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A Testing of Semi-Strong Market Efficiency: Reverse Stock Split on Indonesia Stock Exchange Period 2007-2017

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Abstract: ***There are various reasons as to why company conducted reverse stock split. The announcement of reverse stock split could also affect the market reactions. This activity often seen as a negative signal by investors. This project focuses on test and analyze semi-strong market efficiency towards reverse stock split using three variables which are abnormal return, trading volume activity, and bid-ask spread with event window of 21 days. The samples included only 12 companies which listed on Indonesia Stock Exchange. Based on the result, Indonesia Stock Exchange has not yet achieved semi-strong market efficiency towards reverse stock split and there is significant difference on trading volume activity and bid-ask spread before and after the announcement of reverse stock split.***

Keywords: Market Efficiency, Abnormal Return, Trading Volume, Bid-Ask Spread

1. Introduction

According to Hartono (2016:30), to attract buyer and seller to participate, then the capital market needs to be liquid and efficient. In an efficient market, information coming into the market will be reflected in the price of the securities. The market will process relevant information, then evaluate stock prices based on that information [1]. There are three forms of market efficient concerned with the adjustment of security prices to relevant information subsets proposed by Fama (1970) which are: (1) weak form, (2) semi-strong form, and (3) strong form, where semi-strong form is concern with whether prices efficiently adjust to other information that is publicly available are considered [2]. One of the information which are published is an event that occurred in the company (corporate action) [1]. One of the corporate actions is reverse stock split. According to Peterson and Peterson (1992) on Masse et al. (1997), reveal that the decision to reverse split may be affected by factors related to marketability (e.g., commissions, reputation, and acceptability to institutional investors) [3]. Low priced securities may be viewed as speculative, and therefore not attractive to investors, especially institutional investors. Furthermore, companies have incentive to raise the price via implementation of reverse stock split so that the stock is available to a broader base of individual investors at a more favorable trading price [4]. Another factor why company done reverse stock split is the stock price has been at the minimum limit of trading price permitted by Indonesia Stock Exchange (IDX) [5].

Fahmi (2015) states that "in general, investors and speculators have responded to the reverse stock split decision done by the management as a negative signal" [6]. Refer to Marchman (2007), it is generally found that when a firm implemented reverse stock split, the stock will suffer negative abnormal return both long and short terms and there is a small increase in volume and a decrease in the number of shareholders after the split [7]. However, transaction costs are reduced for reverse stock split and reverse split enhance liquidity of the stock because the increase allows investors to buy stock on margin, therefore allowing margin investors access to the stock [8]. Lower bid-ask spread might be due to the increase liquidity post reverse split price [7]. On the contrary to the theory, some of previous researchers examined that announcement of reverse stock split resulted in positive abnormal return and there is no significant difference on trading volume activity before and after reverse stock split [3], [9].

2. Literature Review

2.1 Capital Market

Capital market is a place where various parties, especially firms, selling stocks and bonds with the purpose of the sale will be used as an additional fund or to strengthen the company's capital [6]. For another definition, formally, capital market can be defined as a market for various long-term financial instruments (or securities) that can be traded, both in the form of debt or capital, issued whether by government, public authorities, or private company. On the whole, capital market is a narrower concept of financial markets [10].

2.2 Market Efficiency

Market efficiency defines as a market which securities' price have reflected all relevant information. The sooner a new information is reflected in the price of securities, the more efficient the capital market is. Thus, it would be very difficult (or even almost impossible) for investors to obtain return from its normal levels by trading on stock exchange [10]. Moreover, market efficiency as a market which prices always "fully reflect" available information [2]. There are three forms of market efficient concerned with the adjustment of security prices to relevant information which are: (1) weak form, in which the information set is just historical prices, are discussed, (2) semi-strong form, in which the concern is whether prices efficiently adjust to other information that is obviously publicly available are considered, and (3) strong

form, in which concerned with whether given investors or groups have monopolistic access to any information relevant for price information are reviewed [2].

2.3 Reverse Stock Split

Reverse stock split is a change in the nominal value per share and reduce the number of shares outstanding in accordance with the split factor. Reverse stock split is usually done when the stock price is considered too low. Reverse stock split is a merger of the nominal value of the stock into higher price. Therefore, the number of shares owned by shareholders will decrease with the nominal value per share becomes greater. This causes the value of the stock to rise proportionately [11].

Share prices that are too low may harm marketability. Low priced securities may be viewed as speculative, and therefore not attractive to investors, especially institutional investors. Firms whose stocks trade at very low prices may wish to change their image as issuers of "penny" stocks. Aligning stock prices with stocks which have similar characteristics or in the same industry, raising stock position from development board category to main board, and forming a more reasonable stock price [12].

