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THE IMPACT OF STOCK SPLIT ON STOCK PRICE AND RETURN: COMPANIES LISTED ON BSE

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ABSTRACT:
The primary objective of the research is to evaluate the effect of stock splits on the price of stocks & returns of firms listed on the Bombay Stock Exchange (BSE). The analysis focuses on companies that executed stock splits within the timeframe from April 1, 2019, to March 31, 2022. The study employs a purposive sampling method to gather relevant data. Out of 166 companies that undertook stock splits during the specified period in the Indian stock market (NSE and BSE), 58 companies that conducted forward stock splits on BSE were selected for the research. This research employs the Wilcoxon signed-rank test to assess the impact of stock splits on stock price & return by comparing stock liquidity data from a 28-day period, encompassing two weeks prior to, and following the split. The test results for both price and return indicate a p-value below 0.05 (denoted as "<.001"), so alternative hypothesis is adopted, signifying a substantial effect of stock splits on stock prices and returns. Thus, the alternative hypothesis is adopted, signifying a substantial impact of stock splits on stock prices and substantial impact of stock splits on returns. It has been concluded that the prices of stock tend to decrease post-split whereas the returns of stocks tend to increase after the event of stock split.

KEYWORDS: Stock return, Stock split, Stock price, BSE, Listed companies

1. INTRODUCTION

The stock market, also known as the stock exchange, is a venue where the buying, selling, and issuance of publicly listed shares occur. Financial transactions within these markets can be executed through formal exchange institutions or over-the-counter (OTC) marketplaces, each operating under a specific set of regulations. In India, the principal stock exchanges are the BSE, one of the largest and oldest stock exchanges, which allows the trading of stocks and securities, and the NSE (National Stock Exchange), a prominent stock exchange in the country. the NSE provides a platform for trading a variety of securities, which includes equities and derivatives. Both exchanges play a vital role in the Indian economy by providing a structured environment for trading and investment, contributing to market liquidity and economic growth. A stock split generally a business decision whereby a company increases the total number of shares it has outstanding by issuing more shares to current shareholders. In a 2-for-1 stock split, each shareholder is allocated one more share for every share they possess. The aggregate value of the shares remained constant, indicating that the price per share has fluctuated proportionately.

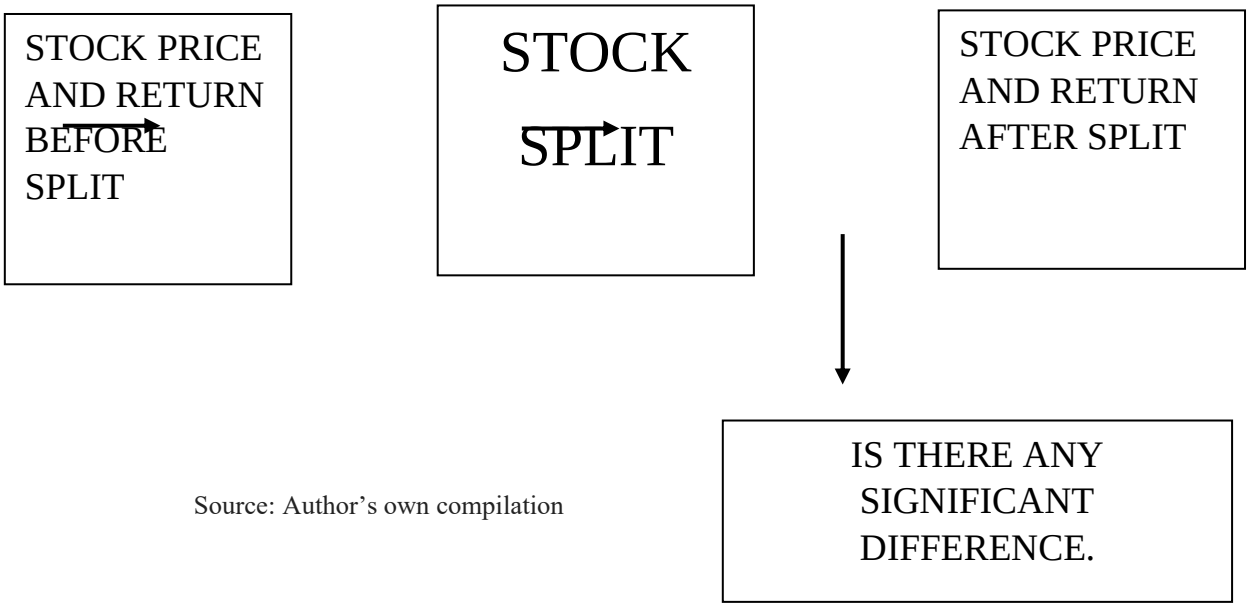
A stock split does not affect a company's fundamentals; however, it can influence stock prices as well as returns through factors involving enhanced liquidity, signaling effects, as well as investor psychology. This article is to analyse the effects of stock splits on stock prices & returns for companies who implemented stock splits from April 1, 2019, to March 31, 2022, on Bombay Stock Exchange (BSE) over a 28-day event window (14-days prior the split & 14-days post the split). Though many studies have been done in this field there is a need for updated data and much of the seminal research on stock splits was conducted years ago. Given significant market evolution, there is a need for contemporary studies that assess the impact using more recent data and methodologies, especially many studies have been done surrounding the announcement dates of split and not many have been done surrounding the actual event.

