Does Stock Option Force Bid-Ask
Spread and Abnormal Return?

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Abstract

Research on stock splits has frequently been undertaken. The results vary, but fundamentally can be classified into two groups. First, the stock split is purely "cosmetic". Second, the stock split has a real effect on stocks. The difference between these opinions raises controversy. The purpose of this study is to examine whether stock splits influence stock liquidity and return of an individual stock as well as in a group of stocks as a portfolio. Overall, the results of this study show that stock splits did influence stock price, trading volume and bid-ask spread but did not influence stock risk and abnormal return from the point of view of an individual stock as well as in a group of stocks as a portfolio. The test of a relationship between bid-ask spread and stock price, trading volume and stock risk for each stock shows that all three variable did not significantly affect the bid-ask spread. On the other hand, the test of a relationship in a portfolio reveals that only stock prices significantly affect the bid-ask spread.

Keywords: stock splits, liquidity, abnormal return, bid-ask spread, stock return
JEL Classification: G32

Introduction

The stock price is the price which was formed from the interaction of the sellers and buyers of shares effected by their expectations towards the company's profit (Loire, Dodd & Kimpton, 1985). For that investors require information relating to the share price formation in taking decisions to sell or buy. Decision making is related to the selection of the most advantageous investment portfolio with a particular risk. Information can reduce the uncertainty that occurs so that the decisions taken are expected to comply with the objectives to be achieved. (Schwartz, 1998)

In the capital market, an awful lot of information that can be retrieved either investor information available in the public and private information. One of the information there is announcement of stock split. Stock split is an activity that is done go public companies to increase the number of outstanding shares. (Sears & Trennepohl, 1993); (Brigham, Gapenski & Daves, 2006). The activity is usually done at a time when prices are assessed too high so that it will reduce the ability of investors to buy it.

There are many opinions regarding the stock split, but basically the opinion can be distinguished into two groups. First, the stock split is just the nature of the changes "cosmetic". Second, the stock split could affect shareholder profit, risk stocks and signals given to the market. Based on the view of some, this study aimed to test back to sejauhmana stock split affect liquidity and the return of shares.

Literature

According to Sears & Trennepohl (1993) and Baker & Powell (1999), the distribution of shares in the form of stock split merely have changes that are "cosmetic" due to the stock split had no effect on the cash flow of the company and the proportion of ownership of the investors. This opinion contradicts Baker & Gallagher (1980) and Sears & Trennepohl (1993) which States that the split refund price of perlembar shares at an optimal level of trade and increase liquidity. According to them, the company that did the split in its shares will attract investors with the stock price so low will lead to the increase of the number of shareholders after the post split.

The impact split against profits investors described Grinblatt, Titman & Masulis (1984) that showed a split announcement around the behavior of the stock price is abnormal. It is believed that the increase in prices which occurred not due to increased dividend announcements such as advanced Fama & French (1993). The market gave a positive rating against the split, due to the tax-option impact. The impact of the tax exemption-shaped facing investors (tax-option investors) so that investors earn more profit. While Nichols & McDonal (1983) and Sears & Trennepohl (1993) conclude the existence of a market anomaly due to the split, the company's earnings will be getting bigger.

Otherwise the risk of stocks, according to Brennan & Copeland (1988) became larger in the days surrounding the announcement of the split and it is believed that the risk on the day the ex-date tend to experience increased permanent. The increasing liquidity after the split can occur due to the greater ownership of shares and the amount of the transaction. The number of shareholders become increasingly abounded after the split. The increase in the number of shareholders was caused by the drop in prices, the volatility of stock prices are becoming increasingly large attract investors to multiply the number of shares held.