2.4 Abnormal Return

Abnormal return or excess return is the excess of actual return to normal returns. Normal return is the expected return (return expected by the investors). Thus, abnormal return is the difference between actual return that occurs with expected return as follows [1]:

$$AR_{i,t} = R_{i,t} - E[R_{i,t}] \quad (1)$$

2.5 Trading Volume Activity

Trading volume activity (TVA) is an instrument that can be used to see how capital market reacts towards an information through the parameter of movement of trading volume activity in the market [13]. Ceteris paribus, the higher the trading volume indicates higher liquidity [8].

$$TVA = \frac{\sum \text{shares of firm i traded in t-period}}{\sum \text{listed shares of firm i in t-period}} \quad (2)$$

2.6 Bid-Ask Spread

Bid-ask spread is "the difference between what they paid for the asset [their bid price] and what they sell it for [the ask price]" [14]. Stock liquidity is how easily (and quickly) an asset can be sold and closed to its fair value using bid-ask spread as a measure, the less the bid-ask spread the more liquid a share is [15].

$$Sp_{i,j} = \frac{AP - BP}{\left(\frac{1}{2}\right)(AP + BP)} \quad (3)$$

2.7 Event Study

Event study is a study that learns market to an event. Event study can be used to test the information content of an announcement and can also be used to the market efficiency of the semi-strong form. Information content testing and market efficiency testing is a different test. Information content testing is intended only to see the reaction when an event is announced, not to test how quickly a market reacts. If the test involved the speed of market reacts to absorb the information announced, then this test is called testing of informationally market efficiency [16].

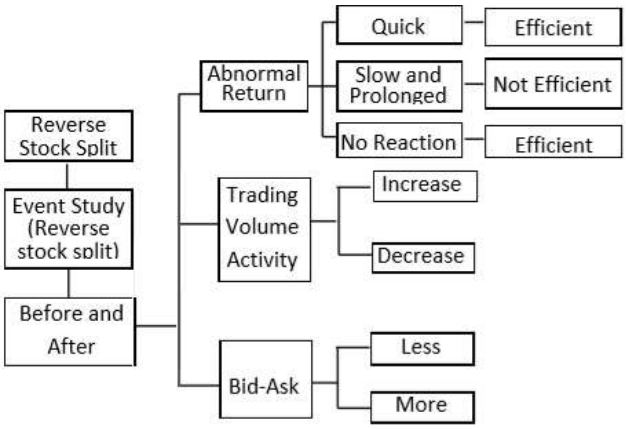

Figure 1: The Proposed Model

3. Discussion and Results

3.1 Abnormal Return

One Sample t-Test is used to perform to determine significance of abnormal return in event window. This hypothesis is conducted to determine whether there is significant abnormal return around the announcement day of reverse stock split which is ten days before and ten days after the announcement day. Thus, the result is as follow.

Table 1: One Sample t-Test of Abnormal Return

Event Date	AR	Sig. Value	Significance
-10	0.00447	0.712	Not Significant
-9	-0.01186	0.115	Not Significant
-8	0.00301	0.683	Not Significant
-7	0.00251	0.771	Not Significant
-6	0.00090	0.911	Not Significant
-5	0.00335	0.445	Not Significant
-4	-0.00077	0.831	Not Significant
-3	0.00599	0.567	Not Significant
-2	-0.00773	0.631	Not Significant
-1	0.00413	0.536	Not Significant
0	-0.01628	0.019	Significant
+1	-0.02300	0.487	Not Significant
+2	-0.03484	0.301	Not Significant
+3	-0.01989	0.599	Not Significant
+4	-0.02627	0.139	Not Significant
+5	-0.05264	0.449	Not Significant
+6	-0.01912	0.702	Not Significant
+7	-0.06835	0.039	Significant
+8	-0.09893	0.046	Significant
+9	-0.02698	0.197	Not Significant
+10	-0.03447	0.226	Not Significant

Abnormal return which is significant only appear on the day of the announcement (t-0), seven days (t+7) after, and eight days (t+8) after the announcement. Significant abnormal

return denotes that the announcement of reverse stock split has information. The existence of negative abnormal return indicates that investors respond to the information of the announcement of reverse stock split as bad news which is in line with theory stated by Fahmi (2015) that reverse stock split perceived by investors as negative signal [6]. In addition, with the existence of significant abnormal return on seven days and eight days after the announcement means that information has not been all absorbed by the market [1].

3.2 Trading Volume Activity

Wilcoxon Signed-Rank Test is used to determine whether there is significant difference on trading volume activity (TVA) before and after the announcement of reverse stock split. The result is as follow.

Table 2: Wilcoxon Test of Trading Volume Activity

Before		After	
Event Date	ATVA	Event Date	ATVA
t-10	0.00295	t+1	0.00424
t-9	0.00182	t+2	0.00738
t-8	0.00098	t+3	0.00804
t-7	0.00138	t+4	0.00344
t-6	0.00093	t+5	0.00470
t-5	0.00188	t+6	0.00814
t-4	0.00159	t+7	0.01136
t-3	0.00586	t+8	0.01167
t-2	0.00891	t+9	0.01036
t-1	0.00348	t+10	0.01204
Asymp. Sig. (2-tailed)	0.005		

Based on Table 2, average trading volume activity (TVA) after the announcement of reverse stock split increase. The increase in trading volume activity (TVA) is due to the inclining number of traffic by both large and small investors. The incline of trading volume activity shows that stocks are actively traded which ultimately will increase stock liquidity [17]. Additionally, the rising of ATVA could also means the stock is available to a broader investors at a more favorable price, therefore, stocks are actively traded [4].

