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Impact of Stock Split on Stock Liquidity of the Companies Listed on NSE and BSE

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ABSTRACT:
The aim of study is to find out difference in levels of stock liquidity before and after stock split. The study aims to analyse all the companies that have carried out stock split in Indian stock markets- BSE and NSE between the period 1st April 2019- 31st March 2022. Purposive sampling method is used to get required data. Out of all the companies which performed stock split between the mentioned period (166 companies), all the companies carrying out forward stock split (119 companies) were chosen to carry out the research. With the use of Wilcoxon signed rank test results are obtained to find out difference in stock liquidity data before and after split within the time frame of 30 days. Since the value of p obtained is less than the conventional significance level of 0.05 (indicated as "<.001"), we reject the test null hypothesis which states that there is no difference between the paired observations and accept the alternate hypothesis which concludes that there is significant impact of stock split on stock liquidity.

KEYWORDS: Stock liquidity, Stock split, BSE, NSE.

1. INTRODUCTION

Stock market or stock exchange is place where buying, selling and issuance of shares listed by companies held publicly takes place. The financial transactions in these markets takes place either through formal exchange institutes or by over-the-counter market places which operate under defined set of rules. Indian economy has two stock markets namely Bombay Stock Exchange (BSE) and National Stock Exchange (NSE).

Stock split refers to when a company changes number of its shares either increases or decreases but the split does not change companies value. If company increases the number of shares, it is forward stock split and vice versa is termed as reverse stock split. The common split ratios for forward stock split are 2:1, 3:1 etc. For example: If a company splits its shares by 2:1 and if investor has 1 share of Rs 100 now he will have 2 shares of Rs 100 which will be Rs 50 each. This way the

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market value of outstanding shares remains the same whereas the number of shares increases. Stock split is done to increase liquidity of firm stocks as when the price is lower it becomes much more affordable for investors to buy the share.(Tavakoli et al., 2012). (Banerjee, 2019) Stock split is indirectly linked with any consequence of viewpoints of shareholders or the firm splitting its stock. Although there is an increase in the number of outstanding shares and decrease in the corresponding value of each share still the total capital value of firm and shareholders remains constant. The ownership of shareholders in the firm remains constant and the capital structure of firm remains unchanged. Many studies conclude that markets behave optimistically to the event of stock split.

The purpose of study is to find the impact of stock split on stock liquidity after and before stock split. The research is carried on companies that have performed the stock split in Indian stock markets (BSE and NSE) within the period 1st April 2019- 31st March 2022. The time frame is chosen keeping in mind there was an increase in retail investors participation during this time and a surge in demat account openings which led to stock split decisions and this period allows us to give insight into pre- pandemic, pandemic and post- pandemic phases which can be used as a criterion for further studies. As such events like these are sometimes known as "cosmetic" events as they simply represent a variation in the number of outstanding shares. Stock split is a phenomenon with less research done on based on Indian markets. Majorly three theories explain stock split effectively: Liquidity Theory, Signaling theory and optimal tick size theory.

According to Liquidity theory (Copeland,1979) there is an optimal price span for every stock where the liquidity of stock is maximum. Managers try to split the stock price to keep their stock price in this range. When the price of stock is too high it becomes of a great advantage to large investors due to lower brokerage fee but for small investors it is discouraging because they have limited money. While when the price is too low large investors are least interested to invest in it. To avoid high and low-price range which has reactions of investors managers tend to keep the stock price in optimal range which is in favour to both small and large investors and hence has maximum liquidity.

Signaling theory model proposed by (Brennan and Copeland,1988) states that private information of firm is communicated by managers to investors by splitting the stocks. Stock splitting consist of transaction cost which prevents companies with bad prospects from doing so.
According to Optimal tick size theory stock split is done to maintain an optimal tick size for stocks. An optimal tick size is much necessary for high liquidity and high bid-ask spread. (Angel,1997)

According to (Baker and Powell,1992) companies decide to undergo stock split to maintain stock prices in a desired range and to enhance stock liquidity.(Anshuman & Kalay, 2002) in a study using a model which explains that a company splits its shares to increase liquidity. In this framework a company can rise its liquidity by setting the price of stock to an optimal level along with stock split.

