

Impact of Stock Splits on Stock Returns and Liquidity of the Selected Firms: A Study from NSE

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Abstract

Stock splits are used as a tool to bring down the current share price in a market in order to attract all kinds of investors in the market and to make it affordable especially to the small investors. During this course it is not expected to gain any abnormal returns but practically it will most of the times as it supports the signaling hypothesis theory. Corporate actions are just cosmetic events where do not have any impact on firms investments or capital structure, so there is a scope for analyzing the impact of splits on the shareholders return. The purpose of this paper is to evaluate the abnormal returns and to analyze the changes in the liquidity position of the pre-split and post-split announcement. Study has considered 10 samples which are gone for stock splits during the year 2016-2020 and also should be trading under Nifty 50 and derivative segment too. The results were highlighting that the spot market and derivative markets are correlated and moves parallel but just immediately after the spot is near month contract; there it is observed that there is a negative abnormal returns on the event announcement day where investors were not able to cope up the information rapidly.

Keywords: Stock splits, abnormal return, liquidity and derivatives.

1.0 Introduction

The rationale behaviour of investors is different from each other and varies from time to time. Few are price conscious like they tend to be traded the securities at the lower prices due to uncertainty, transaction costs, tax and so on. Most of the managers of the firm expect that every investor to participate in the particular stocks. So if the prices are in the higher levels it may not be in a range of the buying for most of the investors; hence managers will enforce the corporate actions like splitting the stocks face value may be by Rs.10/- to Rs.5/- or Rs.2/- or Rs.1/-. As per the SEBI guidelines no

companies can reduce the face value less than Rs.1/-. If this is forecasted by the firm's manager but by executing the stock split it does not only lower the value of the shares but also give some opportunities to investors to make some abnormal gains.

2. Statement of the Problem

Reality and theory are too distinct a many times; due to decision made by the top level management, it will lead to changes in the stock prices, here corporate decision like stock split is considered to measure the abnormal returns if any and analyze the changes in the liquidity position of the selected stocks during the study.

3.0 Review of Literature

Putri & Sihombing (2020) research is motivated by the announcement of corporate actions and their impact on trading volume, abnormal returns, and bid-ask spread. The research focused on signaling theory by considering the sample of 66 companies from Indonesia Stock Exchange from 2015 to 2019. By using the Wilcoxon signed-rank test the results of the study where there is no significant difference between stock trading volume before and after; no difference in the bid-ask spread before and after the stock split but there was a significant difference between abnormal returns before and after the event.

Tabibian et al. (2020) investigated the changes in liquidity in Bursa Malaysia during 2004-2018 by studying 214 samples. The study found improvements in the liquidity in the announcement date and execution date but falls after the split ex-date. Also studied the relationship between abnormal return and liquidity by considering turnover ratio and relative spread and the outcome was the improvement in the liquidity leads to the abnormal returns and in the study it found that 1.49% of abnormal returns which was driven by stock liquidity.

Rastogi & Athaley (2019) studied the integration of volatility in spot, futures and options by using the data from 2010 to 2017 of Nifty 50 index and its constituents. The study used generalized method of moments by applying simultaneous equation model to check the volatility in three markets. Study found that volatility in options was not associated with the volatility of spot and futures but spot and futures were dependent on each other. The behaviour of the options market is completely different compared to the futures market.

Rohit et al. (2016) conducted a study by considering the information of 90 stock split and 29 right issues in the BSE. To calculate abnormal returns, the market model has been used and it has been noticed that positive average abnormal returns were derived for two events on the day of their announcements; however, it was not statistically significant. The study concludes that the Indian stock market is efficient in semi-strong form.

Banerjee (2019) examined the validity of liquidity hypotheses in the stock market by analyzing the trading volume and number of trades following ex-split day using the daily data for one month before and after the split for a sample of splits considered for about seventeen years in the Indian stock market. The findings of the study revealed that a stock split leads

to an improvement in post-split liquidity in the month following and hence it is more attractive to small and retail investors in the Indian market.

Kadian & Yadav (2020) investigated the impact of stock split announcements on the returns and efficiency of the Indian banking sector by considering the data from S&P BSE 500 index from April 2010 to March 2018 about the banking sector which was actively trades in the study period. The results revealed that there is no significant average abnormal returns during the event window on the announcement of stock splits and it concludes that Indian banking industry in a semi-strong form of efficient.

