

## Analysis of Stock Split Volatility in Stock Price on Indonesia Sharia Stock Index

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### Abstract

Stock split is a stock price, stock liquidity is influenced by high low stock prices, then the stock split is the right action to maintain stock liquidity so that the price becomes small and fluitive (Kurniawati, 2013). Stock price splitting is an event rarely performed by issuers. Currently, issuers carrying out stock split activities are still relatively few because basically stock split is only done by companies that have high share prices. If the performance of the company is good, the share price will be high, but if the stock price continues to rise, it will cause a decrease in investor interest to buy the company's shares due to high stock prices. This study aims to determine whether there is a stock price movement when the company is doing a stock split and to find out whether research on stock price movements caused by stock split is following signaling theory and trading range theory. Fluitive stock prices that are affected by stock split can be seen by calculating the abnormal return of the company's close price. If the result of the calculation has a negative effect then the stock split does not have a good effect on stock price liquidity but if it has a positive effect then the stock split gives a positive effect on stock price liquidity. This is what influencing researchers to conduct research in Indonesian Syariah Stock Index because there is still little research on stock split event in Islamic stock market. This study analyzes the movement of stock prices for 60 days, with following day calculation, 30 (thirty) days before the stock split, and 30 (thirty) days after the stock split. This study uses secondary data, namely data from reports of companies that have carried out a corporate action stock split and obtained data through the official website [www.idx.co.id](http://www.idx.co.id) and [www.finance.yahoo.com](http://www.finance.yahoo.com). The researcher uses close price data of daily stock prices from companies that make stock prices splits and become part of 2018 Syariah Indonesia stock index. The independent variable in this study is the stock split and the dependent variable of this study is the stock price. 10 company populations were used in this study, and its testing was only conducted on 7 sample companies that met the criteria according to the purposive sampling method. In analyzing data the researcher used abnormal return analysis with the actual return - expected return method. The normality test used is Kolmogorov Smirnov test. Hypothesis testing used one-sample t-test and paired samples t-test, the author's process this research data using the program SPSS 18 (Yustisia, 2018). The final results of the test using paired sample t-test showed a very significant value that is 0.039 and smaller than  $\alpha = 0.05$  which means there is a movement in stock prices for 30 (thirty) days before the stock split and 30 (thirty) days after the stock split, so this study concludes that the movement of sharia stock prices at ISSI 2018 is affected by the stock splitting event indicated by the results significant paired sample t-test. In the perspective of Signaling Theory and Trading Range Theory of 7 companies that conduct stock split, the results shown by this study are following both theories, namely, when a company does a stock split, the stock market shows the existence of stock fluctuations, both before the split event and after the split event. The results of the calculation of the actual return of 5 companies experienced good liquidity, while 2 companies experienced liquidity, but not so fluitive.

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## INTRODUCTION

Indonesia Stock Exchange (2019) currently has 399 companies listed on Indonesian Sharia Stock Index (ISSI) in 2018, and only 7 (seven) companies have carried out corporate actions in the form of a stock split within 1 (one) period year. The company's expectation when conducting a corporate action stock split is to attract investors so that it is expected to have a positive effect on the liquidity of the company's shares. According to (Mashdurohatun, 2011) in the world of conventional investment and sharia investment, the increase in share prices is usually influenced by market reactions such as demand and supply, but if the stock price is too high then the stock demand will decrease. Vice versa, stock demand will increase if the company has good performance and the stock price is stable or not too high. Investors consider if in the world stock market the price of shares becomes a priority, because it becomes a reference in making decisions to invest. Therefore stock price is very important because it causes changes in investor consumption behavior.

