



RISK, RETURN AND VOLATILITY MEASUREMENT ON STOCK SPLIT

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ABSTRACT

KEYWORDS:

*stockSplit,
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Stock Split is considered one of major corporate action from the investor perception in the capital market. The present study through the light on the stock which got splitted in the period of 1992-2017. The stock were selected based on the market capitalization and analyzed Risk, Return and Forward that post split period return are superior to be pre stock split period returns. The risk level of the investment in mid cap and small cap are increasing after the stock split period. The volatility analysis found that in large cap, mid cap and small cap post stock split period is higher than the pre stock split period. Secondary market benchmark nifty had influence the post split period price. This study is useful to the retail investor HNI and QIB.

INTRODUCTION

The Corporate World has witnessed one of the tools Stock Split, which is usually used by the managers to direct stock prices in the market. A stock split is the division of a share into two or more parts. Stock split adds no value but increases the number of shares in the ratio of the split. By splitting the share the value of the company will not increase, but the capital is only redistributed by the increased number of shares.

Stock splits are a puzzling corporate phenomenon. 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.

REVIEW OF LITERATURE

Jijo PJ Lukose, S Narayan Rao (2002): The present reveals the effects of stock splits on market valuation and trading pattern around split announcement and ex-date and observes significant Abnormal Return. This study also examined the relevance of other theoretical explanation such as liquidity hypothesis and tax option model and won't find the evidence for increase liquidity after stock split. But, the data provide no evidence for an upward shift in variance and observed Abnormal Returns on ex-split date.

Antti Nini (2007): This paper mainly focused on shareholder wealth and volatility effects around the announcement and execution dates of stock splits at Helsinki and Stockholm stock exchange. The paper found the statistically significant abnormal announcement returns and used type of return generating model. It also founded half of the splitting stocks on both markets. This paper uses F-test and ARCH models as a statistical tool.

Madhumita Chakraborty (2013): This paper deals with Cosmetic Corporate Events which are based on split dates. The study founded that there is significantly positive returns on the day of split execution and mostly explained by the pre-split price increase, firm size, and size of transaction by using regression analysis. It also founded that there is no change in firm value consequent to stock splits.

M. Sriram (2016): This paper focused on the market's reaction to stock split announcement by companies and resultant that there is no reaction of the market to stock split announcement. It uses "paired t-test" to compare the AAR and CAR before and after the split date and results AAR has increased respectively in the Post-split period which implies slow momentum in the reaction to stock split announcements and shows there is no association between the stock splits as a new and valuation of stocks by using Average Security Returns valuation. Finally study revealed that liquidity and trading range hypothesis hold goods.

Dr. Chetna Parmar (2016): The present paper focused on information impact of the stock split in the BSE500 and did analysis on stock split effect on the price and volume that have to be scrutinized cumulative Abnormal return (CAR), Average Abnormal Return (AAR), Mean Cumulative Abnormal Return (MCAR), Mean Average Abnormal Return (MAAR) and also done test, whether investor can make an above normal return by relying on public information impound in stock split. It founded that there is no significant trading volume difference on day before stock split but there is huge volume on the split date and after that.

RESEARCH GAP

The stock split is one of the important corporate actions which reduce the market price of the stock keeping the market capital unchanged. The stock split will encourage the small investors to participate in secondary market, so that liquidity will be boosted. Many research papers have done extensive research in this area but no research has been focused risk and reward ratio of the stock performance comparison before and

after period of the split. The present study has made an attempt to explore in Indian market how the stock split had influenced the performance in three different market capital segments (Large, Mid and small Cap).

OBJECTIVES OF THE STUDY

1. To study the Risk Reward Ratio of Equity compare for the period Pre and Post from Split date.
2. To Measure Volatility of the equity in Pre and Post period based on Stock Split.
3. To know the return performance of selected stock and compare with Pre and Post period

SCOPE OF THE STUDY

The present study has been emphasized on corporate action stock split, the period of the analysis has been confined to 1992-2016. The stocks were considered from BSE 100 based on large, mid small cap.

Empirical study:

Large Cap	Mid Cap	Small Cap
Tata consultancy service ltd.	Dr Reddy's laboratories ltd.	Cummins India ltd
Reliance industries ltd	Gail (India) ltd.	Ashok Leyland ltd
HDFC Bank ltd	Aurobindo Pharma ltd	Punjab national bank
ITC Ltd	Cipla ltd	ABB India ltd
Infosys ltd	Siemens ltd	Glenmark pharmaceuticals ltd.
HDFC ltd	Jsw steel ltd	Oil india ltd
Hindustan Unilever ltd		United breweries ltd
State bank of india		Procter & Gamble hygiene & health care ltd.