GUPTA (2015) has analyzed the effects of price and returns in the long term as well as short term by considering the three event window periods viz, 13 months -6 months prior to ex-split month and 6 months after the split; 25 months -12 months prior to ex-split month and 12 months after the split and 73 months -36 months prior to ex-split month and 36 months after the split which was very similar to the event window of Ikenberry (1996) and Desai & Jain (1997). In a short term event window that is for 13 months period there was a negative AAR of 1.46% in the execution month but it was not significant at 5% level of significance. The study found that positive AAR in the entire pre-split period of 13 months excluding the month immediately before the ex-split month and in the post split period study found negative AAR in the 13 months and also statistically significant at 1% and 5% level of significance except the 3rd and 4th month of the post split period. Thus the study concludes that there was a negative AAR in the post stock split period for the event window of 13 months. As the study focuses on the long term time horizon for 73 months event window the results were positive and statistically significant in the months closer to the ex-split month which was very similar to the studies conducted by Lakonishok & Lev (1987), Malloney & Mullherin (1992), Ikenberry (1996) and Boehme (2001) and there was a negative AAR of 2.28% in the execution month in the 73 months window period.

4.0 Research Design

The current study examines the reaction of stock prices to the stock split announcements made by Indian companies listed in NSE during 2016-2020. The following objectives are set for the study.

5. Objectives of the Study

- To determine the abnormal returns if any for the spot and derivative segment.
- To analyze the changes in the liquidity positions for the spot and derivative segment.

5.1 Data and Sample

The sample selected for the study consists of 10 stocks, which are constituents of Nifty 50, the most popular index of National Stock Exchange. The basis for stock selections are it has to be listed in NSE and must trade in the derivative segment along with announcement of the stock splits during the study period. Standard event study methodology was adopted to analyse the abnormal returns around the date of announcement. The event study methodology considers two time intervals (time windows); (a) the estimation window used for establishing the market model, which is used for computation of the expected returns and (b) the event window, the period around the day of announcement for which the abnormal returns are analysed. The current study employs a 180 day estimation window and a 41 day event window. The daily closing prices of shares for all the 10 companies were collected for a period of 200 days prior to the announcement day and 20 days after the announcement day. The closing value of Nifty 50 was also collected for the corresponding period. The relevant data for the study was sourced from the website of the National Stock Exchange.

5.2 Scheme of Analysis

The procedure of event study method applied in the study is explained below:

1. Daily rates of return for the share as well as the market index (Nifty 50) are computed using the formula: Returns for n^{th} day = $\ln [\text{Price on } n^{\text{th}} \text{ day} / \text{Price on } (n-1)^{\text{th}} \text{ day}]$

The entire data period is divided into two parts, the estimation window and the event window. A period of 41 days was defined as the event window, comprising 20 days prior to the date of announcement of stock split, the day of announcement and 20 days after the announcement. A 180 day period preceding the beginning of event window was defined as the estimation window.

The daily returns on the share is regressed with the returns on the market index during the period pertaining to the estimation window to compute the values of α and β for the share. Using the estimates of α and β , the daily expected rates of returns are

computed for the event window period using the following formula, where r_m is the market return and r_j the stock return.

$$E(\bar{r}_j) = \alpha + \beta (r_m)$$

Daily Abnormal Returns (AR) is computed as the difference between the actual returns and the expected returns for all the 30 shares in the sample. Average Abnormal Returns (AAR) is computed by taking cross sectional average of ARs. The cross sectional averaging helps in reducing the scope of bias due to extreme movements, if any, exhibited by one or two shares in the sample. The 41 day movement of ARs is captured graphically.

Cumulative Abnormal Returns (CARs) for each share is computed by cumulating the ARs over the event window of 41 days. CAR for day t is defined as:

$$CAR_t = AR_t + CAR_{t-1}$$

Cumulative Average Abnormal Returns (CAAR) for each day is estimated by computing the cross sectional averages the CARs. The same can also be computed by cumulating the AARs over the event window of 41 days.

The statistical significance of CAARs is tested using t-test at 5% level of significance. Here the objective is to test whether the abnormal returns are significantly different from zero. The null hypothesis for the test is that the abnormal returns are not significantly different from zero and the alternate hypothesis is that the abnormal returns are significantly different from zero.

To analyze the effect of stock splits on liquidity position three variables are considered – number of shares traded, average turnover and number of trades for the spot segment; for derivatives - number of contracts traded, average turnover and changes in open interest. To evaluate the effects 60 days before the event and 60 days after the event is considered.