3.3 Bid-Ask Spread

Wilcoxon Signed-Rank Test is feasible to use to examine if there is significant difference before and after the announcement of reverse stock split towards bid-ask spread. Thus, the result is as follow.

Table 3: Wilcoxon Test of Bid-Ask Spread

Before		After	
Event Date	ABAS	Event Date	ABAS
t-10	0.45485	t+1	0.68014
t-9	0.45925	t+2	0.22849
t-8	0.67635	t+3	0.23037
t-7	0.76079	t+4	0.51600
t-6	0.51170	t+5	0.26117
t-5	0.51327	t+6	-0.28088
t-4	0.75911	t+7	0.29734
t-3	0.26011	t+8	0.25471
t-2	0.29529	t+9	-0.27829
t-1	0.29526	t+10	-0.27390
Asymp. Sig. (2-tailed)	0.017		

Bid-ask spread as one of tools to measure liquidity of a stock is shown in Table 3 indicates that the trend after reverse stock split is announced is generally is less than before the announcement is published, though it is still fluctuates. At the time before reverse stock split is announce cause less actively traded stock, therefore, inventory holding and order processing costs, as component of bid-ask spread, become greater. In contrast, after the announcement of reverse stock split, bid-ask spread generally decreased where it is mainly due to the information of reverse stock split has been spread evenly. It also indicates that the stock split is more liquid [15]. Likewise, the difference between highest bid and lowest ask is decreasing, making it easier for buyer and seller to have a match price which encourage them to do transactions, increasing stocks traded, and in the end the stocks will become more liquid.

3.4 Rapidity of Market Reaction and Efficiency

Refer to Table 3, only on the day of the announcement (t-0), seven days after (t+7), and eight days after (t+8) significant reaction occur. The existence of significant abnormal return shows that the implementation of reverse stock split contains information [1]. On the day of the news is published (t-0), investors react unfavorably shown by AAR value of -0.01628 which is statistically significant. On the seven days (t+7) and eight days (t+8) after the announcement with score of AAR -0.06835 and -0.09893 respectively which are significant at level of significance 95% (α=0.05). Negative and significant reaction on seven days and eight days after the news is broke out from investors can be interpreted that bad information of the announcement of reverse stock split have been absorbed slowly and prolonged by the market, hence, it can be categorized that Indonesia Stock Exchange (IDX) has not yet achieved informationally semi-strong market efficiency. Market is said to be not semi-strong market efficient because it is inconsistent with statement by Tandelilin (2010) [18] that market is said to be semi-strong market efficient if information is absorb or respond quickly by the market in one or two days around the information is announced.

4. Conclusion

1) There is significant abnormal return around the day of the announcement of reverse stock split.
2) Trading volume activity (TVA) has significant difference before and after the announcement of reverse stock split.
3) Bid-ask spread has significant difference before and after the announcement of reverse stock split.
4) Indonesia Stock Exchange (IDX) has not yet achieved informationally semi-strong market efficiency.

5. Suggestion

5.1 Company

The company must be careful in the effort to increase the price and liquidity of its shares through the announcement of reverse stock split. Do not let the issuer implements reverse stock split as the only alternative to raise the price, image, and the sales of its shares, because the announcement of

reverse stock split considered by investors as bad news. If the company wanted to recover company's image through reverse stock split, there are other ways to do so such as implementing corporate social responsibility (CSR), doing public relations (PR), publicity, get achievement, and good corporate governance. Companies also need to improve the companies itself such as management performance or financial performance as one of the stimulus to increase investor's confidence in the stock that ultimately affect to the increasing stock prices into a more optimal and more attractive price levels.

5.2 Investors

In investing in a company's stock, especially a company that has implemented reverse stock split, it is advisable to investors to be a sophisticated investor who not only see the rising price per shares after the announcement of reverse stock split, but also see the risks of a possible fall in stock prices occur after the news is published. Investors are also required to analyse further by considering other factors such as financial performance, business volume, track record of company's growth, its market share, history of the company, or achievements the company have to determine whether the reverse stock split news is bad or good news.

5.3 Future Researchers and Academicians

1) It is advisable to research in the future to increase the amount of sample by extending the observation period so that the results of further research is expected to be more accurate as it covers more data.
2) Extend the period of event window. With the longer event window, it will be clearer on a longer term to see on how market reaction after the announcement of reverse stock split.
3) Do a comparison between three different event study models: Market-adjusted model, Mean-adjusted model, and Market model.

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