The analysis has been bifurcated Pre (2 yrs) and Post (2yrs) based on stock split dates.

RESEARCH METHODOLOGY

The present study has been done based on secondary data by using descriptive statistical tools. The following tools were applied for the analysis purpose.

Risk (Beta): Beta is a measure of volatility, or systematic risk of a security or portfolio of investment vs. the market. Beta is calculated using regression analysis as follows

$$\beta = \frac{\text{Cov (Stock, Market)}}{\text{Var (Market)}}$$

Return:

Return = 100/Base value *(Present value- Base value)

Volatility: Volatility is a statistical measure of the dispersion of returns for a given security or market index. Volatility can either be measured by using the standard deviation or variance between returns from that same security or market index.

$$\text{Volatility} = \sqrt{\frac{\text{Standard deviation}}{\text{Period}}}$$

Modigliani Risk Adjusted performance:- Modigliani risk-adjusted performance (also known as M², M2, Modigliani–Modigliani measure or RAP) is a measure of the risk-adjusted returns of some investment portfolio.

$$M^2 \equiv S \times \sigma_B + \overline{R}_F$$

DATA ANALYSIS AND INTERPRETATION

1.To study the Risk Reward Ratio of Equity Compare for the period of the Pre and Post from split date

Table no: 1.0

Calculation of Risk and Return					
Stocks		Risk(pre)	Risk(Post)	Return(Pre)	Return(Post)
Tata Consultancy Service ltd.	Large cap	0.0659	0.0659	0.0753	0.2338
Reliance Industries ltd	Large cap	0.2252	0.0559	0.0985	-0.042
HDFC Bank ltd	Large cap	-0.1081	-0.1152	340.433	526.174
ITC ltd	Large cap	0.0669	0.0129	1.8982	34.3876
Infosys ltd	Large cap	0.0963	-0.0371	0.1341	0.0459
HDFC ltd	Large cap	0.0907	0.0423	0.0894	597.613
Hindustan unilever ltd	Large cap	0.022	-0.0115	0.069	0.1065
State bank of India	Large cap	0.0329	0.0284	1.749	-0.2235
	Average	0.0615	0.0052	43.0683	144.787
Dr Reddy's laboratories ltd	Mid cap	0.0542	1.0401	0.2112	0.8634
Gail (India) ltd	Mid cap	-0.0213	-0.0078	0.1288	296.24
Aurobindo Pharma ltd	Mid cap	0.0261	0.0474	0.5802	1.6181
Cipla ltd	Mid cap	0.0383	0.2039	0.1033	2.8247
Siemens ltd	Mid cap	0.1861	-0.0647	15.71	0.0266
JSW steel ltd	Mid cap	0.4787	0.2693	-0.0595	0.1586
	Average	0.0567	0.2438	3.3467	60.3145
Cummins India ltd	Small cap	0.0862	0.0769	-0.2813	-0.0082
Ashok Leyland ltd	Small cap	0.0094	0	0.1538	0.0123
Punjab national bank	Small cap	0.0293	0.0411	0.1523	0.4005
ABB India ltd	Small cap	0.2831	0.199	0.3181	0.0003
Glen mark pharmaceuticals ltd.	Small cap	0.1175	0.1053	0.2365	0.0079
Oil India ltd	Small cap	0.0393	0.0439	0.0635	0.0072
United breweries ltd	Small cap	0.0798	0.0705	0.4136	-0.1426
Procter & gamble hygiene & health care ltd.	Small cap	0.6196	1.4265	0.0956	0.8451
	Average	0.1937	0.2481	0.1214	0.1423
Overall Average		0.1145	0.1588	16.4715	66.4159

Source: Compiled from Excel sheet based on secondary data.

Large cap: In the above table 1.0 Risk and Return has been analyzed for the large cap stocks to compare in pre-post stock split period. The risk of the investment pre stock split period is observed higher (0.061) than the post stock split period (0.005). The return of the stock is observed to be greater in post stock split period compared to pre stock split period.

Mid cap: The Risk and Return analysis for the Mid cap depicts that Post stock split period stock split is greater than the pre stock split i.e., (0.243 > 0.056). The return of the mid cap found that post stock split period is greater than the pre stock split period returns.