Thus, an increase in liquidity caused by the growing number of investors who sell and buy shares. Instead, the research results Copeland (1979), Copeland & Galal (1983) and Conroy, Robert & Benet (1990) discovered the existence of a decrease in liquidity after the split with each using the trading volume and the bid-ask spread as a proxy. Copeland & Mayers (1982) do research on 162 companies listed on the OTC for the period 1965-1978 and found the presence of a statistically significant increase in the percentage of the bid-ask spread after split (for 40 day trading ex-date). These results contradict Miller & Rock (1985) which stated that the split had no effect against the trading volume as well as the bid-ask spread. Miller & Rock (1985) did a study of 100 companies that do split and listed on the OTC, with 1972-1976 and produce periods of absence changes the percentage spread relative to the control group.

The explanation that the split could give a signal informative about the prospect of profitable companies, according to Brennan (1986), the activity of the split signal costly to information manager because the cost of trade depends on the magnitude of the stock price where both variables have negative relationships. If the split activities can raise the cost of liquidity to investors, then split shows a valid signal. It is supported Brennan & Schwartz (1988), the higher the level the Commission shares with the more low the stock price increase raises costs that must be incurred due to the company split. The level of the Commission shares the higher is the attraction for the broker to do the analysis as precisely as possible so that the stock price is at a level of optimal trade as well as being able to provide information that is favorable to the company and investors.

Method

The data used in this research is secondary data are derived from the Capital Market Directory and semi-historical data from the Indonesia stock exchange (IDX) form of the data of daily stock price, trading volume, and the bid-ask spread. This type of research belongs to this type of research historical research. The sample of this research is that companies that are members of group LQ45 in Indonesia stock exchange (IDX) and issued policy of stock split.

The determination of the sampling done in a purposive sampling, in which the sample is selected by the criteria (1) issuers that have always been incorporated in the group Indonesia Stock Exchange's LQ45 during periods of 2008-2016; (2) the issuer does not move in the banking and services sectors; (3) the sample selected stocks actively traded (at least ten trading days); and (4) just issued the policy of stock split during the period 2008-2016.

Measurement Variables

The model used in this study is to test two different average and multiple regression. The application of this model is used to achieve a number of objectives, among others: (Levine, Berenson, Stephen &, 1999)

1. See if the activity split affect stock price, trading volume, stock, and variance percentage spread reviewed individually for each company's shares or as a portfolio. This test uses two different test average to see if there is a significant difference between the period before the split with periods after the split against the stock price, trading volume, stock, and variance percentage spread.

2. See if a stock split affect return activity as measured from the abnormal return. This testing using two different test average. But before it has to calculate the magnitude of the abnormal return first. Abnormal return is the difference between the actual return with the expected return. Expected return for each stock can be obtained by using a market model which stated: $Ri = a + bRm$, where Ri is the market return and Rm is the return of a certain stock, while the expected return for a portfolio equals the actual market return. After the abnormal return obtained, then performed a test by using test two different average. If the test results indicate that there is a significant difference between the period before with after the split, then split affect activity is said to return the shares, otherwise if there is no difference then allegedly split activity does not affect the return of shares.

3. Measure the relationship between stock price, trading volume and stock variances against the spread. The measurement of this relationship is done using a regression model where the dependent variable as a percentage of the spread and the stock price, trading volume, stock variance as its independent variables. The regression model can be expressed as follows:
   $Si,t = b0 + b1PRICEi,t + b2VOLi,t + b3RISKi,t + ei,t$
   where: S = spread; PRICE = stock price; VOL = trading volume; RISK = risk represented the standard deviation; i = stake to-i; and t = time.

4. Test the empirical basis whether the liquidity of the shares become increasingly increased or decreased after the split of the magnitude of the measured percentage spread. This test uses two different test results on average against a percentage of the spread that has been done on phase one. If the results of testing on phase one suggests that there is a significant difference towards the percentage spread will mean activity split affect liquidity and if otherwise then split activity does not affect liquidity. The next step is to see if the percentage spread more or less after the activity of the split. The larger the percentage spread after the split indicates that liquidity declined and instead the smaller percentage spread means increasing liquidity after the split.

Results
In this research, which provided the sample numbered 15 issuers, as seen in Table 1.