(Group, 2017) indirectly claimed the thing that makes investors not interested in buying shares is a high stock price. If this continues, there will be a decline in the liquidity of these shares. Therefore, the company will issue a corporate action policy. The right corporate action for this situation is a stock split, which is the split of shares with fixed capital but the number of shares increases. According to Haris (2019), the right step to maintain the company's stock price by carrying out a stock splitting event. The issuer hopes that if the stock price decreases it will affect the liquidity of the shares to attract the interest of small investors so that demand rises and stock trading become optimal. Generally, if the share price rises out of control, it reduces the purchasing power of investors to invest in companies and the company will do a stock split. The stock split causes the number of shares to increase, but the value of the shares remains the same. Thus it attracts investors to buy shares because the value of circulating shares is smaller. Therefore, all information relating to the stock split becomes important and consideration for investors to buy shares of the company.

(Kurniawati, 2013) in economics especially in the capital market said that stock split events are still an arguable science relating to their influence on the movement of company stock prices since there is a difference of opinion between practice and theory. Overpriced share prices result in decreased stock price liquidity. By doing a stock split, it provokes investors' interest to increase stock liquidity by trading. Generally research on stock split still produces different conclusions, especially in Indonesia. Information on the stock market will make a reaction when there is an issue about the information that has an impact on the value of the stock, it can go up or go down. Fluctuation in stock prices can be measured by looking for results from returns or abnormal returns.

Opinion difference resulting from the conclusion of this study is still very clear. The conclusion of the stock split produces opinion difference. It means that there are still many opinions that are pros and cons related to the movement of stock prices influenced by a stock split. This means that previous research does not agree with the principle of signaling theory and trading range theory which says if every event that contains information will affect the value of the company's shares. Researchers are interested in re-conducting the research since there are differences of opinion and inconsistency between previous research trading range theory, and signaling theory. Problems that can be concluded as follows:

How can stock split affect stock price movements?

A positive signal is usually shown by the way of companies doing corporate actions such as a stock split. This is because only companies that have good stock performance and high stock values are able to split stock prices. If an increase in stock liquidity occurs, it means investors have responded positively related to announcement of a stock split in the company so that there is an increase in demand.

How is the movement of stock prices influenced by the stock split from the perspective of trading range theory and signaling theory?

According to Signaling Theory, the prospect of a substantial increase in returns can be known from information about holding a stock split, whether the signal of long profits and short profits can be known through increasing returns. Whereas increasing of stock liquidity can be seen from the Trading Range Theory.

## METHODS

The data used by the researchers in the form of a daily company stock price report on Indonesian Stock Exchange and they are processed by using the SPSS 18 application. The approach used in this study is a quantitative method because it is in the form of processing data from the report (Hartono, 2010). Researchers use secondary data to be used as data processing materials, data obtained through official website sources [www.idx.co.id](http://www.idx.co.id), and [www.finance.yahoo.com](http://www.finance.yahoo.com). (Subalno, 2009) said data is data that has been archived, whether published or not. Secondary data can be in the form of reports, notes, evidence,

documents that have been archived by the company. According to (Bhuvaneshwari & Ramya, 2014) this study uses a period of 2 (two) months or 60 (sixty) days, by analyzing 30 (thirty) days before the stock price splitting event and 30 (thirty) days after the stock price breaking event. The study uses daily stock price report data taken from the close price the company's daily stock trading. The sample of this study is companies listed on Indonesia Stock Exchange and included in Indonesian Sharia Stock Index which conducts stock split. According to the purposive sampling method was used as the determinant in this study, because this study used certain criteria to be used as analysis material (Sugiyono, 2017). This research sample is a company with the following criteria:

- Issuers included in ISSI 2018
- Data of companies did a stock split in 2018
- Date of each company when doing a stock split
- Stock split data which is seen from the daily stock price for 60 (sixty) days, with a calculation period of 30 (thirty) days before the stock split and 30 (thirty) days after the stock split, the processed stock price data is in the form of the closing price.