1. LITERATURE REVIEW - STOCK SPLIT RETURN AND PRICE EFFECT

The signaling hypothesis asserts that stock splits are frequently employed by management to convey their confidence in the company's future growth potential. Investors, in turn, interpret stock splits as positive signals of future performance, leading to positive abnormal returns around the announcement period. Fama, Fisher, Jensen, and Roll conducted a landmark study, demonstrating that stock splits lead to significant abnormal positive returns in the days surrounding the announcement, as investors perceive splits as a sign of increased future profitability (Fama et al., 1969). Brennan & Copeland posited in their research that stock splits facilitate the communication of information on predicted earnings growth, contributing to a short-term price increase following the announcement (Brennan & Copeland, 1988). Ikenberry, Rankine, and Stice (1996) examined a large sample of stock splits and found that companies experience a 7-8% abnormal return on average in the 12 months following a stock split announcement (Ikenberry et al., 1996). The current literature about the effects of stock splits on stock prices & returns is comprehensive and yields inconclusive results. Some of the studies taken up so far suggest that stock splits can lead to positive abnormal returns in the short term, while others find no significant impact or even negative returns. According to the signaling hypothesis, companies employ stock splits in order to provide the market positive information about their potential for future success. By splitting their stock, companies indicate that they are confident in their future earnings growth and believe that their stock price is undervalued

(Conroy & Harris, 1999). The trading range hypothesis asserts that stock splits enhance a stock's liquidity by converting it more affordable to a broader spectrum of investors, which might result in an initial increase in stock price resulting from increased demand. However, other studies argue that the observed positive returns around stock split announcements might be due to other factors, such as improved information dissemination or changes in investor sentiment (Chemmanur et al., 2015). Although short-term benefits are typically endorsed in the literature, long-term impact of stock splits upon the price of stocks remains uncertain. Several studies suggest that the long-term returns post-split tend to underperform compared to pre-split levels or revert to the mean over time. Lakonishok & Lev (1987) found stock splits often followed by a mean reversion in returns, indicating that the initial optimism driving price increases fades over time (Lakonishok & Lev, 1987). On the other hand, Fama (1998) criticized studies showing long-term abnormal returns post-split, arguing that such effects might be overestimated due to methodological biases in the event studies (Fama, 1998). Several studies, including those by (Akhigbe et al., 1995) and Ariff et al. have recorded a favorable short-term impact of stock splits on company prices. These studies found companies undertaking stock splits experience positive cumulative abnormal returns in the months immediately after the announcement is made. The signaling hypothesis, which contends that stock splits serve as an encouraging indication from management on the company's long-term prospects, frequently interprets this favorable market response. For instance, managers might be more willing to split stocks when they are confident about future earnings growth, leading investors to revise their valuations upwards. While the short-term impact of stock splits appears positive, the long-term effects are less clear-cut. (Akhigbe et al.,1995) found that while CARs are initially positive, they tend to decline over time, becoming negative in the long run. This suggests that the initial positive signaling effect might be outweighed by other factors in the long term, such as investor overreaction or increased transaction costs due to a broader investor base. Conroy & Harris emphasize the significance a company's past share price history is to comprehending the manner in which the market responds to splits in its shares. They argue that stock splits are frequently implemented by managers for achieving their stock price once again within a specified trading range. Furthermore, splits resulting in a lower price than previous splits are interpreted as stronger positive signals by investors and analysts. While several studies point towards a positive short-term impact of stock splits, other research, like that by Kimball and Papera focuses on analysing short-term market price fluctuations around significant dates related to the split. Additionally, some studies like those focusing on profitability and stock return (Parlina & Nuswantoro, 2020) or other market factors (Campbell & Ammer, 1993) (Gamm, 2019) might not directly address the effect of stock splits on performance of stocks. Relationship between stock splits & stock performance is complex and influenced by various factors. A Study (Burnwal, 2019) analyses the impact on announcements of stock splits on the share price behaviors & liquidity of the market of large-cap indian companies. The study observes that, for most companies, share prices decrease before and after the announcement. Only a slight recovery is seen on the announcement day itself, followed by further negative abnormal returns. Investors generally could not gain abnormal profits from stock-splitting companies. Instead, significant losses were noticed, particularly post-announcement, when compared to control companies. The study concludes that stock split announcements negatively affect both share price performance and liquidity, though with varying results across different companies. The paper (Adisetiawan & Atikah, 2018) assesses the impact of stock splits on stock prices, liquidity, as well returns within the Indonesian stock market, concluding that stock splits significantly affect stock prices, with the majority of companies experiencing price increases post-split, while abnormal returns remain relatively unaffected, indicating that stock returns remain largely unaffected by the split both at the individual stock level and when stocks are considered as a portfolio.