6. Data Analysis

The AAR and CAAR were tabulated in the Table 1 which are gone for announcement of stock splits during the study period 2016-2020. And AAR is positive for 22 days in the event window and also statistically significant at 5% levels on -12, -11 and -10 day respectively and found negative AAR for remaining 19 days in the event window but the results are not statistically significant. It is observed that there was a positive AAR and CAAR on the event announcement day and negative returns on -1 and +1 days but overall CAAR found to be positive before and after the event for near month contract.

Table 1: Showing the AAR and CAAR for near, mid, far month and spot segment

	Near Month		Mid Month		Far Month		Spot	
	AAR	CAAR	AAR	CAAR	AAR	CAAR	AAR	CAAR
-20	0.001799	0.001799	0.002194	0.002194	0.002672	0.002672	0.002368	0.002368
-19	0.004203	0.006002	0.001345	0.003539	0.001164	0.003836	0.005371	0.007739
-18	-0.00928	-0.00328	-0.00161	0.001924	-0.01739	-0.01356	-0.01302	-0.00528
-17	0.004116	0.000839	-0.00824	-0.00632	-5.5E-05	-0.01361	0.0062	0.000922
-16	0.006253	0.007091	0.000883	-0.00544	0.004983	-0.00863	0.006071	0.006993
-15	0.005168	0.012259	0.00514	-0.0003	0.006818	-0.00181	0.006589	0.013583
-14	-0.00107	0.011186	0.005558	0.005262	0.00199	0.00018	-0.00117	0.012416
-13	0.006515	0.017701	0.00641	0.011672	0.002728	0.002908	0.007664	0.02008
-12	0.004029	0.02173	-0.007	0.004668	0.005933	0.008841	0.000924	0.021005
-11	0.016001	0.037731	0.012335	0.017002	0.022547	0.031388	0.019582	0.040586
-10	-0.00196	0.035774	-0.00263	0.014369	0.001382	0.032771	-0.00096	0.039623
-9	-0.00169	0.034081	0.005084	0.019453	-0.00334	0.029431	-0.002	0.037627
-8	0.000544	0.034625	-0.00124	0.018211	0.001361	0.030791	0.004366	0.041993
-7	-0.00095	0.033674	0.001515	0.019726	0.005408	0.036199	-0.00189	0.040104
-6	-0.00078	0.032892	-0.00384	0.015891	-0.00034	0.03586	-0.00072	0.039381
-5	-0.00452	0.028372	0.001124	0.017014	-0.00089	0.034969	-0.00783	0.031546
-4	-0.00075	0.027622	0.002351	0.019365	0.007951	0.04292	0.000672	0.032218
-3	0.006024	0.033646	-0.00186	0.017508	-0.0054	0.037523	0.004294	0.036512
-2	0.003761	0.037408	0.003188	0.020696	-0.00112	0.036399	0.004031	0.040543
-1	-0.01437	0.023041	-0.00911	0.011582	-0.01292	0.023483	-0.01545	0.025095
0	0.005592	0.028633	-0.01648	-0.0049	0.009275	0.032758	0.004245	0.02934
1	-0.0003	0.028331	0.001135	-0.00377	-0.00705	0.025709	0.003316	0.032656
2	-0.00324	0.025088	-0.00662	-0.01039	0.005169	0.030878	-0.00232	0.030341
3	0.000337	0.025426	0.008074	-0.00232	-0.00432	0.026557	0.001463	0.031803
4	0.010735	0.036161	-0.00181	-0.00413	-0.00357	0.022992	0.009333	0.041136
5	-0.00637	0.029786	0.002622	-0.0015	0.006789	0.029781	-0.00517	0.035969
6	-0.00671	0.023077	0.008607	0.007103	-0.00127	0.028508	-0.00885	0.027116
7	0.00051	0.023587	-0.01168	-0.00457	-0.00187	0.026639	0.003877	0.030994
8	0.004311	0.027898	0.009042	0.00447	0.006222	0.032861	0.004397	0.03539
9	-0.0027	0.025195	-0.00035	0.004123	-0.0025	0.030359	-0.00251	0.032875
10	0.008036	0.033232	0.007571	0.011694	0.000298	0.030657	0.008095	0.040971
11	-0.00327	0.029959	0.003178	0.014872	0.00366	0.034317	-0.0019	0.039068
12	0.005289	0.035248	0.005685	0.020557	0.000424	0.034741	0.004739	0.043808
13	-0.00118	0.034068	-0.00428	0.016273	0.007113	0.041854	0.001262	0.04507
14	-0.00528	0.028787	-0.00317	0.013102	-0.00141	0.040446	-0.00349	0.041582
15	0.005235	0.034022	0.005725	0.018827	-0.00274	0.037706	0.00299	0.044572
16	-0.00692	0.027104	-0.00183	0.016997	0.005689	0.043395	-0.00273	0.041846
17	0.001854	0.028958	0.000266	0.017263	0.000351	0.043745	-0.00225	0.039594
18	0.001642	0.0306	0.004987	0.02225	0.007037	0.050783	0.00505	0.044644
19	-0.00635	0.024246	-0.00419	0.018065	-0.00839	0.042395	-0.00711	0.037533
20	0.003305	0.027551	0.002601	0.020666	0.007749	0.050144	0.00181	0.039344