This study aims to determine impact of stock split on liquidity of a stock base on volume traded. The data is collected using secondary sources and volumes traded data is collected for each company for the duration of 30 days which includes 15 days before the split and 15 days after the split data (+15 and -15 days from the event).

1. LITERATURE REVIEW - STOCK SPLIT LIQUIDITY EFFECT

Liquidity of a stock is how easily a stock can be bought or sold in a market. There are many ways to calculate liquidity of a stock. (Wulff, 2002) (Damsetz, 1968) (benston & Hagerman, 1974) uses

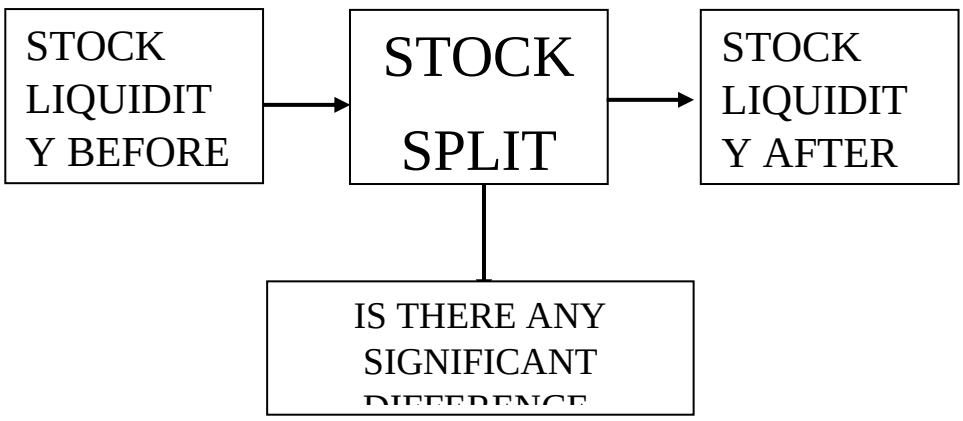
different proxies of liquidity such as trading volume, volume turnover (volume divided by outstanding shares), adjusted volume to calculate stock liquidity. Many others such as (Copeland, 1979; Conroy and Harris, 1990; Desai, Nimalendran and Venkataraman, 1998; and Alves and Alves, 2001) uses trading cost and changes in bid ask spread as an indicator of liquidity.

There are mixed evidences on how stock split effects liquidity; while some researches favour that stock liquidity is improved after a split and some other advocate that there is no impact of split on liquidity of a stock. (LAKONISHOK & LEV, 1987) in their study says that stock liquidity is not impacted permenantly by stock split though it has a temperarory and short lived impact on the stock liquidity. While there is no much impact on volume of trade still stock split aims at composition of shareholders by changing it.(Banerjee, 2019) in her study concludes that the impact of stock split on liquidity of a stock is short lived and can be seen only for a month post split. There is an observed increase in number of trades post the split which indicates that stock splits make the stock more luring for investors to invest in.(Huang et al., 2015) in his study gathered the data of 6463 companies which had performed stock split between 1960-2010 and found that liquidity of stocks improved after the stock split announcement only for a period of 5 days i.e. it is a short lived phenomenon and declines after that. According to (Dennis, 2003) the number of small trades increases post split that is small buys and sells are increased after the split that signals the managers motive of keeping the stock in certain price range. After a research on 214 companies in Malaysia, (Tabibian et al., 2020) concludes that a short term increase in liquidity can be seen post split. Also the companies having low liquidity levels have a significant increase in liquidity after splitting its stock.

(Gunaratna, A.G.D.L.K., Gunaratne Y.M.C, 2013) in their study states that after careful observation and analysis of 19 companies which had performed stock split on Colombo stock exchange between the period of 2009-2010, 60 percent of companies that is 11 companies showed increase in liquidity post-split, 35 percent that is 7 companies showed constant liquidity and 5 percent that is 1 company showed reduced liquidity. Hence it can be said that stock liquidity rises after the split.(Burnwal, 2019) states that few companies showed positive response to stock split and few showed negative or no response to the event.

Many other researchers such as (Suharno & Afriani, 2020)(Bagaskoro et al., 2019)(COPELAND, 1979)(Tabibian et al., 2020) and many more states that there is zero impact of stock split on liquidity of stock and no difference can be seen in pre and post-split volumes.