This study uses secondary data and in the selection of samples using the method of purposive sampling method, out of 10 (ten) population companies that did a stock split in 2018, only 7 (seven) companies met the criteria, because 3 (three) companies were not included in ISSI 2018 (Prakoso, 2016) :

**Table 1.** Companies did a stock split in ISSI 2018

Date	Issuer	Corporate comparison
10/02/2018	PT MNC Land Tbk (KPIG)	1: 5
08/01/2018	PT Bukit Uluwatu Villa Tbk (BUVA)	1: 2
07/13/2018	PT Gema Grahasarana Tbk (GEMA)	1: 5
07/09/2018	PT Totalindo Eka Persada Tbk (TOPS)	1: 5
6/25/2018	PT Graha Layar Prima Tbk (BLTZ)	1: 2
06/04/2018	PT. Mitra Adiperkasa Tbk (MAPI)	1:10
12/14/2018	PT Bukit Asam Tbk (PTBA)	1: 5

Processed Secondary Data in 2019

This study uses 2 (two) variables namely dependent variable and independent variable, each of dependent variables and independent variable has 1 (one) variable, consisting of stock split (X) and stock price (Y), as explained below:

**Independent Variable (X)**

(Liana, 2009) Independent variable is the cause or something that affects the change of dependent variable. In this study stock split (X) becomes an independent variable. The researchers divide calculation into 2 (two) calculation phases, which are 30 (thirty) days before the stock price split and 30 (thirty) days after the stock price split.

**Dependent Variable (Y)**

(Arikunto, 2006) Dependent variable is a variable that is affected by independent variable. The researchers make stock price (Y) as dependent variable. (Bhuvaneshwari & Ramya, 2014) measures return/fluctuation in stock prices. It can use abnormal returns, namely in the following ways:

**Actual Return**

$$P_{i,t} - P_{i,t-1}$$

$$R_{i,t} = P_{i,t} - 1$$

Information:

R<sub>i,t</sub> = Return stock price i at time t

P<sub>i,t</sub> = Stock Price i in period t

P<sub>i,t-1</sub> = Share price in period t-1

**Expected Return**

$$R_{i,t} = \frac{p_{i,t} - (p_{i,t-1})}{p_{i,t-1}}$$

Information

R<sub>i,t</sub> = return of the 1st day stock price on the t event

P<sub>i,t</sub> = share price after

P<sub>i,t-1</sub> = share price before

**Abnormal Return**

Sickle =  $R_{i,t} - R_{m,t}$   
 Information  
 Sickle = abnormal return on stock price  $i$  on the  $t$ -day  
 $R_{i,t}$  = return  $i$  stock price on the  $t$ -day  
 $R_{m,t}$  = return of stock prices on the market

**Data Processing Techniques**

To determine the formulation of the problem in this study, researchers analyzed by using the following techniques: **The first problem formulation analyzing technique**

**Actual Return**

(Jones & Williams, 1998) *Actual returns* is the difference between stock price of yesterday and today which has occurred to analyze data to obtain the actual return result by calculating the difference between the daily stock price at a close price and yesterday stock price with today, or using this following formula:

$R_{i,t} = P_{i,t} - P_{i,t-1}$   
 Information:  
 $R_{i,t}$  = difference stock price  $i$  at time  $t$   
 $P_{i,t}$  = Stock Price  $i$  in period  $t$   
 $P_{i,t-1}$  = Share price in period  $t-1$

**Expected Return.**

$R_{i,t} = \frac{P_{i,t} - (P_{i,t-1})}{P_{i,t-1}}$   
 Information  
 $R_{i,t}$  = difference of the 1st stock price in the  $t$ -event period  
 $P_{i,t}$  = current share price  
 $P_{i,t-1}$  = previous share price

To obtain abnormal return in this study, researchers used market-adjusted return method by reducing the results of actual return minus expected return using to get the results of abnormal returns. The calculation formula of abnormal returns is as follows:

**Abnormal Return**

Sickle =  $R_{i,t} - R_{m,t}$   
 Information  
 Sickle = abnormal return on stock price  $i$  on the  $t$ -day  
 $R_{i,t}$  = difference in share price  $i$  on day  $t$   
 $R_{m,t}$  = difference in stock prices on the market

**Kolmogorov-Smirnov Test**

To know two variables are distributed normal or not, they can be tested by using the Kolmogorov Smirnov test with regression models (Yustisia, 2018). The rules in finding decisions must use the normality test.

