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IMPACT OF STOCK SPLIT ANNOUNCEMENT ON EQUITY SPOT AND FUTURES: A STUDY FROM NSE

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Abstract:

The stock market will witness the ups and downs of the economy. It is one of the alternative tools to measure the performance of economic conditions. Global markets react to internal events and external affairs depend on the trend. In this research, an attempt is made to evaluate the impact of corporate action like an announcement of stock splits on the shareholders' return and liquidity in both spots as well as futures. The standard event study is considered to calculate the abnormal returns if any. To find the liquidity the changes in the daily turnover of volumes of share traded are evaluated. Announcement of stock splits yields negative returns for near month, mid-month and equity spot respectively but it is observed that there is no information leakage prior to the event. The abnormal returns compared with the study are not statistically significant for pre-split and post-split data along with equity spot and futures. The volumes were in trend between -3 to +5 days and become normal reduction in the liquidity position but not statistically significant. The results of the study show that Indian capital markets are in semi-strong form of efficient.

Key Words: Stock splits, spot, futures, abnormal returns, and liquidity.

Introduction:

A capital market attracts researchers for various reasons; here a study is conducted to establish the relationship between the spot market and futures market. Like how well they are integrated in terms of returns and liquidity. Several studies are found in the spot market but very few in terms of the futures market particularly in connection with the Indian stock markets. However due to the impact of internal or external news stock prices tends to be reactive for that; and the same will be reflected in the share prices, whereas in the case of the derivative market the prices are obtained from the underlying assets. In the spot market, everything is traded on daily news/information but in the derivatives market, it is quite difficult to predict the future.

The impact of derivatives trading on stock market volatility has received considerable attention in India, particularly after the stock market crash of 2001. Derivative products like futures and options have become important instruments of price discovery, portfolio diversification, and risk hedging (Rajput et al., 2013). Investing in spot markets is always preferred by investors. However, derivative markets also provide an equally lucrative but demanding platform for investments. Derivatives, as an alternative to the spot market, provide an opportunity to invest in the same securities, however at a lower price (Rastogi & Athaley, 2019).

Literature Review

In order to know the reaction for the corporate actions/events taking place in the stock markets; usually, event study methodology will be adopted which was developed and used by (Fama et al., 1969) the prices fully reflect all available information if the market is efficient and it was purely based on the Efficient Market Hypothesis. (Dhar & Chhaochharia, 2011) in their research attempted to examine the effects of two types of events like stock splits and bonus issues by calculating abnormal returns using CAPM model. The sample was drawn from BSE 500 index from 2001 to 2007 with the stocks of 90 stock splits and 82 bonus issues. And the study found that abnormal returns for bonus issues were about 1.8% and for stock splits were 0.8% and it concludes that Indian capital markets were in the semi-strong form of efficiency.

(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)investigates the changes in liquidity in Bursa Malaysia during 2004-2018 bus 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.

(Joshipura, 2008) has analyzed 94 companies that had gone for a stock split during 2002 to 2007 from S&P CNX 500 to check the price and liquidity effects of the stock split in the Indian capital market. The study focused on the optimal trading range hypothesis because the stock split was quite more common in like US, Germany., but like in India, it was a new phenomenon. The results of the study were deviating from the results of other countries like US and Germany; it found the there was an abnormal return of 1.08% and 1.665 on an announcement and effective day but it was reversed in less than a week and there are no chances for shareholders to create wealth in the long run but it was improving the volumes of the shares due to announcement of the stock split.

(Chakraborty, 2012) an attempt is made to understand the reality versus theory that exists in the market by evaluating the 234 companies listed in BSE India from 1999 to 2008. Even though here was positive returns before and on the announcement date it was wiping out the returns gained during after execution day and no wealth is created for the investors and the price has increased in the pre-announcement window itself due to this noticeable change in the volumes can be observed but it was also reduced in the post announcement window. A small investor is affected by this due to informed investors were exit the same when prices are at their peaks.

(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 behavior of the options market is completely different compared to the futures market.

(Singh & Kansal, 2010) examined the impact of derivatives trading on the volatility on Indian stock market by studying pre-introduction and post introduction of derivatives. To find the standard deviation rates of returns were used and same measured as a volatility factor for the period 1995-96 to 2008-09. The study suggests that due to the introduction of derivatives in the market the volatility has been reduced when compared to the pre-introduction period and also it is attracting new investors to the derivative segment as an investment alternative, due to which there is an increase in the trading volumes with that greater liquidity has been reflected in stock prices.

