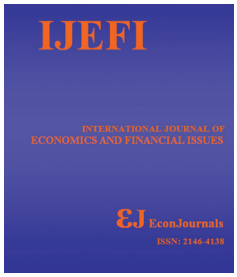

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Price Manipulation by Dissemination of Rumors: Evidence from the Indonesian Stock Market

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ABSTRACT

This study examines stock market reactions to the publication of rumors in Indonesia market. Using 672 market rumors published in the electronic version of the Investor Daily Indonesia newspaper for the period starting from 3 August 2007 to 31 December 2008, this research shows that market rumors were intentionally published by sellers to attract buyers. They are a part of a manipulation scheme that is intended to enable the manipulator to sell at higher prices stocks that they previously accumulated at lower prices. The findings of this research indicate that the stock market is not fully efficient as prices could be manipulated by rumors. Consequently, the existence of market rumors should be considered in timing the buy and sell decision. Regulators might also want to put into effect stronger regulation against spreading false information to protect the small and usually less informed investors.

Keywords: Rumor, Market Manipulation, Abnormal Return, Investment Decision, Regulation
JEL Classifications: GO1, G14, G15

1. INTRODUCTION

In stock exchange, a market rumor is unsubstantiated information regarding a certain security. In most cases, rumor can be classified as either positive or negative information. In the US, market rumors are generally associated with negative information and short selling[1]. One of the latest rumor in the US market is about the plan of Bank of America (NYSE: BAC) to make secondary offering, which is generally considered to be a "bad news." Although the information was later denied by the bank's official, the rumor "successfully" dropped the price of BAC by 2.8% on the day of the rumor. Following the denial, however, the stock price rebounded by almost 2% in after-hours trading (Park, 2012).

Probably because short selling is not common in Indonesia, most of the market rumors in Indonesia are positive information, implicitly function as buy recommendations. As an example, on 15 July 2008 there was a rumor about an intention of PT Bakrie and Brothers Tbk. (IDX: BNBR) to acquire PT Indosat Tbk. (IDX: ISAT)[2], one of the leading Indonesian telecommunication companies, at the price of Rp 7,650 per share. This particular news was responded by a 3.05% increased of ISAT to Rp 6,750 per share from the Rp 6,550 closing price at the day preceding the rumor. Trade volume also increased to 42 million shares, which was much higher than the 15 million shares average volume during the period of 120 trading days preceding the date of the rumor. The fact that until today the plan was never realized instigates the question if the information was false information that was deliberately engineered by a certain party to enable selling at higher prices.

1 The idea that negative information are intentionally fabricated and circulated by short sellers was widely discussed primarily during the latest meltdown of the US stock market in 2008. The "bear raid" has been, at least partly, blamed for the market collapse since the 1930s.

2 PT stands for Perseroan Terbatas, meaning (limited) corporation. Public companies in Indonesia must use corporation as their legal form. Tbk. stands for Terbuka, meaning open. This mandatory abbreviation is used to signify that the entity is a public company. IDX stands for Indonesia Stock Exchange. BNBR and ISAT are the ticker symbols of the respective companies. Indonesian public companies must use a four-letter symbol.

This research analyzes whether rumors in Indonesian market are intentionally made and distributed by those who wish to sell, hence parts of manipulation schemes. This research is motivated by the widespread of rumors, especially in this internet era. Rumors can potentially cause temporary deviation of stock prices from their intrinsic values, and therefore reduce market efficiency (Hou et al., 2014). Furthermore, assuming that in the long-run market prices equate intrinsic values, the temporary deviation can harm investors that make buy and sell decision based on unsubstantiated information (Rezvanian and Rao, 2012; Maeda, 2015; Windolf, 2016).

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Market manipulation is an age-old phenomenon. It has started since as early as the trading of the Vereenigde Oost-Indische Compagnie (The Dutch East India Company) stocks in the Amsterdam stock exchange in the seventeen century (Leinweber and Madhavan, 2001). Jarrow (1992) provides a chronological detail of large scale market manipulations, started from gold commodity manipulation in 1869, Northern Pacific Railroad stock in 1901, Stultz Motor Car Company stock in 1920, soybean commodity in 1977 and 1989, and US Treasury bond in 1986. Aggarwal and Wu (2003) found that market manipulations still routinely occur in the US, with prices tend to rise during manipulation period and fall after manipulation period.