The formula of finding probability value (p-value) is as follows:

- If the probability value (P-value) > 0.05, it is normally distributed
- If the probability value (P-value) < 0.05, it is not normally distributed

With the following partial formula:

$$Z = \frac{X^1 - X}{SD}$$

No	$X_i$	$Z = \frac{X^1 - X}{SD}$	FT	Fs	[FT-FS.]
1					
2					
Etc.					

Information :

$X_i$  = Data number  
 $Z$  = Switchover from numbers to notations in normal distribution  
 FT = Normal cumulative probability  
 FS = Empirical cumulative probability

FT = cumulative proportion of normal curve size based on

**Test of One Sample T-Test**

Generally to compare the average sample examined with existing population averages, we use One Sample t-test. In addition to test descriptive hypotheses with scale or interval research data, we can use a one-sample t-test (Penelitian & Bisnis, 2009). The level of significance of the one-sample t-test was  $\alpha = 0.05$  or 5%. From one-sample t-test if the value is greater than 5% (0.05) then  $H_0$  is accepted and  $H_a$  is rejected, but if the value is less than 5% (0.05) then  $H_a$  is accepted and  $H_0$  is rejected. The test formula is as follows:

$$t = \frac{x - \mu}{\frac{s}{\sqrt{n}}}$$

Information :

- x = sample average
- $\mu$  = average population / previous research
- S. = Standard Deviation
- n = number of samples

**Test of Paired Samples T-test**

(Irmayani & Wiagustini, 2015) The effect of stock prices on samples before split and after split can be measured by paired sample t-test. To know whether there is an abnormal return in stock price movements researchers analyzed abnormal returns 30 (thirty) days before the stock price split and 30 (thirty) days after the stock price breaking event. This research has a significance level of  $\alpha = 0.05$  or 5% (Potochnik et al., 2018). If the hypothesis test produces a value greater than 5% (0.05) then  $H_0$  is accepted, with the information that there is no significant difference, but if the value is less than 5% (0.05) then  $H_a$  is accepted by showing that there is a significant difference. Following is the formula of the paired samples t-test:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r \left(\frac{s_1}{\sqrt{n_1}}\right) \left(\frac{s_2}{\sqrt{n_2}}\right)}}$$

- $\bar{X}_1$  = sample average before the stock split
- $\bar{X}_2$  = sample average after stock split
- $S_1$  = standard deviation before the stock split
- $S_2$  = standard deviation after the stock split
- $n_1$  = number of samples before the stock split
- $n_2$  = number of samples after stock split

**The second problem formulation analyzing technique**

Test of One Samples T-Test :

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- X1 =average sample before stock split
- X2 =flat- average sample after stock split
- S1 =deviation raw before stock split
- S2 =deviation raw after the stock split
- n1 =total the sample before stock split
- n2 =total the sample after stock split

**Theoretical framework for discussion**

*3.1 Stock Split*

(Darmadji & Fakhruddin, 2012) claimed stock split is a nominal breakdown of smaller shares, for example, one share with a value of Rp. 5,000 then the company did a stock split with a ratio of 1: 5, then one share that had been valued at Rp. 5,000 is now Rp. 1,000 but the number of shares has increased.(Pittaway & Cope, 2007) said that corporate action of stock price split is a step of the company to improve stock liquidity by splitting stock prices or in the world of capital markets called stock split. The stock split action only increases the number of shares outstanding but does not increase capital, if at first 1 share is worth Rp. 5,000 then company conducts a stock split of ratio 1: 5, the number of shares will be 5 shares with a value per share of Rp. 1,000

*3.2 Abnormal Return*

(Bhuvaneshwari & Ramya, 2014) argued abnormal return is the difference between the actual return and expected return. if the difference is positive then the stock price rises, which means the stock split has a positive influence on the movement of stock prices, but if the abnormal return is negative then the stock price decreases, which means the stock split has a bad influence on the movement of stock prices.

