ratio test: Variance ratio test is considered more powerful and more reliable than traditional tests such as ADF, autocorrelation. There are two methods to calculate the variance ratio; they are Lo and McKinley, Wald test. It is used to test

whether stock prices follow a random walk. It uses the property of RWH that when variances are compared over different periods, the variance of the incremental should be linear in observation interval.

H01: Bonus splits, Rights has a martingale (or) non-random.

$$VR(q) = \frac{\mathrm{var}\left[r_t(q)\right]}{q\,\mathrm{var}\left[r_t\right]}$$

2. Runs test: The runs test analyses the occurrence of similar events that are separated by events that are different. The runs test model is important in determining whether an outcome of a trial is truly random, especially in cases where random versus sequential data has implications for subsequent theories and analysis. This test checks whether or not the number of runs is the appropriate number of runs for a randomly generated series. The observations from the two independent samples are ranked in increasing order, and each value is coded as a 1 or 2, and the total number of runs is summed up and used as the test statistics.

$$r_c = \mu - 1.96\,\sigma \quad \text{at 5\% level of significance}$$

$$\text{where } \mu = 1 + \frac{2 n_1 n_2}{n_1 + n_2} \text{ and } \sigma = \sqrt{\frac{2 n_1 n_2 \,(2 n_1 n_2 - n_1 - n_2)}{(n_1 + n_2)^2 (n_1 + n_2 - 1)}}$$

H02: Data used to perform Runs test for Bonus, Splits, Rights are random (p value> 0.05)

3. The t-test assuming equal variance for all the selected companies were computed to determine the statistical significance in order to validate the hypothesis framed. The stock prices were obtained from www.nseindia.in for the 31 days before and after the announcement of specified corporate actions and computed (differenced prices) with the use of eviews7 software and tabulated in Microsoft Excel.

H03: Data used to perform Runs test for Bonus, Splits, Rights are random (p value> 0.05)

Results & Discussion

The t-test assuming equal variance for all the selected companies were computed to determine the statistical significance in order to validate the hypothesis framed. The stock prices were obtained from www.nseindia.in for the 31 day before and after the announcement of specified corporate actions and computed (differenced prices) with the use of eviews7 software and tabulated in Microsoft excel.

Table.1 summary output of bonus announcements in the year 2014

BONUS 2014	Runs test		T-statistic	Joint test		Variance ratio using specified lags			
COMPANY NAME	No of Runs	P-value		wald	maz	2	5	10	30
SHARON	12	0	1.65	0.98	0.87	0.82	0.28	0.04	0.09
RAJTV	9	0.29	0.81	0.13	0.01	0.33	0.16	0.28	0.4
MAYUR	26	0.47	1.3	0.78	0.37	3.48	2.15	0.41	0.12
GMBRE	29	0.63	0.25	0.05	0.4	0.47	0.18	0.793	0.796
MINDTRE	23	0.88	-0.56	0.95	0.77	0.72	0.49	0.37	0.34
GRUH	23	0.55	1.04	0	0.98	0.81	0.851	0.855	1.587*
DEEPAK	10	0	0.59	0	0.27	0.49	0.57	0.8	2.31*
LYBBR	34	0.29	-0.39	0.29	0.79	0.632	0.609	0.739	1.05*
SHRENUJ	24	0.19	0	0	0.01	0.83	2.93*	6.31*	10.19*
SHILPI	19	0	2.66	0.2	0.65	1.18*	1.19*	0.79	0.26
LYPSA	26	0.23	-0.08	0.43	0.99	0.9	1.55	0.332	0.182
SUNCHEM	11	0.46	0.56	0.06	0.04	0.22	0.253	0.21	0.577
THEBYKE	7	0.66	-1.1	0.85	0.52	0.61	0.06	0.07	0.08
VIKAS	16	0	-1.83	0	0.63	1.61*	0.72	1.3	0.43
NITIN	30	0.77	0.55	0	0	19.6*	7.56*	10.86*	25.21*
INFY	20	0.91	-0.62	0.37	0.05	0.42	0.21	0.13	0.19