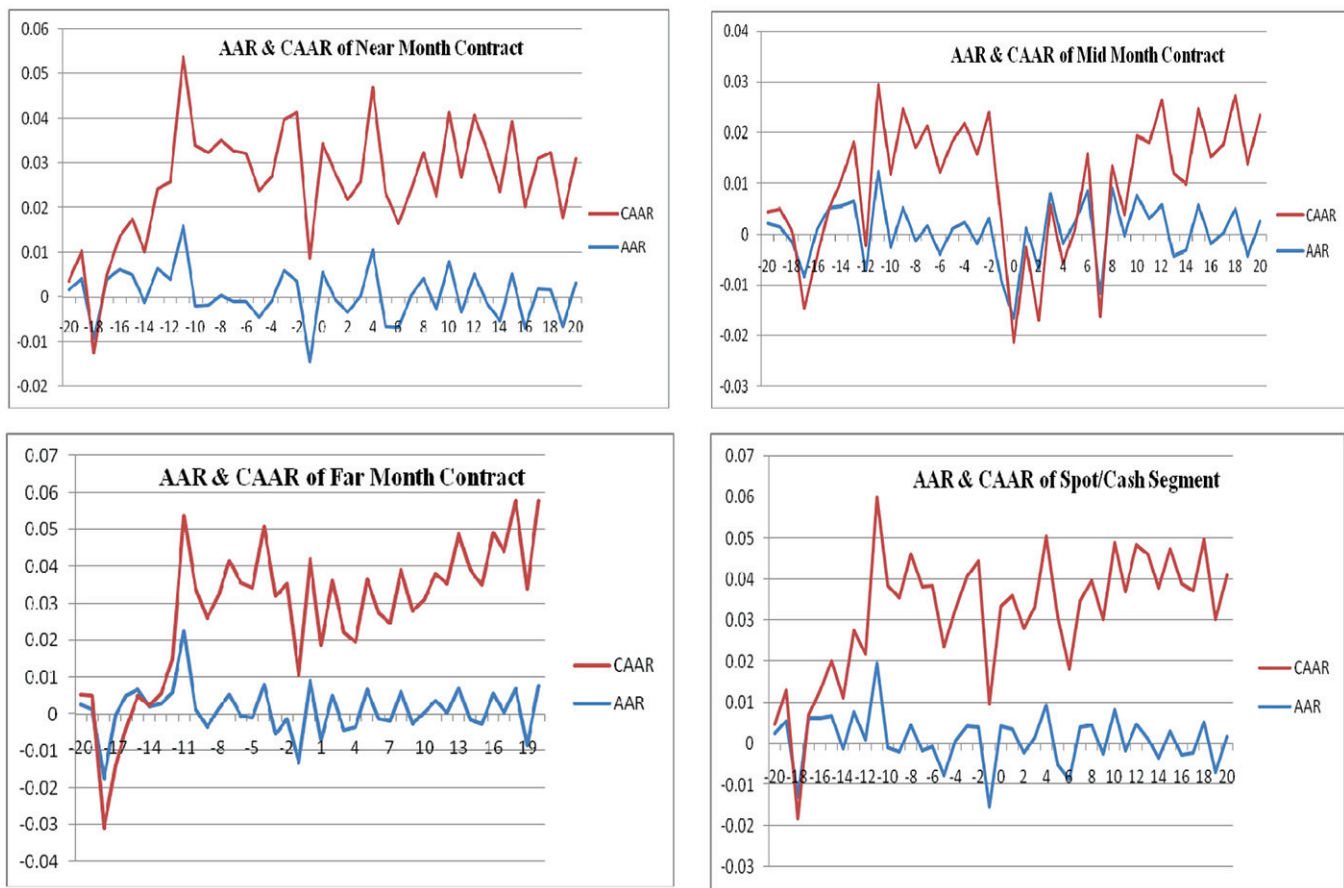


Figure 1: Showing the AAR and CAAR for near month, mid-month, far month contract and spot

The results of mid month contracts of AAR were found to be 23 days positive and 18 days negative in the event window but the results were not statistically significant at 5% level.