Objectives of the Study:

- To compare the returns of the equity spot and futures listed at NSE.
- To understand the liquidity pattern in both spot and futures due to the announcement of stock splits.

Hypothesis:

H_0: There is no significance difference in abnormal returns of selected stocks compared to pre-split and post-split for near month, mid-month and spot market.

H_1: There is significance difference in abnormal returns of selected stocks compared to pre-split and post-split for near month, mid-month and spot market.

H_0: There is no significance difference in abnormal returns of equity spot and futures listed at NSE.

H_1: There is significance difference in abnormal returns of equity spot and futures listed at NSE.

Data set and Methodology

SEBI has permitted trading on index futures on May 25, 2000. BSE commenced its trading of Index futures on June 9, 2000 and NSE commenced its trading of Index futures on June 12, 2000. The stock options were introduced in July 2001 Futures on individual stocks were introduced in November 2001. These above-discussed instruments were introduced to provide alternate securities to trade in the market for the speculators. In this context here the study focuses on the correlation between the spot and equity derivatives in the NSE selected from Nifty large-cap, mid-cap, and small-cap indices which are gone for stock splits in the previous five years. The

study is based on the sample criteria which have considered a daily return of the stocks for which the derivative products data are available for the trading.

For the stock futures, to the current month - closing prices of near-month and mid-month prices were taken and the far-month contracts have been ignored in this study. The daily closing prices of 10 stocks for spot as well as futures were collected for 150 days period before the announcement day and 20 days after the announcement is made. The closing value for particular indices was collected for the corresponding period.

The daily returns were calculated using the formula:

Returns for n^{th} day = [Price n – Price (n-1)]/Price (n-1)

The data set was divided into two parts, estimation window, and event window. A period of 41 days was defined as the event window, comprising of 20 days before the date of announcement of a stock split, the day of the announcement, and 20 days after the announcement. 129 days preceding the beginning of the event window was defined as the estimation window.

In order to estimate the alpha and beta, CAPM model was used by the formula:

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

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Abnormal returns were calculated by taking the difference between the actual returns and the estimated returns for 10 companies. Average Abnormal Returns were computed by taking cross-sectional averages of AR's.

In the 41-day event window cumulative abnormal returns for each share are computed by calculating ARs over the event window of 41 days. CAR for day *t* is defined as:

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

By taking the cross-sectional average of cumulative abnormal returns, cumulative average abnormal returns were calculated and it is tested using a t-test at 5% statistical significance.

Data Analysis

Table1.1 showing Average Abnormal Returns for near month, mid-month and equity spot.

Table 1 – Average Abnormal Returns (AAR)						
Day	AAR of Near Month	t- value	AAR of Mid-Month	t- value	AAR of Spot	t- value
-20	-0.00227	-0.65091	-0.00039	-0.13197	-0.00216	-0.83041
-19	-0.00062	-0.25969	0.005322	1.209361	0.01341	1.865767
-18	0.006049	1.302509	-0.00077	0.669428	0.00741	1.215172
-17	-4.08E-06	-0.00109	-0.00405	0.013331	0.000385	0.062414
-16	-0.01075	-2.12173	-0.00485	-0.62381	-0.00372	-0.61614
-15	0.004817	1.002627	0.003064	-0.21449	0.002713	0.501439
-14	-0.00261	-1.3367	0.002131	0.046973	0.001933	0.374548
-13	0.012177	2.731699	0.005204	0.498439	0.003103	0.663707
-12	-0.00749	-2.21205	-0.00563	0.003064	0.002799	0.522893
-11	-0.00921	-1.85395	-0.00596	-0.55572	-0.00598	-1.08479
-10	-0.003	-0.69875	-0.00014	-0.52045	0.004726	1.297435
-9	0.004531	1.157434	0.002806	-0.26071	-0.00068	-0.18433
-8	0.000902	0.197945	-0.00187	-0.4053	0.003828	0.591999
-7	-0.00353	-0.65018	-0.004	-0.60857	-0.00023	-0.04356
-6	-0.00913	-1.044	-0.0025	-0.59299	0.000794	0.126604
-5	0.010751	1.898102	0.005655	-0.38185	0.010103	1.830917
-4	-0.00204	-0.49865	0.004212	-0.10894	0.000603	0.137308
-3	0.004892	0.974628	-0.00209	-0.22844	0.002014	0.333472
-2	-0.00388	-1.74683	-0.0033	-0.43095	0.000818	0.251376
-1	0.005222	1.10625	0.0051	-0.11367	0.003743	0.878573
0	-1.53892	-5.60221	-1.53983	-5.58939	-0.9132	-2.86042
1	0.007371	0.808889	0.006398	-5.5949	0.000299	0.030869
2	0.006055	0.975649	0.004872	-5.50697	-0.14988	-0.88878