Most of the previous researches on market manipulation are theoretical in nature (Allen and Gale, 1992; Jarrow, 1992; Bagnoli and Lipman, 1996; Van Bommel, 2003). Aggarwal and Wu (2003) extends the theoretical framework of Allen and Gale (1992) and tests the model using 142 manipulation cases under the SEC litigation. They found that stock prices rise throughout the manipulation period and then fall in the post-manipulation period, and that prices are higher when the manipulators sell than when the manipulators buy. Liu et al. (1990) studied market reactions to the "Heard on the Street" column of The Wall Street Journal during 3-year period starting on 01 September 1982. They classified the news into either buy or sell recommendations, and found price reactions not only on the publication day but also on 2 days preceding the publication.

Unlike Liu et al. (1990), this research uses market rumors that all can be classified as buy recommendations. In addition, this research explicitly deals with manipulation attempts through publication of such rumors.

2.1. Manipulation Method

Manipulation method can be classified into two groups, i.e., transaction-based manipulation and information-based manipulation. In a transaction-based manipulation, a group of manipulators conduct buy-and-sell activities among themselves to create a price trend. The real transactions are conducted with third parties who fall into the manipulation scheme. The most known transaction-based manipulation scheme is the pump-and-dump scheme, in which a group of manipulators artificially lift stock price and start selling as soon as the market respond with an increase in demand for the stock.

In information-based manipulation, the manipulators misuse their informational advantages for their benefits. The following are several types of information-based manipulation. First, front-running, in which a stock broker place buy or sell order in front of a client order. Front-running can also mean that a stock broker informs other parties outside the brokerage firm that a client has made buy or sell order, usually a large one, so that the recipient of the information can trade in front of that order to make unduly profits. Second is the issuing of buy recommendation while selling. In this scheme, an analyst publishes a buy recommendation while his (her) brokerage firm, or other parties whose interest he (she) represents, quietly sell. The buy recommendation is expected to enable the seller to sell at higher prices. Levy (2002) and Sexton (2008) discussed the widespread of this manipulation scheme. Finally is the making early transaction based on to-be-published information. For example, someone with advance knowledge about a sharp increase in a company's profit can purchase the share of the company in the expectation that the price will rise when the information becomes public. Prior access to information is usually available to someone "inside," such as a company official, hence this manipulation scheme is known as insider trading.

Market manipulation is an illegal activity. In the US, as quoted from Colby et al. (2009), "… any effort to manipulate the securities markets using fraudulent devices and misinformation is prohibited by Section 17(a) of the Securities Act of 1933 (the "Securities Act") and Section 10(b) of the Securities Exchange Act of 1934 (the "Exchange Act") and Rule 10b-5 thereunder." Nevertheless, manipulation is still a daily activity. As more and more investors seek information in the internet and trade using online trading facilities, the manipulators now make use of the internet to launch their scheme (see for example Leinweber and Madhavan, 2001). Numerous legal actions that have been taken by law enforcement agencies apparently cannot eliminate the attempts to make large profit in unfairly manners.

2.2. Indonesian Market

The Indonesia stock exchange (formerly Jakarta stock exchange) currently lists 443 public companies, with 119 participating brokerage house[3]. It also trades bonds and some derivative products. Stock market capitalization is around US$400 billion, and targeted to reach US$750 billion by the end of 2015. The market has about 400.000 active investors, and expects to have more than 500.000 by the end of this year (Bisnis Indonesia, 2012).

As in all countries, market rumors always exist to "sweeten" the market. Googling "rumor pasar" (Bahasa Indonesia for "market rumor") gives 12,300,000 results for all language query and 1,210,000 results limited to Bahasa Indonesia only. In fact, some leading business periodicals such as Bisnis Indonesia and Investor

3 As of 21 May 2012, as reported in the JSX website (www.idx.co.id/Home/MarketInformation/ListofSecurities/Stock/tabid/102/language/en-US/Default.aspx, downloaded on 22 May 2012).

Daily Indonesia routinely published market rumors[4]. Indonesia also has many websites dedicated to spreading stock market information and rumors.

Unlike the aforementioned schemes, this research explores the possibility that a manipulator or a group of manipulators intentionally fabricate and publish "good news" to attract demand on a certain stock to enable selling at higher prices. Therefore, instead of rising, prices tend to fall after the "good news" because the manipulators sell in large quantity. Controlling for market movement, abnormal returns of stocks with such "good news" are expected to be negative, leading to the first hypothesis of this research.