*3.3 Signaling Theory*

According to (Gumanti, 2009) signaling theory is a signal theory that if a company does something corporate action that is informational, there will be a reaction to investors. Corporate action stock split is considered as a signal from company leaders to the public that a positive performance has been carried out by the company so that if investors buy shares there will be an increase in stock prices and it can benefit investors.

*3.4 Trading Range Theory*

(Gumanti, 2009) said that corporate action is in line with trading range theory. According to this theory stock split can increase company stock liquidity because if stock prices are high then buying interest from investors decreases so that there is no movement in stock prices, but if the stock price is broken down and becomes smaller it is expected to attract investor interest and will increase company liquidity. (Indarti & Purba, 2011) conducted a survey that became the tendency of managers to split stock prices to maintain the equilibrium price of the company's shares so that investors were still many in number.

**Applications of stock price movements that are affected by a stock split**

The value of the abnormal return (actual return-expected return) both before the stock split and after the stock split can be seen in the following table:

**Table 2.** Abnormal return value before and after the stock split

Date	Before	Date	After
-1	0.009	1	-0,015
-2	0.066	2	-0.006
-3	-0,039	3	-0,301
-4	0.043	4	0.043
-5	.001	5	-0,029
-6	-0,027	6	-0,012
-7	.001	7	.001
-8	0.042	8	0.057
-9	0.031	9	-0.006

-10	-0,012	10	-0,039
-11	0.013	11	0.027
-12	0.005	12	0.046
-13	-0.008	13	-0,041
-14	-0,036	14	0.051
-15	-0,029	15	-0,013
-16	0.011	16	-0.008
-17	-0,068	17	0.031
-18	-0,027	18	0.007
-19	-0.009	19	-0,041
-20	0.025	20	-0,039
-21	-0,023	21	-0,057
-22	0.041	22	0.041
-23	-0.009	23	-0,014
-24	-0,012	24	0.015
-25	0.009	25	-0,013
-26	-0,017	26	0.012
-27	-0,037	27	0.018
-28	-0,036	28	0.042
-29	0.005	29	0.019
-30	-0,087	30	-0.01

Source: data processed using SPSS 18, (2019)

From the results above, it is known that there is fluctuation in abnormal stock return of companies that carry out a stock split. In this case, there is negative and positive stock return. (Patel et al., 2016) After knowing that analyzed companies carried out a stock split and had abnormal return at their stock price, then the next phase is testing the normality of abnormal return result to find out whether those variables have been distributed normally or not. The normality test used Kolmogorov-Smirnov test. **Kolmogorov-smirnov test**. (Lopes, 2011) said to determine whether a data is normally distributed or not it can be seen from the regression results. To test the normality of data in this study researchers use the Kolmogorov-Smirnov test, the following table is results from the Kolmogorov-Smirnov test:

**Table 3.** Normality test results (Kolmogorov-smirnov test)

One-Sample Kolmogorov-Smirnov Test			
N		before	after
		30	30
Normal Parameters, b	The mean	8.3333	-5.5333
	Std. Deviation	26,84738	29.56201
Most Extreme Differences	Absolute	.103	.121
	Positive	.079	.999
	Negative	-.103	-.121
Kolmogorov-Smirnov Z		.563	.662
Asymp. Sig. (2-tailed)		.909	.774

a. Test distribution is Normal;  
b. Calculated from data.