Figure 1 Thinking Framework



2. OBJECTIVE AND HYPOTHESIS

The study aims to answer the question "What happens to stock liquidity after the split and what impact it has on trading volumes of the share". The objective of the study is-

- To identify impact of stock split on stock liquidity based on trading volumes.

In order to meet the objective, the hypothesis framed are as follows-

H_0: There is no significant impact of stock split on stock liquidity.
H_a: There is a significant impact of stock split on stock liquidity.

3. RESEARCH METHODOLOGY

The type of research is quantitative research based on event study. The main aim of using event study method is that values are compared before and after the event to assess difference in liquidity before and after the event. The study population includes all the companies that have performed stock split in period 1st April 2019- 31st March 2022 on Indian stock markets NSE and BSE. 166 companies have undergone stock split in Indian stock markets during the mentioned time frame. Sample population for the study includes all the companies that have undergone forward stock split.6 companies were rejected from population as they had undergone reverse stock split.41 companies were rejected as the companies were either closed or data was not available on any of the sources. The sample population includes 119 companies listed on NSE and BSE that performed stock split within the mentioned time. The data collected consist of secondary data and is extracted using Prowess database, NSE and BSE sites. Data for volumes traded for each company is collected consisting of data of 30 days (15 days prior to split and 15 days after the split).

Analysis of data is done using normality test followed by parametric paired sample T test. In case of not normally distributed data, non-parametric test Wilcoxon Signed Rank test is used.

a. DESCRIPTIVE ANALYSIS

Descriptive analysis is done to study data and helps in summarising it based on its patterns that satisfies all the conditions of data. It provides description and explanation of variables used in study. In this study we have used normality test to study data collected.

i. Normality Test

Normality test is used to check whether the data is normally distributed or not. If the data is normally distributed then paired T test is used and if data is found to be not normally distributed Wilcoxon signed rank test is used. The normality test used in this study is Kolmogorov-Smirnov test.

Rejection and acceptance of hypothesis is based on following rules (Singgih Santoso, 2001):

- If p value >0.05, data is normally distributed.
- If p value <0.05, data is not normally distributed.

The software used to perform test is IBM SPSS Statistics 29.0.2.0

The hypothesis framed are as follows:
H_1: The data is normally distributed
H_2: The data is not normally distributed

b. HYPOTHESIS TESTING

i. Paired Sample T-Test

Paired sample T test is parametric statistic test to study paired data when the data is normally distributed. Paired data may involve pre and post results of an event for example here we have data of volumes traded pre and post the event of stock split. The decision-making criteria is based on p value.

ii. Wilcoxon Signed Rank Test

Wilcoxon Singed Rank test is used as post descriptive test to study paired data. It is a non-parametric test to study paired data. It is only used when the data is not normally distributed. Wilcoxon test of liquidity of stock is carried out to know the difference in stock liquidity based on trading volume before and after the event of stock split. Decision making is dependent on the p-value, if it is less than the conventional significance level of 0.05 (indicated as "<.001"), we reject the proposed null hypothesis (H_0) and if it is more than 0.05 then we accept the null hypothesis. It is an alternative to parametric t test.

4. RESULTS & ANALYSIS

The results are obtained based on Wilcoxon signed rank test succeeding the test of normality of data. The software used to analyse data is SPSS 29.0.2.0

a. Normality Test

Normality test is performed based on following results. The hypothesis formed for normality test are as follows. The software used to perform test is IBM SPSS Statistics 29.0.2.0

H_1: The data is normally distributed

H_2: The data is not normally distributed

Table 1: Normality Test Descriptive

Descriptives

		Statistic	Std. Error
Pre Split	Mean	1588315.6610	526457.94513
	Std. Deviation	5742978.1639	
	Skewness	6.140	.222
	Kurtosis	41.297	.440
Post Split	Mean	1190749.4000	363901.84628
	Std. Deviation	3969700.4790	
	Skewness	5.533	.222
	Kurtosis	34.375	.440