Figure 1 Thinking Framework



Source: Author's own compilation

3. OBJECTIVE AND HYPOTHESIS

The study aims to answer the question "What happens to stock price after the split and what impact it has on returns of share". The objectives of the study are as mentioned below-

- **To recognise impact of stock split on stock prices.**
- **To recognise impact of stock split on stock returns.**

To achieve the objective, the following hypotheses have been set forth:

H1: Stock split significantly impacts stock price.

H2: Stock split significantly impacts stock returns.

4. RESEARCH METHODOLOGY

This research employs a quantitative research design utilizing the methodology of event study. The primary goal of this approach is to analyse and compare returns and prices of the stocks after and before stock split occurrences. The study encompasses all companies listed on Bombay Stock Exchange (BSE) that executed stock splits from April 1, 2019, to March 31, 2022. Initially, 68 companies performed stock splits within this timeframe on BSE. The final target population for the study includes 58 companies that carried out forward stock splits during the specified period on BSE. The research relies on secondary data, sourced from the Prowess database and the official website of BSE. The dataset encompasses daily stock closing prices for each selected company over a 28-day period—14 days preceding the stock split and 14 days succeeding i.e. two weeks before and after the split. We define the event as having its window from **t = -14 to t = +14** days surrounding the split day that is t =0. The formulae used to calculate normal returns is (Nindhya et al., 2024)

$$R = \frac{(P_t - P_{t-1})}{P_{t-1}}$$

Where the calculation of returns (R) is determined by an examination of the day's final stock price (P_t) to that of the previous one (P_{t-1}).

Daily closing prices are considered for 28 days window to study impact of split on stock prices. Data analysis is conducted through a structured process, which includes performing a normality test followed by applying appropriate statistical tests for hypothesis evaluation using SPSS Version 29.0.2.0

4.1 Descriptive Statistics and Normality Test

Descriptive analysis is employed to summarize the gathered data and identify patterns that satisfy the study's conditions. This analysis provides an inclusive overview of the variables considered in the research.

Normality Test is conducted to evaluate if the gathered data adheres to a normal distribution. Subsequent analysis will employ either a paired sample t-test or a wilcoxon signed rank test, contingent upon the results. The kolmogorov-smirnov test utilized for normality assessment in this study.

Interpretation Rules (Singgih Santoso, 2001):

- P-value>0.05: Data is distributed normally.
- P-value<0.05: Data isn't distributed normally.

The analysis will be carried out using IBM SPSS Statistics 29.0.2.0.

4.2 Hypothesis Testing

(i) Paired Sample T-Test

A parametric statistical method (paired sample t-test) is applied in evaluating paired data when the data is distributed normally. In this context, it examines returns and prices of stocks preceding and succeeding the stock split event. The decision-making process is based on the p-value.

(ii) Wilcoxon Signed Rank Test

When the data fails to distribute normally, the wilcoxon signed rank test is applied in post-descriptive analysis to gain insight into paired data. This test is utilized to evaluate fluctuations in stock prices as well as returns preceding and following the split event. The decision-making criteria are as follows: if p-value<0.05 (illustrated as "<.001"), the null hypothesis ought to be rejected. This indicates that the split of the stock has a substantial effect on both stock price along stock return. If p-value>0.05, indicates that the split of the stock has no substantial effect on both stock price along stock return

5. ANALYSIS & RESULTS

The analysis for the study has been done in two parts. The first part focuses to understand the impact of stock split on stock prices and the second part focuses to understand the impact of stock split on stock returns by analysing the descriptive of the data followed by normality test.