Sellers can be genuine, in the sense that they wish to sell for cash or to make changes in their portfolio. Nonetheless, they may also be "pure manipulators" that initially purchased stocks with the intention to sell them back by first introducing rumors to the market to attract attention and demand for the stocks. In this case, stock prices would gradually increase as the manipulators make their purchases and peak on the day of the rumor, and then gradually decline afterward (Rezvanian and Rao, 2012; Maeda, 2015). Again, controlling for market movement, there should be positive abnormal returns on the days before the rumor date, leading to the second hypothesis of this research.

This research uses 14 days before and after rumor date as event window. Abnormal returns are accumulated during the appropriate period, which gives cumulative abnormal return (CAR) for day 1-14 after rumor date (CAR+14) to test the first hypothesis and CAR for day −14 to −1 before rumor date (CAR-14) to test the second hypothesis. Formally stated:

Hypothesis 1: There is a negative CAR for the period of fourteen days following the rumor date.

Hypothesis 2: There is a positive CAR for the period of fourteen days before the rumor date.

3. RESEARCH METHOD

3.1. Data and Sample

This research uses market rumor published by Investor Daily Indonesia, a newspaper specializing in economics and stock market news. The newspaper is available in print as well as in electronic format in the www.investor.co.id (formerly www.investorindonesia.com) website. This Indonesian Investor Daily uses Bahasa Indonesia. Latest market rumor is presented on the upper-left corner of the first page of the newspaper, with uniform resource locator that would open previous rumors. Market rumors of this newspaper are often cited by other online media.

Data start from the first rumor provided by Investor Daily Indonesia on 3 August 2007, and end at the last rumor of 2008. This period is characterized by a sharp decline in the market, during which the Indonesian Composite Index was down by almost 40% from 2194.34 to 1332.67, giving high motivation to sell[5]. During the investigation period, there were 891 rumors about 196 of 397 companies listed in the Indonesian Exchange as at 31 December 2008. Most of the rumors are on smaller companies with small trading volumes, consistent with the finding of Aggarwal and Wu (2003). Only 19% of the companies belong to the LQ45 companies[6]. Some companies were rumored upon more than the others.

The first rumor appeared in the newspaper is about Bank Victoria, one of Indonesian public banks. The following is the full translation of the rumor.

Bank Victoria is Heading toward Rp 350:

> Investors can pay attention to the price movement of PT Bank Victoria International Tbk. (IDX: BVIC) for short- and medium-term. It has been said that upon the completion of Bank Swaguna acquisition, the company will convert its operation to syariah banking pursuing Bank Indonesia regulation on single present policy. With assets amounting to Rp 3.5 trillion, the company will be a bank with strong capital.

An Investor Daily source said that fundamentally the company's share is attractive because the price-to-earnings ratio is only 5.4 and the price-to-book value is 0.97, lower than industry average. "With such a promising fundamental BVIC shall be price at minimum Rp 350," add the source in Jakarta.

On Thursday (02 August 2007), BVIC rose Rp5 to Rp163. Trading volume was 3.67 shares valued at Rp583.71 million, while trade frequency was 57[7].

The rumor example is a typical rumor published by Investor Daily Indonesia. The fact that the rumor contains a target price (Rp350) makes it seem like a buy recommendation. Notably, up to the day this paper is written the price of BVIC never passes Rp200 (see footnote 6). The rumor characteristics make it a suitable data for this research.

3.2. Research Variable and Measurement

The research variable is CAR after and before the issuance of market rumor. A negative CAR following the day of the rumor indicates that manipulators use rumors to attract demand for the stock to enable them to sell at higher prices. A positive CAR before the day of the rumor indicates that the manipulators initially purchased the stock that they later sell on rumors. CARs are calculated for 14 trading days after (before) the issuance of

4 Both periodicals are available in print and digital (electronic) forms. The website of Bisnis Indonesia is www.bisnis.com and of Investror Daily Indonesia is www.investor.co.id.

5 This period corresponds to the stock market crash around the world as the result of the housing bubble.

6 LQ45 is the 45 most liquid companies in the Indonesian exchange. The list is updated semi-annualy on February and August each year.

7 www.investorindonesia.com/index.php?option=com_content&task=view&id=36643&Itemid=; downloaded on 8 November 2008. The website now change into www.investor.co.id. For additional information, the price of BVIC on the day of the rumor was down 3.68% to Rp 157 from Rp 163 in the previous day. However, the market (IHSG) was also down by 0.05% from 2,270.85 to 2,269.79. On the other hand, BVIC could not match the following rally of the market. As at 16 May 2012, IHSG closed at 3,980.50 (up by 75.37% since the rumor date) while BVIC closed at Rp 128 (down by 18.47 percent since the rumor date).

rumor. Therefore, CAR following the day of the rumor (CAR+14) is the accumulation of abnormal returns from 1 to 14 days after rumor date, and CAR before the day of the rumor (CAR-14) is the accumulation of abnormal returns from 14 days to 1 day before the rumor date.