Source: SPSS Version 29.0.2.0

Table 2: Descriptive test results: Normality Test

Tests of Normality

	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
Pre Split	.391	119	<.001
Post Split	.401	119	<.001

a. Lilliefors Significance Correction

Source: SPSS Version 29.0.2.0

According to Kolmogorov-Smirnov Test, for both "Pre-Split" and "Post Split" data, the Kolmogorov-Smirnov test statistic is greater than the critical value, which corresponds to a p-value of less than 0.001 (indicated by <.001). This suggests that there is strong evidence to reject the null hypothesis (H_1) that the data is normally distributed. Since the data is not normally distributed now, we can pursue our analysis with non- Parametric alternative Test named Wilcoxon Signed rank test.

b. Wilcoxon Signed Rank Test

Wilcoxon Singed Rank test is used as post descriptive test to study paired data. Paired data involve pre and post results of an event for example here we have data of volumes traded pre and post the event of stock split. It is only used when the data is not normally distributed. Wilcoxon test of liquidity of stock is carried out to know the difference in stock liquidity based on trading volume before and after the event of stock split.

Table 3: Hypothesis Test Results: Wilcoxon test

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.[a,b]	Decision
1	The median of differences between Pre Split and Post Split equals 0.	Related-Samples Wilcoxon Signed Rank Test	<.001	Reject the null hypothesis.

a. The significance level is .050.
b. Asymptotic significance is displayed.

Source: SPSS Version 29.0.2.0

As per the results obtained total n indicates the total number of paired observations in data set are 119 paired observations. The wilcoxon signed rank test statistic is a measure of the magnitude of the differences between paired observations i.e. 2312.000 in this case. Standard error associated with the test statistic measures the variability of the test statistic across different samples which is 377.101 here. Standardized test statistic is the standardized form of the test statistic, which is calculated by dividing the test statistic by the standard error. In the output, the standardized test statistic is -3.336 (which denotes population value is much greater than mean of samples or random variable values).

Table 4: Hypothesis Test Results: Wilcoxon test Summary

Related-Samples Wilcoxon Signed Rank Test Summary

Total N	119
Test Statistic	2312.000
Standard Error	377.101
Standardized Test Statistic	-3.336
Asymptotic Sig.(2-sided test)	<.001

Source: SPSS Version 29.0.2.0

Asymptotic sig. (2-sided test) is the p-value associated with the wilcoxon signed rank test. It indicates the probability of obtaining a test statistic as extreme as, or more extreme than, the one

observed in the sample, the null hypothesis (There is no significant impact of stock split on stock liquidity) is true. In the output, the p-value is reported as "<.001", meaning it is less than 0. 001.Since the p-value is less than the conventional significance level of 0.05 (indicated as "<.001"), we reject the proposed null hypothesis stating There is no significant impact of stock split on stock liquidity. The negative value of the standardized test statistic (-3.336) suggests that, on average, the first member of the pair tends to be lower than the second member which means that pre-split trading volume is lower than post-split trading volumes. Therefore, constructed on the wilcoxon signed rank test, we have strong evidence to suggest that there is a statistically significant difference between the paired observations in the data set.

So, as a solution we reject null hypothesis and accept the alternate hypothesis that there is Significant impact of stock split on stock liquidity.

5. CONCLUSION

In this study we aim to find impact of stock split on stock liquidity based on trading volumes. The data is collected from 119 companies which performed stock split in Indian stock markets: NSE and BSE between the period of 1st April 2019- 31st March 2022. After careful analysis of data using various statistical tests, it is found that there is a significant and related impact of stock split on stock liquidity since p value is less than 0.05. Also, negative value of standardised test statistic denotes that volumes trades before split is much lower than volumes traded after the split. Based on results obtained there is strong evidence and alternate hypothesis is accepted that is there is significant impact of stock split on stock liquidity. It can be generalised that trading volumes are much lower before the stock split and that it influences shares liquidity post event. Although it appears to be a short-term phenomenon but it can be used as a basis of decision making for investing in shares by small investors and retail investors as it appears to be more liquid and attractive at this point of time. Few shortcomings of study are that the time of study is limited that is between 1st April 2019- 31st March 2022 and the results are derived based on one proxy of liquidity and can be elaborated considering other proxies such as bid ask spread. Further studies can be done based on other proxies of liquidity and for distinct time frame for different companies. The study can be utilised as a reference for further researches.