Small cap: The Risk and Return analysis for the Mid cap depicts that Post stock split period stock split is greater than the pre stock split i.e., (0.2481 > 0.1145). The return of the mid cap found that post stock split period is greater than the pre stock split period returns.

In both pre-post majorities of stocks splits are seemed to be positive. Overall average between pre and post period risk performance i.e., Post period stock split risk is observe to be higher (0.1588) than the Pre period of stock split (0.1145). The return of the selected stock splits are observed that post split period return is superior to the pre period returns.

2.To Measure the Volatility of the equity in Pre and Post period based on Stock Split.

Table no: 1.1

Calculation of Volatility of pre-post period						
Stock	Pre			Post		
	Std	P	Volatility	Std	P	Volatility
TATA CONSULTANCY SERVICE LTD.	229.2335	0.460308	0.67846	229.8293	0.45242	0.672622
RELIANCE INDUSTRIES LTD	514.62	1.031303	1.015531	95.58206	0.189647	0.435485
HDFC Bank LTD	591.5424	1.1464	1.070701	142.7014	0.273374	0.522852
ITC LTD	22.40004	0.04283	0.206954	20.92096	0.042522	0.206209
INFOSYS LTD	470.4213	0.899467	0.948402	476212.9	962.0463	31.01687
HDFC LTD	512.1703	1.303232	1.141592	727.0403	1.166999	1.080277
HINDUSTAN UNILEVER LTD	33.29011	0.066052	0.257005	19.38092	0.038762	0.19688
STATE BANK OF INDIA	476.5962	0.91302	0.955521	43.42602	0.092989	0.304942
Average			0.784271			4.304517
DR REDDY'S LABORATORIES LTD	72.4731	0.150672	0.388165	145.9919	0.291984	0.540355
GAIL (INDIA) LTD	28.40351	0.054517	0.233489	74.87582	0.143716	0.379098
AUROBINDO PHARMA LTD	29.01193	0.056998	0.238742	23.64195	0.046539	0.21573
CIPLA LTD	14.04351	0.028143	0.16776	103.0974	0.206195	0.454087
SIEMENS LTD	107.0449	0.211551	0.459947	123.1541	0.241953	0.491887
Average			0.297621			0.416231
JSW STEEL LTD	225.9881	0.443984	0.666322	208.0494	0.400095	0.632531
CUMMINS INDIA LTD	139.8536	0.273152	0.522639	92.38932	0.176991	0.420703
ASHOKA LEYLAND LTD	12.1793	0.023928	0.154686	5.961062	0.011643	0.107901
PUNJAB NATIONAL BANK	191.7511	0.366637	0.605506	36.11209	0.075707	0.275148
ABB INDIA LTD	176.0763	0.35571	0.596414	369.8274	0.74412	0.862624
GLENMARK PHARMACEUTICALS LTD.	78.65546	0.1589	0.398623	177.8218	0.356356	0.596956
OIL INDIA LTD	107.5264	0.21377	0.462353	191.563	0.374146	0.611675
UNITED BREWERIES LTD	52.27634	0.104973	0.323995	90.69769	0.182858	0.427619
PROCTER & GAMBLE HYGIENE & HEALTH CARE LTD.	692.8506	1.324762	1.150983	527.7829	1.011078	1.005524
Average			0.542391			0.548965

Source: Compiled through E-views based on secondary data

Large cap: The Volatility of the stock has been analyzed to compare in pre and post stock split period for the large cap stocks average volatility indicates that post split period fluctuation of the stocks is greater than the pre stock split period (0.041>0.78)

Mid cap: The Volatility of the stock has been analyzed to compare in pre and post stock split period for the large cap

stocks average volatility indicates that post split period fluctuation of the stocks is greater than the pre stock split period (0.41>0.29)

Small cap: The Volatility of the stock has been analyzed to compare in pre and post stock split period for the large cap stocks average volatility indicates that post split period fluctuation of the stocks is greater than the pre stock split period (0.548>0.542)

3.To know the Return performance of selected stock and compare with before and after period