3	0.000113	0.02186	0.002233	-5.42345	0.004929	0.610722
4	-0.00678	-1.37616	-0.00853	-5.40317	-0.00567	-0.86499
5	0.003111	0.368753	0.002074	-5.35599	0.007162	0.645113
6	-0.00107	-0.21921	-0.00179	-5.36159	-0.00161	-0.42151
7	0.005134	0.968269	0.003654	-5.37355	0.009565	1.105123
8	-0.00281	-0.81759	0.003888	-5.32511	0.002912	0.675158
9	-0.00145	-0.2642	-0.00511	-5.36326	0.003462	0.561147
10	-0.00616	-0.98781	-0.00443	-5.41123	0.002626	0.57005
11	0.003725	0.555239	0.162482	-4.19581	-0.00439	-0.5628
12	-0.0047	-1.1123	0.004869	-4.1363	0.004901	0.622882
13	-0.00468	-0.54461	-0.00354	-4.1781	0.015407	2.093155
14	0.002059	0.253471	-0.00829	-4.16783	-0.0105	-1.26726
15	0.00069	0.144704	0.00693	-4.09703	0.012319	1.299593
16	-0.00395	-0.75	-0.16717	-5.33393	0.005526	1.054825
17	-0.00867	-2.67444	-0.00533	-5.37843	0.004071	0.827616
18	-0.00054	-0.07252	-0.00367	-5.4049	-0.00207	-0.30282
19	-0.00297	-1.13113	-0.00754	-5.34712	-0.01013	-1.35287
20	-0.00727	-1.39296	4.72E-05	-5.37365	-0.00067	-0.09743

(Significance level at 5% t – value - 2.059539)

The above table demonstrates the results for the sample of the stock splits announcements made during the year 2016 – 20 and the shares one which is trading under cash segment and derivative segment is considered. Before the announcement of stock splits the study witnessed there is no consistent pattern of abnormal returns but on the event day it is witnessed that -1.53892059, -1.53983 and -0.9132 which is statistically significant at 5% level for all three categories but after announcement of event on 17th day in the near month contract -0.00867281 was significant but in near month contract from the date of announcement and till the event window exhibited the negative returns and also statistically significant at 5% level and in the case of spot market after the event of 13th day it exhibited 0.015407 and it is positive.

Table 1.2 showing Paired t-test for Pre and Post-Split announcement (AAR)

t-Test: Paired Two Sample for Means						
	Near Month		Mid - Month		Spot Market	
	Variable 1	*Variable 2*	*Variable 1*	*Variable 2*	*Variable 1*	*Variable 2*
Mean	-0.00026	-0.00114	-0.0001	-0.0009	0.00228	-0.00559
Variance	4.14E-05	2.17E-05	1.59E-05	0.002884	1.96E-05	0.001198
Observations	20	20	20	20	20	20
Pearson Correlation	-0.26075		-0.19684		-0.56291	
Hypothesized Mean Difference	0		0		0	
df	19		19		19	
t Stat	0.443978		0.065141		0.943567	
P(T<=t) one-tail	0.331037		0.474371		0.178618	
t Critical one-tail	1.729133		1.729133		1.729133	
P(T<=t) two-tail	0.662073		0.948742		0.357236	
t Critical two-tail	2.093024		2.093024		2.093024	

As the observed statistics for Near Month contracts t-statics is smaller than the tabular t-value, we are failed to reject null hypothesis (0.443978 < 1.729). The P-value of one tail test is 33.10% which is greater than value of α so we fail to reject null hypothesis. (0.065141<1.729) in case of mid-month contract so failed to reject the null hypothesis also one tail test is 47.43% greater than value of α so we fail to reject the null hypothesis as in the case of equity spot (0.943567<1.729) and one tail test is 17.86% failed to reject the null hypothesis in all the three cases.