The above table provides the company's that issued bonus during the year 2014, depicts that on performing the Runs test, we can find out that ; out of 16 companies 4 company's p-values is less than 0.05 which implies non-randomness in these companies. The remaining 12companies' p-value is greater than 0.05 which implies randomness in these companies. T-test for the period before and after Bonus announcements, infers that only one company named Shilpi medicals (2.66) attained

the level of significance which is more than are 1.96, this infers rejection of null hypothesis (that there is differences between abnormal returns before and after the event.

The variance ratio test performed on bonus during the year 2014. From the above table it is evident that the variance ratios at different lags. the variance ratios for majority companies is less than 1 which tells us that there is slight mean reversion and possibility of prices changes in the opposite direction. The companies named Shrenuj and Nitin ltd have variance ratio which is greater than 1 which implies that these two companies have tendency to form trends, and changes in share prices are expected to be in same direction which can yield investors upon right time on Investment.

Table 2. output of bonus announcements in the year 2015

BONUS 2015	Runs test		T-statistic	Joint test		Variance ratio using specified lags			
COMPANY NAME	No of Runs	P-value		wald	Maz	2	5	10	30
GODREJIND	32	0.88	-0.14	0.08	0.01	0.3	0.23	0.11	0.095
PERSISTENT	17	0.37	0.85	0	0	2.28*	1.83*	1.21	2
RAIREKMOH	30	0.81	-0.74	0.75	0.63	0.58	0.47	0.33	0.27
HCLTECH	22	0.57	0.56	0.03	0	0.49	0.19	0.101	0.033
TECHM	12	0.02	-0.11	0.609	0.741	0.626	0.427	0.57	0.268
AARTIDRUGS	23	0.03	0.02	0	0.16	0.42	0.27	0.34	0.71
WABAG	23	0.15	1.22	0.2	0.09	0.38	0.42	0.33	0.47
INSECTICID	21	0.01	0.66	0.23	0.07	0.23	0.17	0.152	0.341
VIVIDHA	17	0.22	3.13	0	0	1.05	0.64	0.71	10.73*
INFY	24	0.84	-0.25	0.88	0.96	0.75	0.68	0.467	0.927
CMAHENDRA	36	0.24	0.49	0	0.7	0.51	0.59	2.23*	4.09*
SRSLTD	30	0.98	-0.05	0	0.07	0.316	0.26	0.7	0.65
RELAXO	22	0.57	0.29	0	0.31	0.51	0.44	0.6	1.07
KOTAKBANK	21	0.86	0.03	0	0.86	0.85	0.8	1.27	2.9
FEDERALBNK	23	0.26	0.82	0.9	0.88	0.97	0.18	0.07	0.017
MAITHANALL	30	0.39	1.28	0.06	0.72	0.6	0.28	0.17	0.68
AUROPHARMA	24	0.6	-0.45	0.66	0.26	0.5	0.25	0.079	0.069
MOTHERSUMI	20	0.01	-0.28	0.15	0.01	0.24	0.11	0.039	0.031
MBLINFRA	23	0.42	0.47	0.83	0.98	0.87	0.82	0.312	0.205
DHFL	23	0.83	-0.44	0.45	0.07	0.27	0.1	0.066	0.006
BEL	15	0	-1.55	0	0.01	0.205	0.17	0.422	0.291
DIVISLAB	21	0.36	-0.18	0.86	0.48	0.722	0.206	0.07	0.069
COLPAL	16	0.03	0.57	0.18	0.02	0.151	0.151	0.15	0.029
APCOTEXIND	32	0.81	-0.67	0	0	3.68*	0.75	0.26	0.69
SHIVAMAUTO	26	0.88	-0.01	0.41	0.347	0.49	0.522	1.066	1.13*
RUBYMILLS	27	0.55	-0.67	0.77	0.82	0.7	0.62	0.14	0.26
ECLERX	28	0.42	0.82	0.03	0.01	0.07	0.22	0.16	0.06
VENKEYS	33	0.62	0.97	0	0	2.57*	1.74*	1.52*	4.63*
MARICO	21	0.77	0.35	0.49	0.13	0.45	0.35	0.16	0.117
ALLCARGO	32	0.32	1	0.18	0.97	0.903	0.48	0.531	1.055