Table no: 1.2

Calculation of Modigliani Risk-Adjusted Return												
Stock	Pre					Rank	Post					Rank
	D	STDd	S	STD b	M2		D	STDd	s	STDB	M2	
TCS	-0.721	1.385	-0.521	-0.379	-1.799	9	-0.304	0.421	-0.722	-1.646	-2.651	19
RIL	-0.469	1.265	-0.371	2.574	-0.781	14	-0.609	0.730	-0.834	1.098	-0.408	11
HDFC BANK	-0.345	0.476	-0.725	1.534	-0.862	16	-0.534	0.296	-1.807	1.066	-0.961	15
ITC	-0.109	0.689	-0.159	1.411	-0.207	7	0.176	2.694	0.065	1.453	0.107	5
INFY	-7.607	0.694	-10.957	2.092	60.436	1	-7.200	0.906	-7.944	1.174	47.870	1
HDFC	-0.588	0.956	-0.616	2.385	-1.106	19	-0.582	0.321	-1.812	1.194	-1.109	17
HUL	-0.556	0.540	-1.029	1.448	-0.918	17	-0.487	0.373	-1.306	2.592	-2.748	22
SBI	-0.575	0.523	-1.100	0.951	-0.413	10	-0.650	0.883	-0.736	0.979	-0.242	8
DR REDDY	-0.541	0.908	-0.596	1.967	-0.849	15	-0.084	1.799	-0.047	1.209	-0.053	6
GAIL	-0.518	0.517	-1.003	-1.673	2.196	4	-0.487	0.395	-1.232	-0.184	0.827	3
AUR PHA	-0.039	0.825	-0.047	1.909	-0.089	5	-0.832	1.266	-0.657	1.168	-0.221	7
CIPLA	-0.541	0.487	-1.112	1.203	-0.735	12	0.302	1.717	0.176	1.276	0.278	4
SIEMENS	5.429	10.060	0.540	1.325	3.645	3	-0.724	0.766	-0.946	1.685	-0.908	14
JSW	-0.618	0.622	-0.995	1.177	-0.556	11	-0.492	0.539	-0.914	0.952	-0.421	12
CUMMINS	-0.330	0.507	-0.651	2.028	-1.988	21	-0.636	0.641	-0.993	1.169	-1.904	20
ASHLEY	-0.474	0.116	-4.106	1.200	-2.978	22	-0.741	0.702	-1.056	1.200	-0.484	13
PNB	-0.734	0.958	-0.766	0.954	-0.169	6	-0.613	0.765	-0.801	1.023	-0.329	10
ABB	-0.317	0.585	-0.542	1.449	-1.245	20	-0.442	1.139	-0.388	2.592	-2.153	21
GLEN	-0.392	0.569	-0.689	1.494	-0.760	13	-0.500	1.066	-0.469	2.616	-0.992	16
OIL	-0.531	0.362	-1.466	1.170	-0.937	18	-0.752	0.625	-1.203	0.995	-0.293	9
UB	-0.246	0.756	-0.325	1.361	-0.363	8	-0.701	0.856	-0.819	2.364	-1.361	18
P&G	0.638	0.042	15.143	0.950	24.041	2	0.600	0.044	13.576	0.969	21.301	2
Total Average					3.344						2.416	

Sources: Complied through MS-Excel based on secondary data.

The table 4.2 returns performance has been analyzed by applying Modigliani risk adjusted method. It is found that pre and post stock split period the Infosys and Procter & Gamble hygiene & health care ltd remain same performance (ranked 1 &2). But the majority of the stock returns performance is found to be negative. The overall performance return measure of Modigliani risk adjusted method depicts that pre stock split returns performance is superior to the post stock split period (3.4084 > 2.4614). The performance measure Modigliani risk adjusted method has been applied and result reveals that fluctuations of the stocks are greater in the pre stock split period than the post stock split period.

FINDINGS OF THE STUDY

1. It is found that returns of the stocks are superior in Post split period compare to Pre stock split period returns.
2. The Mid cap and the Large cap risk level had increased in post stock split period compare to the pre stock split period (0.248>0.193).
3. The Volatility measurement result found that in large cap, mid cap and small cap post split period fluctuations are greater than the pre stock split period fluctuation.
4. The Risk performance measure Modigliani Risk adjusted result indicates that pre stock split period return performance (3.408) is greater than the post stock split period return (2.461).

CONCLUSION OF THE STUDY

The study concluded the titled "Risk, Return and Volatility measurement on Stock Split-A study" for the period 1992-2016. In the present study large cap, Mid cap and Small cap stock are considered from BSE 100 Index. The analysis found that the Returns and Risk are increasing in post stock split period compare to the pre stock split period. The performance return proved that Pre stock split are superior than after stock split period.

Hence there is further scope to do research by considering the company fundamental influence on the stock returns. So that investors can take inform decision.

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