The results of far month contracts of AAR were found to be 24 days positive and 17 days negative in the event window but the results were not statistically significant at 5% level.

Finally, for the spot segment AAR were found to be 24 days positive and 17 days negative in the event window the results were statistically significant before the event on -15, -13, -12, -11, -10, -9, -8, -8, -7, -6 and -4 day on the event day there was a positive average abnormal returns were found and overall there a positive CAAR found in the event period.

The above graphs represent the AAR and CAAR for the stock splits during 2016-2020. In all the 4 categories it is observed that before the event the market expectations were gradually drifted and on the announcement day there was a dip in the AARs. The positive average abnormal returns were reported on event date except for the mid month contracts. Thus

the study found that market reacts positively for the announcement and successful in increasing the share price after the announcement of the stock splits.

6.1 Analysis of Liquidity Position

Table 2 shows the changes in the number of shares traded in the near month contract almost all companies trading numbers were increased and six company's results were statistically significant at 5% level and only two companies Chola Investment Corporation and United spirits shares numbers were decreased.

The Table 3 shows that changes in turnover in near month contract and the average turnover is increased in 6 samples and the results are statistically significant for 7 samples.

The Table 4 shows that changes in the average traded quantity for the cash segment and nine samples were successful in increasing the quantity but only HDFC Bank Ltd. quantity was decreased and except HDFC Bank Ltd. all other sample results were statistically significant.

Table 2: Changes in Number of Shares Traded for Near Month Contracts

Company Name		Average number of shares traded				Increase/ Decrease
		Pre-Split	Post-Split	t-value	p-value	
1	BEL	1575.95	2840.25	-4.4548	0.0000381	1264.3
2	Bajaj Finance Ltd.	1741.52	2578.42	-3.5058	0.0008764	836.9
3	Chola Invest. Finance	1159.32	1010.28	1.92586	0.0589443	-149.0333
4	Container Corp	862.25	1053.27	-1.5374	0.1295484	191.01667
5	Eicher Motors Ltd.	4667.85	5332.93	-1.9499	0.0559436	665.08333
6	Grasim Industries	1499.72	3871.57	-4.8257	0.0000102	2371.85
7	HDFC Bank Ltd.	20562	21378.2	-0.5453	0.5876181	816.15
8	IGL	1728.65	2096.65	-1.5298	0.1313991	368
9	JSW Steel Ltd.	4686.85	5375.32	-1.6589	0.1024518	688.46667
10	United Spirits	4836.27	4274.85	1.00648	0.3182946	-561.4167

Table 3: Changes in Turnover in Lakhs for Near Month Contracts

Company Name		Average Turnover in Lakhs			Increase/ Decrease	
		Pre-Split	Post-Split	t-value		p-value
1	BEL	15453.6	38235.2	-6.4415	0.00000	22781.6
2	Bajaj Finance Ltd.	11254.9	18700.6	-4.4988	0.00003	7445.7
3	Chola Invest. Finance	7676.22	7039.67	1.1634	0.24935	-636.55
4	Container Corp	6866.31	8752.03	-1.9128	0.06063	1885.72
5	Eicher Motors Ltd.	21017.8	37001.3	-6.0827	0.00000	15983.5
6	Grasim Industries	10464.6	27453.2	-5.098	0.00000	16988.7
7	HDFC Bank Ltd.	116151	21378.2	15.461	0.00000	-94773
8	IGL	10492.7	16715.6	-3.5868	0.00068	6222.86
9	JSW Steel Ltd.	49403.6	27335.3	7.74744	0.00000	-22068
10	United Spirits	40311.2	35857.7	0.93066	0.35582	-4453.6