Table 1: Issuers that are always grouped in the Group of LQ45 during the period 2008-2016 in the Indonesia stock exchange

No.	Code Issuers	Name of the Issuers
1	AALI	Astra Agro Lestari Tbk
2	ADRO	Adaro Energy Tbk
3	ASII	Astra International Tbk
4	GGRM	Gudang Garam Tbk
5	INCO	Vale Indonesia Tbk
6	INDF	Indofood Sukses Makmur Tbk
7	INTP	Indocement Tunggal Prakarsa Tbk
8	KLBF	Kalbe Farma Tbk
9	LSIP	PP London Sumatera Tbk
10	PGAS	Perusahaan Gas Negara (Persero) Tbk
11	PTBA	Tambang Batubara Bukit Asam Tbk
12	SMGR	Semen Indonesia (Persero) Tbk
13	TLKM	Telekomunikasi Indonesia Tbk
14	UNTR	United Tractors Tbk
15	UNVR	Unilever Indonesia Tbk

Source: Processed data

Two Different Test Average to Price, Volume, Variance and Percentage Spread

Table 2 explains that the average stock price, trading volume, and the percentage spread from each company showed a significant difference between the period before with after the split. Only the variance of the stock that does not indicate the existence of significant differences. In this section there are several stages of discussion. First, a discussion of the stock price, the company of fifteen samples examined, as many as 13 issuers sample stated that there is a significant difference between the period before with having split; are 2 issuers samples show the results otherwise. On average, the share price of the respective issuers has increased after the split, only 2 issuers samples average price decline after the split. Secondly, a discussion of trading volume, 15 issuers samples examined, there are 9 issuers samples showed that there is a significant difference between the period before the split, after whereas with 6 issuers samples show the results otherwise. On average, the volume of trade has decreased after the split, only 2 issuers samples average volume has increased after the split. Third, the discussion regarding the percentage spread, as many as 11 issuers samples showed that there is a significant difference between the period before with after the split, only 4 samples which showed the results of issuers in contrast. On average, the percentage spread into the larger activities after the split. Of the 11 samples that issuers stated that there is a significant difference, there is only 1 issuer that indicates that the percentage of spread is becoming increasingly small after the split. Fourth, the last discussion about variance of the stock, as many as 14 issuers of the sample stated that there is no significant difference between the period before with after the split, and there is only 1 issuer stating otherwise.

Table 2: Summary of statistical test results for each Issuer (sample)