Abnormal returns are calculated by market-adjusted model (Brown and Warner, 1980). The Indonesian aggregate stock price index (IHSG) is used as proxy for market. The formula for CAR calculation is as follows.

$$CAR+14 = \sum_{t=1}^{t=14} \frac{P_\tau - P_{\tau-1}}{P_{\tau-1}} - \frac{IHSG_\tau - IHSG_{\tau-1}}{IHSG_{\tau-1}} \quad (1)$$

$$CAR-14 = \sum_{t=-14}^{t=-1} \frac{P_\tau - P_{\tau-1}}{P_{\tau-1}} - \frac{IHSG_\tau - IHSG_{\tau-1}}{IHSG_{\tau-1}} \quad (2)$$

Where,
t = The date of the rumor,
P = Stock closing price, and
IHSG = the market index closing.

To test the research hypotheses, one-sample t-test is conducted for each CAR. Hypothesis 1 is supported if CAR+14 is negative (significantly less than zero). Hypothesis 2 is supported if CAR−14 is positive (significantly more than zero).

4. RESULTS OF ANALYSIS

4.1. Sample Description

To avoid error in calculating abnormal return, rumors published within 2 weeks after another rumor of the same company are excluded from the sample. There were 208 of such rumors. Eleven other rumors were also dropped because they were published in less than 14 trading days before the company listed, leaving 672 rumors for 185 companies in the data set[8]. In most cases, rumors appeared more than once. Table 1 presents the rumor distribution among the 185 companies during the research period.

As much as 286 rumors (42.56%) were followed by increased in stock prices, and 264 (39.29%) were followed by decreased in stock prices. The price of the remaining 122 (18.15%) were unchanged. On average, closing stock prices rose by 0.53% on the day of the rumors, while IHSG downed by 0.18%, creating an average abnormal return of 0.71%. Assuming 240 trading days in a year, the abnormal return corresponds to 170% annual rate. Table 2 presents the changes from previous closing of average stock price, market index, and abnormal return on the rumor day.

Before hypothesis testings are conducted, data are first screened for outliers based on z-scores of both variables (CAR+14 and CAR-14). Observations with z-scores of more than 3.3 or less than minus 3.3 were considered outliers and dropped from the sample (Tabachnick and Fidell, 1996). There were 14 (2.08%) outliers, leaving 658 observations for further analysis.

8 14 trading days are needed to calculate CAR-14 for Hypothesis 2 testing.

4.2. Test of Hypothesis 1

Consistent with previous researches, trade volumes were higher than average on and around rumor dates, confirming the notion that rumors are effective means to attract market (Liu et al., 1990; Van Bommel, 2003). Average volume in 14 days prior to rumor dates was 28.50 million shares, almost identical to trade volume of 28.55 in the 14 days following the rumors. On rumor dates, trade volumes on average reached 39.84 million, almost 40% higher than normal volume. In three days around rumor dates trade volume on average was 37.94 million, much higher than the average trade volume during the 29 days window of 28.92 million. Figure 1 presents trade volume during the event window (0 = rumor date).

Table 3 presents descriptive statistics for CAR+14 and the result of the t-test. CAR+14 ranged from −0.5435 to 0.4726, averaging at −0.0263 or minus 2.63% (statistically different from zero, t-statistics = −4.842; P = 0.000). The figure corresponds to a loss of 45.09% annual rate relative to the market. The test results in Panel B show that, after controlling for market

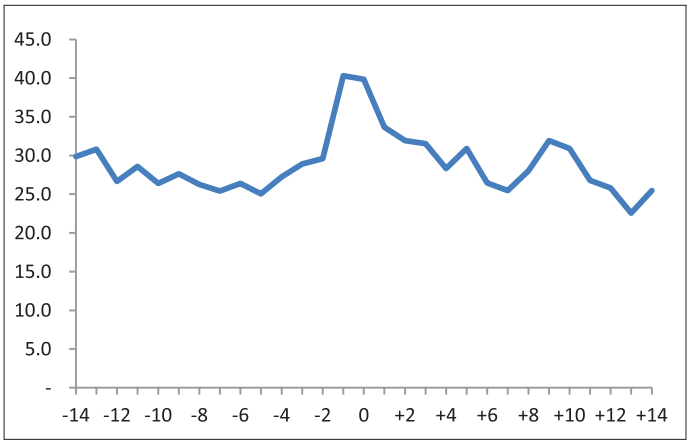
Table 1: Rumor frequency

Rumor frequency	Number of company	Number of rumor
1	55	55
2	31	62
3	24	72
4	14	56
5	19	95
6	12	72
7	13	91
8	4	32
9	3	27
10	3	30
11	4	44
12	3	36
Total	185	672