Table 1.3 showing Paired t-test for equity spot and near month and mid-month contracts AAR

t-Test: Paired Two Sample for Means				
	Equity spot and Near Month		Equity spot and Mid-Month	
	Variable 1	*Variable 2*	*Variable 1*	*Variable 2*
Mean	-0.02389	-0.03822	-0.02389	-0.038044643
Variance	0.02086	0.057741	0.02086	0.05917169
Observations	41	41	41	41
Pearson Correlation	0.984871		0.972761	
Hypothesized Mean Difference	0		0	
df	40		40	
t Stat	0.906799		0.838856	
P(T<=t) one-tail	0.184972		0.203268	
t Critical one-tail	1.683851		1.683851	
P(T<=t) two-tail	0.369944		0.406536	
t Critical two-tail	2.021075		2.021075	

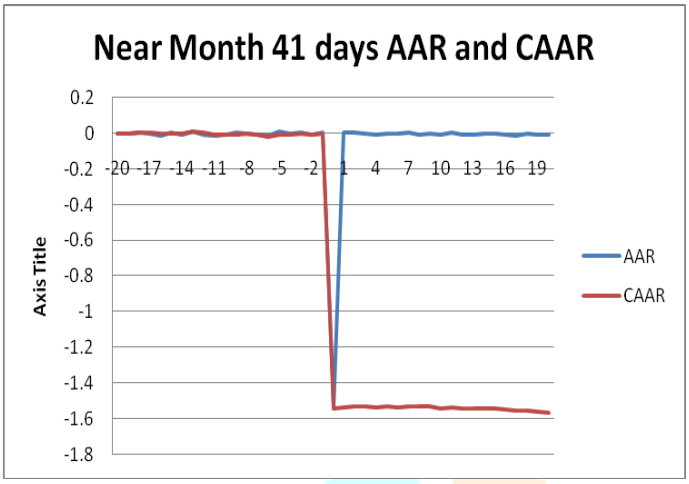
An comparison of average abnormal returns for equity spot and near month contract and mid-month contracts the results shows that computed value of t is less than tabular t-value i.e., 0.984871 and 0.972761 is less than 1.729 and P-value is 18.49% and 20.32% % greater than value of α so we are failed to reject null hypothesis.

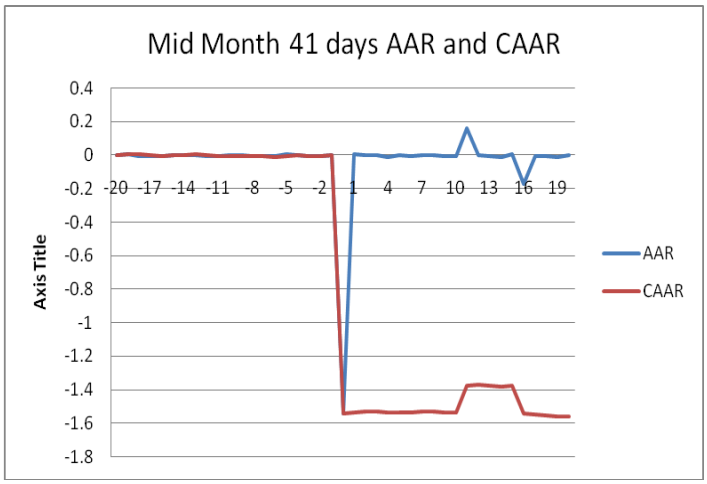
Table 2 showing Cumulative Average Abnormal Returns for near month, mid-month and equity spot.