BIBLIOGRAPHY

1. Baker, H. K., & Powell, G. E. (1992). Why companies issue stock splits. Financial Management, 21(2), 11-11.
2. Anshuman, V. R., & Kalay, A. (2002). Can splits create market liquidity? Theory and evidence. *Journal of Financial Markets*, *5*(1), 83–125. https://doi.org/10.1016/S1386-4181(01)00020-9
3. Bagaskoro, B. S., A, A. F., & Widagdo, A. K. (2019). the Effect of Stock Split on Liquidity Stock in Companies Which Listed on Bei 2007-2015. *International Journal of Economics, Business and Management Research*, *3*(11), 160–169.
4. Banerjee, P. (2019). Impact of Stock Split on Short-Term Liquidity of Stocks in Ex-Split Period: Evidence From Indian Stock Market. *Indian Journal of Accounting (IJA) ISSN*, *51*(1), 63–72.
5. Burnwal, A. (2019). *Announcement Effect of Stock Split on Price Behaviour and Market Liquidity of Shares : a Study*. *XI*(Xii), 659–671.
6. COPELAND, T. E. (1979). Liquidity Changes Following Stock Splits. *The Journal of Finance*, *34*(1), 115–141. https://doi.org/10.1111/j.1540-6261.1979.tb02075.x
7. Dennis, P. (2003). Stock splits and liquidity: The case of the nasdaq-100 index tracking

stock. *Financial Review*, *38*(3), 415–433. https://doi.org/10.1111/1540-6288.00053

8. Gunaratna, A.G.D.L.K., Gunaratne Y.M.C, Y. R. D. (2013). *Stock Splits and Liquidity*. *Ircmf*, 164–175.
9. Huang, G. C., Liano, K., & Pan, M. S. (2015). The effects of stock splits on stock liquidity. *Journal of Economics and Finance*, *39*(1), 119–135. https://doi.org/10.1007/s12197-013-9250-6
10. LAKONISHOK, J., & LEV, B. (1987). Stock Splits and Stock Dividends: Why, Who, and When. *The Journal of Finance*, *42*(4), 913–932. https://doi.org/10.1111/j.1540-6261.1987.tb03919.x
11. Suharno, H., & Afriani. (2020). Price Earning Ratio And Stock Liquidity Before And After Stock Split In Indonesia Stock Exchange. *Journal of Islamic Economics Lariba (2020).*, *6*(2), 1–18.
12. Tabibian, S. A., Zhang, Z., & Jafarian, M. (2020). How does split announcement affect stock liquidity? Evidence from bursa Malaysia. *Risks*, *8*(3), 1–14. https://doi.org/10.3390/risks8030085
13. Tavakoli, M., McMillan, D., & McKnight, P. J. (2012). Insider trading and stock prices. *International Review of Economics and Finance*, *22*(1), 254–266. https://doi.org/10.1016/j.iref.2011.11.004
14. Benston, G., Hagerman, R. (1974), "Determinants of Bid-Ask Spreads in Over the Counter Market", Journal of Financial Economics, Vol. 1, No. 4, pp. 353– 364.
15. Demsetz, H. (1968), "The Cost of Transacting", Quarterly Journal of Economics, Vol. 82, No. 1, pp. 33– 53.
16. Wulff, Christian (2002), "The Market Reaction to Stock Splits –Evidence from Germany", Schmalenbach Business Review, Vol. 54, pp. 270–297.
17. Conroy, R. M., R. S. Harris and B. A. Benet (1990), "The Effects of Stock Splits on Bid-Ask Spreads", The Journal of Finance, Vol. 45, pp. 1285-1295.
18. Copeland, T (1979), "Liquidity Changes Following Stock Splits", The Journal of Finance, Vol. 34, pp.115-41.
19. Desai, A. S., Nimalendran, M. and Venkatarama, S. (1998), "Changes in Trading Activity Following Stock Splits and Their Effect on Volatility & Adverse Information Component of Bid-Ask Spread", Journal of Financial Research, Vol. 11, pp.159-183
20. Santoto. Singgih (2000), Buku latihan SPSS Statistik Parametik, Jakarta : PT. Alex Media Komputindo.
21. Miliasih, Retno. (2000). Analisis Pengaruh Stock Split Terhadap Earning Per Share, Jurnal Bisnis dan Akuntansi. Universitas Gajah Mada.Vol.2,no.2, 131-144.