Code Issuer	Stock Price average before the split	Stock Price average after the split	Stock Price t-value (sig.)	Trading Volume average before the split	Trading Volume average after the split	Trading Volume t-value (sig.)	Varians average before the split	Varians average after the split	Varians t-value (sig.)	Spread average before the split	Spread average after the split	Spread t-value (sig.)	Abnormal Return average before the split	Abnormal Return average after the split	Abnormal Return t-value (sig.)
AALI	947.50	907.50	2.21407	626,700	139,500	4.27877	0.00217	0.00140	0.65208	1.82366	2.75742	-4.36897	0.00937	-0.00997	2.52548
			0.03997			0.00045			0.52259			0.00037			0.02116
ADRO	1,221.25	1,282.50	-12.20770	3,939,600	1,090,550	3.55629	0.00223	0.00149	0.42893	1.02045	1.94947	-150.71500	0.00296	-0.00168	0.55365
			0.00000			0.00226			0.67306			0.00000			0.58663
ASII	1,227.50	1,340.00	-2.33663	2,996,955	4,841,222	-0.86961	0.00142	0.00023	-2.72142	1.21579	2.08406	-3.07611	-0.00225	0.00344	-0.26351
			0.03122			0.39596			0.01434			0.00651			0.79515
GGRM	11,298.80	12,512.50	-5.02221	649,100	177,850	3.99528	0.00551	0.00381	0.54418	0.22814	0.77122	-2.99182	0.01402	-0.01069	2.08535
			0.00008			0.00085			0.59299			0.00782			0.05155
INCO	2,602.50	2,707.50	-4.41359	66,600	45,750	0.66363	0.00245	0.00147	0.94567	1.28678	2.19675	-1.91428	0.00572	-0.00718	1.57091
			0.00034			0.51534			0.35684			0.07162			0.13362
INDF	3,242.50	3,585.00	-9.85297	982,600	183,450	2.68885	0.00281	0.00166	0.79232	0.67842	1.53527	-2.01038	0.00878	-0.00793	1.86529
			0.00000			0.01500			0.43849			0.05962			0.07853
INTP	4,920.00	4,950.00	-0.83676	682,400	227,550	2.43193	0.00157	0.00062	1.00478	0.63001	3.01774	-2.60107	0.00125	-0.00136	0.37470
			0.41370			0.02568			0.32832			0.01806			0.71226
KLBF	1,706.25	1,860.00	-9.22212	278,100	1,741,150	-2.63941	0.00965	0.00150	1.95439	3.48858	1.32641	2.53952	0.00370	-0.00304	0.43593
			0.00000			0.01666			0.06637			0.02054			0.66807
LSIP	708.75	665.00	5.55719	418,500	155,250	2.07176	0.00457	0.00454	0.01085	1.93036	4.05067	-5.08286	0.00840	-0.00889	1.26975
			0.00002			0.05293			0.99146			0.00007			0.22035
PGAS	2,708.75	2,922.50	-6.74942	696,000	188,600	3.26375	0.00121	0.00334	-1.12901	0.73546	1.18993	-2.45105	0.00548	-0.00546	1.13496
			0.00000			0.00431			0.27372			0.02469			0.27128
PTBA	3,210.00	3,215.00	-0.03821	10,000,000	777,300	5.01304	0.01869	0.00618	1.24882	0.53809	1.49069	-3.62170	0.02640	-0.02462	2.53237
			0.96995			0.00000			0.22773			0.00195			0.02085
SMGR	1,495.00	1,735.00	-6.50526	14,000,000	4,350,450	1.48032	0.01426	0.00525	1.04354	1.00000	5.19540	-1.17727	0.01419	-0.01363	1.62303
			0.00000			0.15608			0.31051			0.25442			0.12197
TLKM	1,510.00	1,557.50	-2.13168	2,225,400	887,600	2.18252	0.00259	0.00111	0.98797	1.57874	3.20957	-3.55336	0.00758	-0.00777	1.84872
			0.04707			0.04256			0.33626			0.00227			0.08099
UNTR	1,540.00	1,407.50	6.65978	3,252,700	1,687,850	1.36583	0.00181	0.00541	-1.67641	1.23792	2.47415	-2.77963	-0.00277	0.00245	-0.41443
			0.00000			0.18882			0.11094			0.01236			0.68346
UNVR	750.00	975.00	-8.58116	34,900	294,150	-1.46845	0.00716	0.01886	-1.01286	3.54041	4.44271	-0.67043	0.01109	-0.01109	0.97437
			0.00000			0.15924			0.32455			0.51111			0.34279

Significance at $\alpha = 0.05$
Source: Processed data

Table 3: The results of the test statistics for the whole Stock As a portfolio

Description	Average before the Split	Average after the Split	t-value (Sig.)
Stock Price (Rp)	2,605.92	2,774.83	-5.439 (0.000)
Trading Volume (in Thousands of Rp)	2,665,880	1,111,806.67	2.662 (0.016)
Varians (%)	1.504	1.340	-0.351 (0.729)
Spread (%)	1.416	2.513	-3.370 (0.002)
Abnormal Return (%)	0.649	1.426	-0.685 (0.502)

Significance at $\alpha = 0.05$
Source: Processed data

While Table 3, t-count -5.439 (p-value 0.000) with a level of significance of 5%; These results show that between stock prices before with after the split there is a significant difference. Next can be seen two different test also average against trading volume which generates t-count 2.662 (p-value 0.016) at the level of significance of 5%; These results show that between trading volume before the split with trading volume after the split there is a significant difference. Test results of two different average against the variance of the stock can be seen that the t-count -0.351 (p-value 0.730) with a

level of significance of 5%; This value indicates that there is no significant difference between the variance of the stock before it with after the split. The next test of two different average percentage against the spread can be seen that t-count to a percentage spread is -3.70 (p-value 0.002) at the level of significance of 5%; These results indicate that there is a significant difference between the period before with a period after the split.