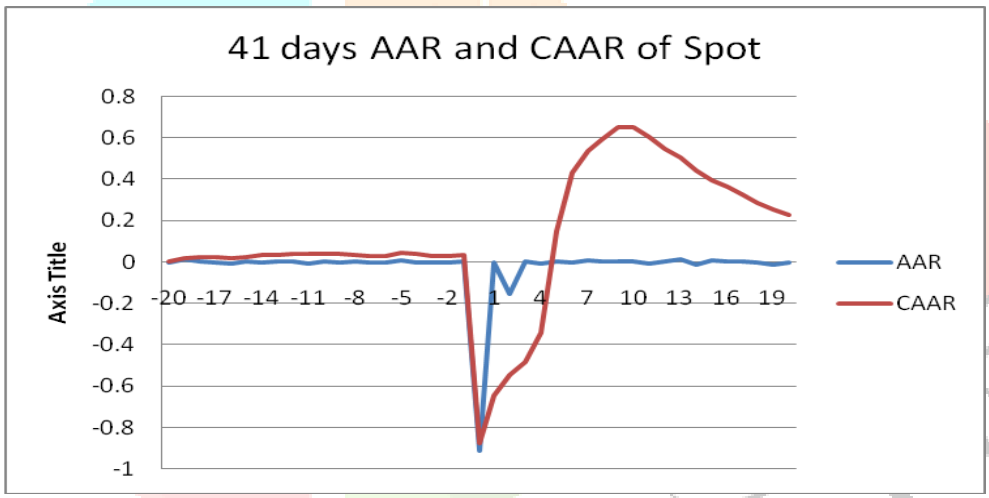
Table 2 – Cumulative Average Abnormal Return(CAAR)						
Day	CAAR of Near Month	t- value	CAAR of Mid-Month	t- value	CAAR of Spot	t- value
-20	-0.002266	-0.6509	-0.00039	-0.132	-0.0022	0.16742
-19	-0.000615	-0.7475	0.005322	1.20936	0.01341	1.81012
-18	0.006049	0.42292	-0.00077	0.66943	0.00741	2.03991
-17	-0.000004	0.39568	-0.00405	0.01333	0.00039	2.13552
-16	-0.010748	-0.8537	-0.00485	-0.6238	-0.0037	1.64914
-15	0.0048165	-0.3359	0.003064	-0.2145	0.00271	1.36254
-14	-0.002614	-0.6049	0.002131	0.04697	0.00193	4.02168
-13	0.0121766	0.60135	0.005204	0.49844	0.0031	3.58887
-12	-0.007494	-0.0551	-0.00563	0.00306	0.0028	4.25854
-11	-0.009206	-0.8289	-0.00596	-0.5557	-0.006	4.06544
-10	-0.002996	-1.1585	-0.00014	-0.5205	0.00473	4.10502
-9	0.0045307	-0.6885	0.002806	-0.2607	-0.0007	5.35396
-8	0.0009016	-0.5646	-0.00187	-0.4053	0.00383	4.62341
-7	-0.003525	-0.7772	-0.004	-0.6086	-0.0002	4.27164
-6	-0.009125	-1.2122	-0.0025	-0.593	0.00079	4.34691
-5	0.0107508	-0.6938	0.005655	-0.3819	0.0101	5.32342
-4	-0.002039	-0.9595	0.004212	-0.1089	0.0006	3.49878
-3	0.0048922	-0.4318	-0.00209	-0.2284	0.00201	3.57841
-2	-0.003883	-0.7124	-0.0033	-0.431	0.00082	3.99547
-1	0.0052218	-0.3222	0.0051	-0.1137	0.00374	3.59743
0	-1.538921	-5.5773	-1.53983	-5.5894	-0.9132	-2.781
1	0.0073706	-5.5793	0.006398	-5.5949	0.0003	-2.0454
2	0.0060546	-5.4852	0.004872	-5.507	-0.1499	-1.3734
3	0.0001126	-5.4248	0.002233	-5.4235	0.00493	-1.1177
4	-0.006777	-5.3906	-0.00853	-5.4032	-0.0057	-0.7286
5	0.003111	-5.3489	0.002074	-5.356	0.00716	0.35816
6	-0.001069	-5.3432	-0.00179	-5.3616	-0.0016	1.49524
7	0.0051338	-5.3334	0.003654	-5.3736	0.00957	2.06255
8	-0.002812	-5.3511	0.003888	-5.3251	0.00291	2.64528
9	-0.001447	-5.3645	-0.00511	-5.3633	0.00346	3.73507
10	-0.006161	-5.4125	-0.00443	-5.4112	0.00263	6.36011
11	0.0037254	-5.3732	0.162482	-4.1958	-0.0044	9.68477
12	-0.004702	-5.3711	0.004869	-4.1363	0.0049	8.76475
13	-0.004677	-5.3963	-0.00354	-4.1781	0.01541	8.10217
14	0.0020588	-5.2842	-0.00829	-4.1678	-0.0105	6.38874
15	0.00069	-5.3113	0.00693	-4.097	0.01232	6.47405
16	-0.003954	-5.3498	-0.16717	-5.3339	0.00553	6.42243
17	-0.008673	-5.3647	-0.00533	-5.3784	0.00407	6.4134
18	-0.000537	-5.2784	-0.00367	-5.4049	-0.0021	6.68608
19	-0.00297	-5.3168	-0.00754	-5.3471	-0.0101	6.29125