5.1 Analysis of Stock Price

The tests are conducted according to established hypotheses, with results produced using IBM SPSS Statistics 29.0.2.0.

(i) Descriptive Statistics and Normality Test - Stock Price

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Table 1: Descriptives Statistics: Stock Price (before and after the split)

Descriptives

			Statistic	Std. Error
pre split	Mean		199.880427	49.8517285
	95% Confidence Interval for Mean	Lower Bound	100.054063	
		Upper Bound	299.706792	
	5% Trimmed Mean		142.979776	
	Median		35.8940000	
	Variance		144141.300	
	Std. Deviation		379.659453	
	Minimum		.654000000	
	Maximum		2138.94733	
	Range		2138.29333	
	Interquartile Range		168.748500	
	Skewness		3.094	.314
	Kurtosis		11.724	.618
post split	Mean		159.733943	48.2837607
	95% Confidence Interval for Mean	Lower Bound	63.0473794	
		Upper Bound	256.420506	
	5% Trimmed Mean		96.1840294	
	Median		25.8316667	
	Variance		135216.650	
	Std. Deviation		367.718166	
	Minimum		.376000000	
	Maximum		2183.21333	
	Range		2182.83733	
	Interquartile Range		104.951667	
	Skewness		3.799	.314
	Kurtosis		16.822	.618

Source: SPSS Version 29.0.2.0

Table 2: Normality Test: Stock Price

	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
pre split	.312	58	<.001
post split	.332	58	<.001

a. Lilliefors Significance Correction

Source: SPSS Version 29.0.2.0

As seen in table 1, both the "pre-split" and "post-split" data have extreme skewness and kurtosis, suggesting they are not normally distributed. The descriptive statistics show the mean values of post-split and pre-split stock prices which are 199.88 and 159.73 respectively and has decreased post-the-stock split. The standard deviation shows that both groups' data have large variances and there is a substantial spread. The Kolmogorov Smirnov test in table 2 indicates that both "pre-split" and "post-split" datasets yield a test statistic that exceeds the critical value, resulting in a p-value < 0.001. This strong evidence permits the rejection of the assumption, suggesting that the data is not distributed normally. Consequently, wilcoxon signed rank test will be applied in the ensuing analysis. The normality tests confirm this non-normality (with p-values < .001), meaning the data distribution is far from the gaussian shape. So, the prices before and after the split are not normally distributed.

(ii) Wilcoxon Signed Rank Test - Stock Price

Pairings of observations on stock price prior & post the stock split event are analysed employing wilcoxon signed rank test. When the data is not normally distributed, this test is employed as an alternative to the paired t-test.

Table 3: Wilcoxon Signed Rank Test: Stock Price

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
post split – pre split	Negative Ranks	33[a]	34.55	1140.00
	Positive Ranks	25[b]	22.84	571.00
	Ties	0[c]		
	Total	58		

a. post split < pre split
b. post split > pre split
c. post split = pre split

Test Statistics[a]

	post split – pre split
Z	-2.203[b]
Asymp. Sig. (2-tailed)	.028

a. Wilcoxon Signed Ranks Test
b. Based on positive ranks.

Source: SPSS Version 29.0.2.0

As seen in Table 3 the z statistic score is -2.203 & p value=0.028; lower compared to the customary 0.05 significance level, indicating a significant variance among pre- & post-split data. The negative z-score indicates that the "post-split" values tend to be smaller than the "pre-split" values (as seen from the larger sum of negative ranks), suggesting that, on average, the values have decreased after the split. This suggests that there is a decrease in the price of stocks after the split.
Given that the p-value is below 0.05, we possess evidence indicating a difference of substantial significance within the paired observations in the dataset. Therefore, we have rejected null hypothesis and validated the alternate hypothesis, signifying the substantial impact of stock splits on stock prices.

5.2 Analysis of Stock Returns

The tests are conducted according to established hypotheses, with results produced using IBM SPSS Statistics 29.0.2.0.