The Runs test results highlighted out of 30 companies 6 companies p-values is less than 0.05 which implies non-randomness . The remaining 24 companies' p-value is greater than 0.05 which implies randomness in these companies..T-test depicts that only one company named Vividha (3.33) attained the level of significance and remaining companies significance level is less than are 1.96, this infers rejection of null hypothesis (that there is differences between abnormal returns before and after the bonus issue with respect to Vividha). he variance ratios for majority companies is less than 1 which tells us that there is slight mean reversion and possibility of prices changes in the opposite direction. Six companies have variance ratio which is greater than 1 which implies that these companies have tendency to form trends, and changes in share prices are expected to be in same direction which can yield investors upon right time on Investment.

Table 3 output of bonus announcements in the year 2016

BONUS 2016	Runs test		T-statistic	Joint test		Variance ratio using specified lags			
COMPANY NAME	No of Runs	P-value		wald	Maz	2	5	10	30
KOTHARIPRO	24	0.06	1.77	0	0.017	0.21	0.6	0.54	1.51
MINDTREE	15	0.19	0.48	0.91	0.88	0.89	0.34	0.31	0.2
RAMASTEEL	11	0.46	-0.63	0.41	0.06	0.4	0.26	0.15	0.07
TIDEWATER	9	0	-0.66	0	0.05	1.83*	0.28	0.09	0.02
DISHMAN	23	0.29	0.52	0	0.131	0.41	0.19	0.52	0.83
GMBREW	26	0.16	-0.28	0	0.7	0.46	0.47	0.33	0.911
ITC	31	0.81	0.92	0.07	0.54	0.582	0.584	0.317	0.476
HATSUN	29	0.63	-0.05	0.05	0.04	0.306	0.349	0.303	0.605
BPCL	24	0.89	0.96	0.34	0.04	0.43	0.235	0.123	0.023
GANESHHOUC	28	0.88	1.37	0	0.95	0.72	1.191*	1.29*	1.7*
GRINDWELL	11	0.46	1.3	0.6	0.63	0.95	0.08	0.12	0.13
BERGEPAINT	29	0.76	-0.66	0	0.74	0.68	0.55	0.51	0.68
KTIL	30	0.83	0.21	0.79	0.97	1.13*	0.607	0.05	0.464
PFC	25	0.87	0.6	0	0.67	0.648	0.423	0.551	0.648
MENONBE	28	0.39	1.07	0.56	0.65	0.97	0.134	0.146	0.057
NBVENTURES	33	0.2	-0.38	0.8	0.38	0.47	0.29	0.09	0.02
TECHNO	23	0.59	1.38	0.34	0.37	0.523	0.35	0.158	0.28
BAJFINANCE	9	0.29	1.13	0	0.31	0.57	0.22	0.49	0.63
SYMPHONY	16	0.02	-1.39	0	0.1126	0.4	0.711	0.82	1.22
HINDPETRO	13	0.01	-0.68	0.53	0.65	0.81	0.23	0.35	0.42
RECLTD	24	0.34	-0.33	0.68	0.26	0.55	0.28	0.12	0.05
8KMILES	16	0.03	1.36	0.09	0.02	0.196	0.26	0.205	0.056
IOC	27	0.85	0.87	0	0	0.178	0.396	0.361	0.339
ALANKIT	31	0.98	0.81	0	0.73	0.68	1.58*	2.28*	3.59*
SUNILHITEC	17	0.02	-1.06	0.84	0.95	0.99	0.79	0.19	0.05
INDIANHUME	19	0.06	-0.07	0.09	0.01	0.22	0.231	0.157	0.131
ONGC	24	0.46	1.61	0.374	0.1	0.483	0.187	0.144	0.154
BALMLAWRIE	13	0.08	3.59	0	0	2.944*	0.3581	0.3588	0.221
ENGINERSIN	26	0.64	1.02	0.45	0.07	0.4	0.187	0.127	0.067