20	-0.007273	-5.3513	4.72E-05	-5.3737	-0.0007	6.815

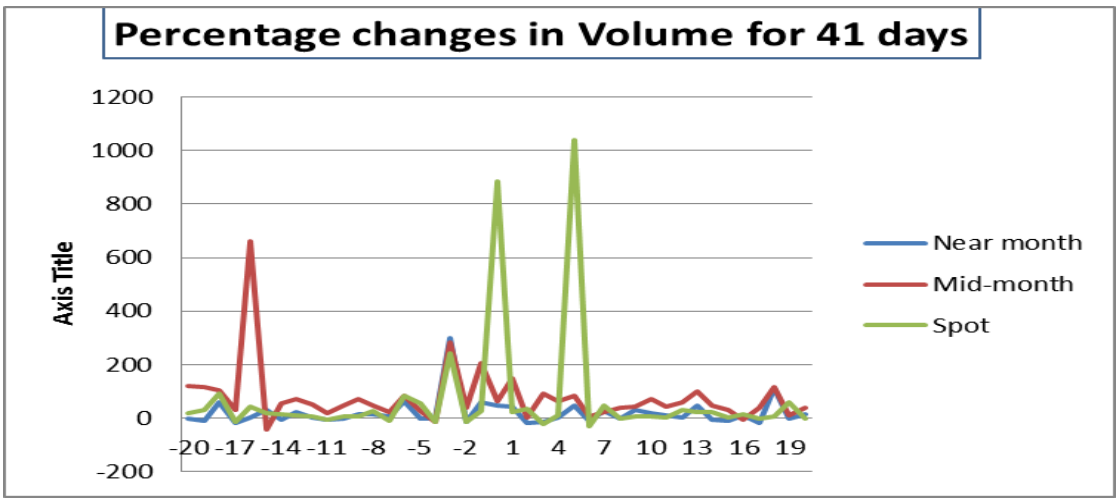
Graph showing the AAR and CAAR for 41 days for near month, mid-month and equity spot.







From the above graph we can infer that investors incurring a heavy losses in near month as well as mid-month contract between -2 to +1 days and after the execution of stock split the CAAR ends up with the negative but where as in the case of spot market it is also exhibiting the negative returns on the execution date but can able to generate the positive returns after the execution date.



Above graph depicts the percentage changes in volumes for the equity spot and futures for before announcement of stock split and after execution of stock splits. It is noticed that the information has been received just before the announcement and huge volumes have been witnessed and after the benefit just immediately there is a spike in the volumes between -5 to +6 days in the spot market segment. But in futures some volatility is observed in the mid-month contract but in case of near month it is less than the mid-month contract.

Conclusion:

This paper aims to examine the changes in the abnormal returns and liquidity position due to announcement of stock split by considering the equity stocks and the same stocks which are trading in the derivative segment. Here curious about comparing the spot market returns with the futures market returns in Indian context and the study shows that abnormal returns during the execution of stock splits are not statistically significant and rejects the null hypothesis these findings are similar with (Ghatak, 2005) but the results are not similar for spot market and futures market; for near month and mid-month contracts shows that overall negative CAAR after the event but in the spot market investors can able to make the profits out of it. When comes to the liquidity position in near month, mid-month and equity spot the percent changes in volumes are 297.60%, 285.3% and 244.196% respectively just 3 days before the event and after the event on 5^{th} day it the high were 45.49%, 85.90% and 1040.68% respectively and noticed that the huge volumes are taken place in the spot market when compared to futures.

The results of the current study is limited only to the companies which have gone for stock split in the last five years and also the stocks which are trading in the derivative segment is considered for the study. Further research may be carried out for the same by considering the other corporate actions in the market.

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