(i) Descriptive Statistics and Normality Test for Stock Returns

Table 4: Descriptives Statistics: Stock Returns (before and after the split)

Descriptives

			Statistic	Std. Error
average pre split	Mean		-.013739482	.004735314
	95% Confidence Interval for Mean	Lower Bound	-.023221785	
		Upper Bound	-.004257179	
	5% Trimmed Mean		-.012439949	
	Median		-.001039494	
	Variance		.001	
	Std. Deviation		.036063078	
	Minimum		-.103731468	
	Maximum		.057135736	
	Range		.160867204	
	Interquartile Range		.052929247	
	Skewness		-.598	.314
	Kurtosis		-.263	.618
average post split	Mean		-.001256298	.002162539
	95% Confidence Interval for Mean	Lower Bound	-.005586707	
		Upper Bound	.003074111	
	5% Trimmed Mean		-.002245698	
	Median		-.003966017	
	Variance		.000	
	Std. Deviation		.016469403	
	Minimum		-.031108953	
	Maximum		.049880378	
	Range		.080989331	
	Interquartile Range		.018914585	
	Skewness		.974	.314
	Kurtosis		1.605	.618

Source: SPSS Version 29.0.2.0

Table 5: Normality Test: Stock Returns

Tests of Normality

	Kolmogorov–Smirnov[a]		
	Statistic	df	Sig.
average pre split	.193	58	<.001
average post split	.125	58	.025

a. Lilliefors Significance Correction

Source: SPSS Version 29.0.2.0

As seen in table 4, the descriptive statistics shows the mean values of pre-split and post-split stock prices which are -0.0137 and -0.0013 respectively and has increased post the stock split. The standard deviation shows that both groups' data have large variances and there is a substantial spread. According to the kolmogorov-smirnov test results seen in table 5, it indicates that both "pre-split" and "post-split" datasets yield a test statistic that exceeds the critical value, resulting in a p-value < 0.001. This strong evidence suggests that the data isn't distributed normally. Consequently, wilcoxon signed rank test will be applied in the data analysis that follows. The data, both prior to and following splitting, deviate from the normal distribution hence, stating the returns before and after the split are not distributed normally.

(ii) Wilcoxon Signed Rank Test for Stock Returns

Table 6: Wilcoxon Signed Rank Test: Stock Returns

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
average post split – average pre split	Negative Ranks	25[a]	22.72	568.00
	Positive Ranks	33[b]	34.64	1143.00
	Ties	0[c]		
	Total	58		

a. average post split < average pre split
b. average post split > average pre split
c. average post split = average pre split

Test Statistics[a]

	average post split – average pre split
Z	-2.226[b]
Asymp. Sig. (2-tailed)	.026

a. Wilcoxon Signed Ranks Test
b. Based on negative ranks.

Source: SPSS Version 29.0.2.0

According to test results as seen in table 6, the z statistic score is -2.226 & p value=0.026 that is less than the significant level of 0.05 stating a noteworthy variance among the pre-split & post-split data. Given that the aggregate number of the positive ranks (1143.00) exceeds that of the negative ranks (568.00), it implies that, on average, the "average post-split" values tend to be larger than the "average pre-split" values which means returns increases after the stock split. Since p-value<0.05, based on the Wilcoxon Signed Rank Test, we possess evidence indicating a difference that is significant within the paired observations in the data set. Consequently, we have invalidated the null hypothesis & accepted the alternative hypothesis, indicating a strong impact of stock splits on stock returns. The wilcoxon signed ranks test shows a substantial rise of "average post-split" values compared to the "average pre-split" values. This suggests that, on average, the data has shifted in a positive direction after the split.

6. CONCLUSION

The present research analyses the impact of stock splits on stock prices as well as returns, utilizing normal returns and daily closing prices for each stock of 58 companies registered on the BSE that had stock splits from April 1, 2019, - March 31, 2022. The analysis reveals a highly significant impact of stock splits on stock price & returns, as demonstrated by a p-value below 0.05 in both instances. The findings suggest that stock prices are substantially lower after the stock splits compared to pre-split prices. Since the p-value is below the established significance threshold, we accept H1 stating there is a substantial impact of stock split on stock price. Similarly, after analysing results obtained from wilcoxon test in case of stock returns, it is concluded the stock returns tend to increase post the split and since p-value<0.05, we accept H2 stating There is a substantial impact of stock split on stock returns. The findings of this study have several practical applications in the financial markets. First, the statistically significant drop in stock prices post-split, as evidenced by the p-value below 0.05, can help investors make informed decisions about the timing of their trades around stock split events.

The observed increase in stock returns after the split further suggests that stock splits may serve as an indicator of potential short-term gains, aiding traders in formulating profitable strategies. Additionally, the evidence-based acceptance of hypotheses H1 and H2 provides useful insights for analysts and financial advisors who aim to evaluate the market response to corporate actions. These results also lay a quantitative foundation for expanding investor awareness regarding how stock splits can influence investment outcomes. While this study is confined to a limited timeframe and returns calculated are based on closing stock prices, subsequent research could investigate other return calculation techniques, such as an efficient market model, and expand the analysis to different timeframes and company classifications. This research may serve as a foundation for further inquiries in this domain.

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