Two Different Test Average against Abnormal Return to See if the Activity of the Split Affected the Stock Return

In Table 2 before, it can be seen that the results of two different test average against abnormal return for each company. 15 issuers samples examined, the average abnormal return, his does not indicate there is a significant difference between the period before with after the split, just 2 sample that shows the results of the issuer otherwise. Thus, the results of this test show that the activity of the split does not affect the abnormal return, with no difference in abnormal return significantly, then return the shares also will not change significantly. So it can be said that the activity does not affect the return of the stock split.

Two different test average against abnormal return portfolio on Table 2, it can be noted that the value of t-count 0.685 (p-value 0,502), on the level of significance of 5%, this value indicates that between the abnormal return before with after the split did not show significant differences. With these results, it can be said that although the review as a portfolio split activity still does not affect the return of shares. This is apparent from the absence of significant difference against abnormal return.

Measuring the Relationship between Price, Volume and Variance against the Spread

Table 4: The results of the Regression Spread Towards the price, Volume, the variance for each Stock Issuers (sample)

Parameters	AALI	ADRO	ASII	GGRM	INCO	INDF	INTP	KLBF	LSIP	PGAS	PTBA	SMGR	TLKM	UNTR	UNVR
constants	7.964	-13.019	1.333	-1.678	-11.690	-8.194	-12.008	33.326	29.435	-0.905	0.116	-24.101	-5.028	15.723	3.518
p-value	0.025	0.000	0.444	0.279	0.232	0.114	0.114	0.002	0.000	0.761	0.964	0.166	0.533	0.006	0.534
Koef. Price	-0.005	0.012	0.000	0.000	0.005	0.003	0.003	-0.017	-0.039	0.001	0.000	0.017	0.005	-0.009	0.001
p-value	0.113	0.000	0.859	0.133	0.163	0.069	0.069	0.003	0.001	0.490	0.598	0.115	0.335	0.015	0.934
Koef. Trading Volume	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
p-value	0.819	0.020	0.042	0.141	0.497	0.723	0.152	0.765	0.367	0.475	0.040	0.215	0.247	0.442	0.998
Koef. Varians	-87.700	2.553	23.000	20.803	40.000	66.059	-41.800	4.756	14.400	-4.583	-4.480	209.366	-12.400	-57.678	15.400
p-value	0.133	0.789	0.000	0.271	0.752	0.408	0.874	0.910	0.796	0.870	0.628	0.170	0.906	0.282	0.622
R-square	0.238	0.909	0.562	0.331	0.139	0.270	0.159	0.459	0.506	0.106	0.284	0.210	0.201	0.360	0.019
F-Statistics	1.774	56.770	7.291	2.799	0.922	2.099	1.078	4.824	5.807	0.675	2.245	1.433	1.433	3.185	0.111
significance F	0.190	0.000	0.002	0.071	0.451	0.138	0.385	0.013	0.006	0.579	0.120	0.268	0.268	0.051	0.953

Significance at $\alpha = 0.01$
Source: Processed data

The regression results on each of the companies in Table 4, shows that, on average, stock price, trading volume, and the variance of the stock does not have significant influence towards the percentage spread. In this section there are several stages of discussion. First, a discussion of the relationship of the stock price percentage against the spread. A total of 11 issuers samples indicates that the stock price is related positively against the spread, being 4 issuers demonstrate otherwise. The regression results also show that 15 issuers samples, there are only 3 issuers which States that prices have significant influence towards the percentage spread. Secondly, a discussion of the relationship of trading volume against the percentage spread. As many as 13 issuers samples showed that the volume of trade had a negative relationship toward the percentage spread. The regression results also shows that of the 15 issuers samples, there are only 2 samples stating that the volume of trade has significant effects against percentage spread. Third, the discussion of the relationship of the stock against the variance percentage spread. As many as 9 issuers samples showed that the variance of the stock had a positive relationship towards the percentage spread. The regression results also shows that of the 15

issuers samples, there is only 1 issuer stating that the volume of trade has significant effects against percentage spread.