Table 4: Changes in Total traded quantity in Cash/Spot Segment

Company Name		Average traded quantity			Increase/ Decrease	
		Pre-Split	Post-Split	t-value	p-value	
1	BEL	123139.40	535170.50	-6.28	0.00000	412031.10
2	Bajaj Finance Ltd.	387024.58	2924554.02	-6.67	0.00000	2537529.43
3	Chola Invest. Finance	325924.73	627237.05	-4.88	0.00001	301312.32
4	Container Corp	305714.08	538624.65	-3.17	0.00240	232910.57
5	Eicher Motors Ltd.	250056.83	776619.57	-2.60	0.01181	526562.73
6	Grasim Industries	90323.90	389909.72	-6.12	0.00000	299585.82
7	HDFC Bank Ltd.	3447581.07	3334716.38	0.21	0.83078	-112864.68
8	IGL	364594.77	540369.87	-2.64	0.01065	175775.10
9	JSW Steel Ltd.	587867.60	1700688.82	-2.91	0.00509	1112821.22
10	United Spirits	473108.83	745599.33	-2.33	0.02343	272490.50

Table 5 Changes in Turnover in Cash/Spot Segment

		Average Turnover in Lakhs				Increase/ Decrease
		Pre-Split	Post-Split	t-value	p-value	
1	BEL	962568267	1459504039	-1.81	0.07509	496935772.61
2	Bajaj Finance Ltd.	552942616	955067389	-4.79	0.00001	402124772.38
3	Chola Invest. Finance	432754604	366035409	1.83	0.07156	-66719195.58
4	Container Corp	394669739	572241677	-2.01	0.04891	177571937.98
5	Eicher Motors Ltd.	3754180997	5700210070	-5.25	0.00000	1946029073.05
6	Grasim Industries	420077657	870319074	-2.70	0.00892	450241416.93
7	HDFC Bank Ltd.	7775381860.95	7816536544.49	-0.03	0.97222	41154683.54
8	IGL	405206196.75	730407553.35	-4.19	0.00010	325201356.59
9	JSW Steel Ltd.	1026290961.02	927937773.06	1.06	0.29523	-98353187.97
10	United Spirits	1567116268.59	1217367795.04	1.71	0.09168	-349748473.55

Table 6: Changes in Number of Shares Traded in Cash/Spot Segment

	Company Name	Average number of shares traded				Increase/ Decrease
		Pre-Split	Post-Split	t-value	p-value	
1	BEL	14580.92	27703.32	-4.72	0.00001	13122.40
2	Bajaj Finance Ltd.	18032.47	33355.20	-6.60	0.00000	15322.73
3	Chola Invest. Finance	20444.30	19949.37	0.31	0.76073	-494.93
4	Container Corp	22895.37	25434.17	-1.03	0.30643	2538.80
5	Eicher Motors Ltd.	58920.62	75040.35	-2.11	0.03939	16119.73
6	Grasim Industries	6417.40	18287.47	-4.90	0.00001	11870.07
7	HDFC Bank Ltd.	123307.13	137363.82	-1.92	0.05986	14056.68
8	IGL	11880.98	21380.07	-4.88	0.00001	9499.08
9	JSW Steel Ltd.	21166.12	25458.48	-1.91	0.06128	4292.37
10	United Spirits	28386.27	28744.67	-0.11	0.91539	358.40

The Table 5 shows the average turnover in the cash segment during pre and post-split. Here only 50% of the samples results were statistically significant and other not but still 7 samples were successful in increasing the turnover after the splits.

The Table 6 reveals that there is increase in number of shares traded for 9 sample companies and 6 sample results are statistically significant. Overall the observation shows that the stock split is successful in improving the liquidity immediately after the announcement of stock splits.

7.0 Conclusions

Stock splits intends to keep the stock price level to the low and expects to enhance in the trading volume activity in the market perhaps the investors are also taking the advantage out of it by gaining the abnormal returns. The managers intention is completely different from what the investors think by the corporate actions carry the more information to the investors. Unlike all the stock splits are not generating the abnormal returns nor enhancing the trading volume after the

split announcement, but here for the purpose of the study the sample selected on the basis of existence of stocks in the spot as well as derivative segment during the period 2016-2020 and only 10 samples were fulfilled the requirements. From the study it is clear that there is a chance of gaining positive abnormal returns in the spot market but in the near month contract the AAR and CAAR found to be negative it might be due to non-synchronization. Also stock splits are good enough to increase the total number of shares traded, turnover, and traded quantity in both spot as well as stock futures.

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