The above table infers that the company's issues bonus during the year 2016 depicts that on performing the Runs test   we can find out that out of 30 companies 6 companies' p-values is less than 0.05 which implies non-randomness in these companies. The remaining   24 companies' p-value is greater than 0.05 which implies randomness in these companies.

T-test depicts that only one company attained the level of significance balmalwire 3.59 remaining companies significance level is less than are 1.96, this infers not to reject null hypothesis (that there is no difference between the abnormal returns before and after the event).

Variance ratio test performed on bonus during the year 2016. From the above table it is evident that the variance ratios at different lags. the variance ratios for majority companies is less than 1 which tells us that there is slight mean reversion and possibility of prices changes in the opposite direction. Five companies have variance ratio which is greater than 1 which implies that these companies have tendency to form trends, and changes in share prices are expected to be in same direction which can yield investors upon right time on Investment.

Summary of Splits during the year 2014
The Runs test signified 3companies (out of 20), the p-values is less than 0.05 which implies non-randomness in these companies. The remaining 17 were observed random. T-test depicts that none of the company attained the level of significance; which   is less than are 1.96, this infers not to reject null hypothesis (that there is no difference between the abnormal returns before and after the event). The variance ratios for majority companies is less than 1 which infers that there is slight mean reversion and possibility of prices changes in the opposite direction. Out of 6 companies which had variance ratio >1, named Shivam autoand maninfraltd implies that these two companies have tendency to form trends, and changes in share prices are expected to be in same direction which can yield investors upon right time on Investment.

Summary of Splits during the year 2015

The Runs test we observed that out of 32companies 3 companies p-values is less than 0.05 which implies non-randomness in these companies. The remaining 29 companies' p-value is greater than 0.05 which implies randomness in these companies. T-test depicts that three company namely corp bank(2.56), jmt auto ltd(-5.63),Sarala poly(-2-21) attained the level of significance and the remaining companies significance level is less than are 1.96, this infers not to reject null hypothesis (that there is no difference between the abnormal returns before and after the event). The variance ratios for majority companies is less than 1 which tells us that there is slight mean reversion and possibility of prices changes in the opposite direction. The 19 companies(*) have variance ratio which is greater than 1 which implies that these companies have tendency to form trends, and changes in share prices are expected to be in same direction which can yield investors upon right time on Investment

Summary of Splits during the year 2016

The Runs test we observed that out of 34 companies 4 companies p-values is less than 0.05 which implies non-randomness in these companies. The remaining 30 companies' p-value is greater than 0.05 which implies randomness in these companies. T-test depicts that two company namely gulpoly(2.05), kajariacer(2.34), attained the level of significance and the remaining companies significance level is less than are 1.96, this infers not to reject null hypothesis (that there is no difference between the abnormal returns before and after the event).

The variance ratios out of 34 companies include 20 companies where variance ratio is less than 1 which tells us that there is slight mean reversion and possibility of prices changes in the opposite direction. The remaining 14 companieshave variance ratio which is greater than 1 which implies that these companies have tendency to form trends, and changes in share prices are expected to be in same direction which can yield investors upon right time on Investment.