The results of the regression towards portfolio on Table 5, shows the value of the resulting R-square of 0.53. This value means that the possibility of independent variables such as price, volume and variance can be explained as dependennya variable spreads percentage of 53%. In addition, this model has a value of the F-value 6.38 (p-value 0.004) and statistically significant at the 1% level. This shows that at least there is a significant relationship between the dependent variable with one of its independent variables. Next, a discussion of the relationship between each independent variable with the variable dependennya. First, the regression coefficients are generated from the variable prices of 0.005 (p-value 0.001) and statistically significant at the 1% level. This coefficient numbers showed that stock prices had a positive relationship towards the percentage spread and these results also show that stock prices have significant influence towards the percentage spread. If the stock price rises of 1%, ceteris paribus; then the spread of 0.005 percent going up or vice versa. Second, the resulting regression coefficient of the variable volume of trade amounting to 0.000 (p-value 0.277) and not statistically significant at the 1% level. Numeric coefficient indicates that the volume of trade had a negative relationship toward the percentage spread and this result also shows the volume of trade had no significant effects against percentage spread. Third, the resulting regression coefficient of variance of variable stock of 33.99 (p-value 0.457) and not statistically significant at the 1% level. The figures show that the coefficient of variance of the stock had a positive relationship towards the percentage spread and also shows that the volume of trade had no significant effects against percentage spread.

Table 5: The Regression Results Against Portfolio

Parameters	Coefficient	p-value
Constants	-11.416	0.004
Price	0.005	0.001
Trading Volume	0.000	0.277
Varians	33.987	0.457
R-square	0.529	
F-Statistics	6.380	
significance F	0.004	

Significance at α = 0.01
Source: Processed data

Prove in Emperikal whether the Activity Split Affect Liquidity as measured from the Percentage Spread

The liquidity of a stock can be measured from the execution cost him (Blake, 1990). Execution cost this is the magnitude of the costs that must be incurred to modify an securities into cash or otherwise. There are two kinds of execution cost; First, the brokerage commission fees and secondly, the bid-ask spread where the spread is determined by the dealer. The greater the percentage of his spread, the lower liquidity and vice versa. Benchmarks of liquidity in this research is the percentage spread. In Table 2 and Table 3, it can be seen that both reviewed for each company as well as a portfolio, between the percentage spread before with after the split showed the existence of significant differences where the average percentage of his spread became more considerable. Thus, these results prove that the liquidity of the shares decline after split activity.

Conclusion
Based on the results of the research that has been done there are a few conclusions that can be made, such as:
1. Split Activities have significant effects against stock price, trading volume and percentage spread, but it has no significant effects against abnormal and stock return variance well reviewed on an individual basis or as a portfolio.
2. In the absence of significant difference for abnormal return; It also means no change in return shares. Thus, it was concluded that the activity of the split does not affect the return of shares either individually or as a portfolio.
3. On average, stock prices had a positive relationship towards the percentage spread well reviewed on an individual basis or as a portfolio.
4. On average, the volume of trade had a negative relationship toward the percentage spread well reviewed on an individual basis or as a portfolio.
5. On average, variance of the stock had a positive relationship towards the percentage spread well reviewed on an individual basis or as a portfolio.
6. If reviewed individually, change the percentage spread more significantly is not caused by price, volume as well as the variance of the stock.
7. If the review as a portfolio, percentage change spreads significantly affected by share price.
8. With the greater percentage of spread, overall good be reviewed individually and as a portfolio it was concluded that the liquidity of the shares decline after the split.

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