Data processed using SPSS 18, (2019)

The P-value of abnormal returns before the stock split event in this study was 0.909, this value is greater than 0.05, which means it can be concluded that the normal return is normally distributed, and the P-value of the abnormal return after the stock price split event in this study is 0.774, this value is greater than 0.05, which means it can be concluded that the value of the abnormal return is normally distributed. Based on the results of abnormal returns before and after the stock price split tested for normality using the Kolmogorov Smirnov test, it can be concluded that the abnormal return values are normally distributed, then paired sample t-test or statistical test will be conducted.

### Test of One Samples T-Test

Abnormal return reactions caused by stock split events can be seen through test of one sample t-test. In the period of observation the researchers can see whether there is an effect caused by the stock split event using this test during the observation period. The level of significance in this test is 0.05. Data

processing in this test uses the SPSS 18 application with the following results:

**Table 4.** Result Test of One sample t-test

One-Sample Test					
Test Value = 0					
95% Confidence Interval of the Difference					
T	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Before 1976	30	.058	8.333333	-.3112	17,9778
After 3,32230		.002	14.00000	5.3812	22.6188

Data processed by SPSS 18, (2019)

Observation from one sample t-test test shows that when the observation period before carrying out a stock split the abnormal return of the stock price is not significant, the result is  $0.058 > 0.05$  which means that at 30 (thirty) days before the stock split there is no abnormal return, but when after a stock split occurs the market reaction is proven by testing this one-sample t-test the value is  $0.002 < 0.005$ , which means that at 30 (thirty) days after the stock split there is a reaction to the movement of its shares. This means the stock split event conducted by the issuer gives positive impact.

### Test of Paired Sample T-Test

In testing the hypothesis of this study, researchers used paired sample t-test. This test method compares the average abnormal return at the time before the stock split and after the stock split. The significant value resulted from the paired sample t-test by processing the abnormal return results used the SPSS 18 application as in the table below:

**Table 5.** Tested paired samples T-test

Paired Samples Test								
Paired Differences								
		The	Std.	Std.	95% Confidence Interval of the		Sig.	
		mean	Deviation	Error	Difference		T	df
Pair				Mean	Lower	Upper		tailed)
1	before after	13,86667	35,19770	6.42619	.72363	27.00970	2,15829	.039

Data processed by SPSS 18, (2019)

This test is to find out the results of the abnormal returns before the stock price split event and after the split event. It is known in the table above that there is significance in the abnormal return of this research that is equal to 0.039. This research has a significance value  $\alpha = 0.05$  or 5%, which means this solution affects the stock price movement. Seeing from the abnormal return tested using paired sample t-test, so the hypothesis stating that "stock prices are influenced by stock split" is accepted.

## CONCLUSION

The results of paired sample t-test conducted by researchers show the results of the analysis of the significant value in the paired sample t-test is 0.039, smaller than 0.05. It means that in the observation period 30 (thirty) days before the stock price split and 30 (thirty) days after the stock price split had a positive effect on the stock price liquidity of the companies that carried out a stock split at the 2018 Indonesia Syariah Stock Index

Abnormal return on stock prices before and after stock splits is tested using a one-sample t-test to see whether there is an influence before and after stock splits. In testing, the results of the significance is 0.058, in other words it is bigger than 0.05. This means before stock split there is no significant stock price movements seen from abnormal returns tested, but when it has been done stock split there is a significant stock price movement seen from the results of 0.002 or  $0.002 > 0.05$  which means there is a significant movement in stock prices after the company made a stock price split. This research is following the signaling theory and trading range theory which are used as theoretical foundation.

It can be said stock prices on the stock market is strongly influenced by the activities of the company, including the activities of corporate action to split stock prices that have an impact on stock liquidity. Yet many factors can affect stock prices including internal factors because companies have different stock prices which depend on the type of business of the company. Besides internal factors, stock price movements are also influenced by external factors, usually due to economic, political, regulatory policies and stock market reactions that are influenced by issues (Hermuningsih, 2014). Furthermore, causes of

changes in stock prices are believed to be related to those factors.

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