Summary of Rights issue during the Year 2014

On computing the Runs test we can find out that out of 13 companies only 1 company has p-values is less than 0.05 which implies non-randomness in these companies. The remaining 12 companies' p-value is greater than 0.05 which implies randomness in

these companies. T-test depicts that two company namely neulandlab(-1.96), wheels(2.47), attained the level of significance and the remaining companies significance level is less than are 1.96, this infers not to reject null hypothesis (that there is no difference between the abnormal returns before and after the event). The variance ratios for majority companies is less than 1 which tells us that there is slight mean reversion and possibility of prices changes in the opposite direction. The 5companies have variance ratio which is greater than 1 which implies that these companies have tendency to form trends, and changes in share prices are expected to be in same direction which can yield investors upon right time on Investment.

Summary of Rights issue during the Year 2015

The Runs test was performed on 8 companies among which 1 company had p-value is less than 0.05 which implies non-randomness in these companies. The remaining 7 companies' p-value is greater than 0.05 which implies randomness in these companies. T-test depicts that none of company attained the level of significance and since the companies significance level is less than are 1.96, this infers not to reject null hypothesis (that there is no difference between the abnormal returns before and after the event). The variance ratios out of 8 companies 4 companies have variance ratio which is less than 1 that tells us that there is slight mean reversion and possibility of prices changes in the opposite direction. The remaining 4companies have variance ratio which is greater than 1 which implies that these companies have tendency to form trends, and changes in share prices are expected to be in same direction which can yield investors upon right time on Investment.

Summary of Rights issue during the Year 2016

The above table infers that the company's issues rights during the year 2016 depicts that on computing ADF test it is obvious that at 1st difference all companies are stationary performing the Runs test we can find out that all the companies p-value is greater than 0.05 which implies randomness in these companies. T-test depicts that none of company attained the level of significance and since the companies significance level is less than are 1.96, this infers not to reject null hypothesis (that there is no difference between the abnormal returns before and after the event. The variance ratios for majority companies is less than 1 which tells us that there is slight mean reversion and possibility of prices changes in the opposite direction.

Suggestions and Scope for further research

Despite of conducting the event study here are some of the suggestions where in further research can be done; The event study can be conducted by using advanced econometrics models such as, GARCH, ARIMA, vector error correction model, VAR model to assess the contribution factor in determining the individual event studies. Further research can be done on other events namely, mergers and acquisitions , initial public offerings, elections , budgets, global economic crisis, other corporate actions namely Buy back of shares and dividend issues. In this study in order to derive the abnormal returns the authors used alpha and beta as constant to determine the expected returns and to check the significance , however, further research can be done by considering the factors such as return on investments, volume of trade during the event period.

Findings

The variance ratio test suggest that the variance ratio computed at different lag periods are mostly combination of mean reversion in majority cases where VR<1, there is a tendency to form trends along with price changes in the same direction in some cases where VR>1.

The results from Runs test conveys that 161 companies have randomness in the data and 28 companies have p values <0.05 which implies that there is no randomness in these companies. On comparing the percentages it is notable that 85% of the corporate actions are random and remaining 15% are non-random.

The results from T-Test concludes that majority of the companies t-statistic values are less than the 1.96 in bonus splits and rights issues during the event period 2014-2016. This infers that the information of these issues are likely to be digested before the event which has resulted in not rejecting the null hypothesis which tells that (there is no difference in the returns generated during the event period)

Summary of runs test					
	Bonus	**Splits**	**rights**	**Total**	**Percentage**
Random	59	76	25	160	85.1
non-random	16	10	2	28	14.9
total companies	75	86	27	**188**	**100**

Conclusion

Corporate actions of 188 companies listed in the National stock exchange during the period 2014 to 2016 revealed that majority of the stocks were mean reverting which was observed using variance ratio test. A few companies have tendency to form trends and move in same direction. The output obtained from performing runs test conveys that majority of companies are random on announcement of corporate actions which concludes that on performing all these test on the NSE listed companies which made a corporate action during the period of 2014-2016 is a" Weak form of market efficiency."

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