Table 2: Changes of stock price, market index, and abnormal return on rumor day (N=672)

Changes	Minimum (%)	Maximum (%)	Average (%)
Stock price	−22.50	34.52	0.53
Market index	−10.38	7.92	−0.18
Abnormal return	−15.61	34.21	0.71

Figure 1: Trade volume for all rumor days (in million shares) (N=658)



movement, stock prices tend to fall after the issuance of rumors. These results, therefore, indicate support the hypothesis that market rumor is part of a manipulation scheme orchestrated by sellers.

4.3. Test of Hypothesis 2

Hypothesis 2 states that rumor makers initially purchased the stocks that they eventually sold by first introducing rumors to attract buyers. As manipulator made the purchase, prices tend to go up. Therefore, CAR before the rumor date (CAR-14) is expected to be positive.

Most of the rumors analyzed in this research appeared for more than once. Three of them even published as many as 12 times during the 17 months of the research period. In order to test Hypothesis 2 properly, only rumors that appeared for the first time are used as the basis for conclusion because buying activities of the manipulators are not expected to be repeated after the first rumors began to circulate. The approach gives 180 observations.

Figure 2 presents trade volume during the event window for days in which rumors were published for the first time. Similar to its behavior for all rumors, trade volume peaked at rumor dates. Average trade volume during the 14 days before the rumor dates was 26.79 million. On the rumor dates the average volume was 34.49 million. Average volume for the 14 days following the rumor dates was 24.61 million.

The abnormal returns in days when rumors were published for the first time are depicted in Figure 3. The chart shows that abnormal return started to drop on the first day after the publication of rumor.

The test result of Hypothesis 2 is presented in Table 4. Observations are classified into five groups based on the number of the appearance of the rumor in the newspaper. Group 1, 2, 3, and 4 are for rumors that were published for the first, second, third, and forth time, respectively. Group 5 is for rumors that were published for the fifth or more times. The support for Hypothesis 2 can be found in the first row of each panel of Table 4. CAR-14 for Group 1 is 3.15% with positive sign, as expected, and statistically significant (t-statistic = 2.294; P = 0.023).

Table 4 reveals that CAR-14 is statistically significant only for rumors that were published for the first time. Subsequent rumors were not led by abnormal returns, indicating no preceding purchase as those purchases were made only before the publication of rumor for the first time. This finding reinforces the support for Hypothesis 2.

Rumors were followed by statistically significant abnormal returns up to their third appearance, after which they began to lose their power to fool the market. From another point of view, it seems that manipulators need to perform their act up to three times before they finally able to sell all of the stocks that they previously bought.

Figure 2: Trade volume for first rumor publication days (in million shares) (N=180)

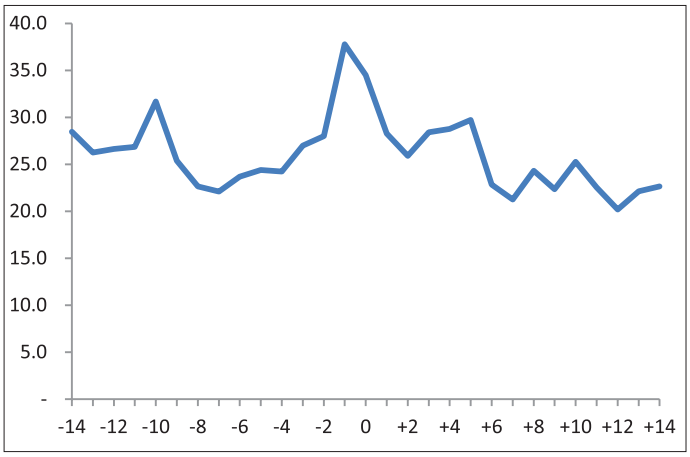


Figure 3: Abnormal returns for days with rumors published for the first time (N=180)

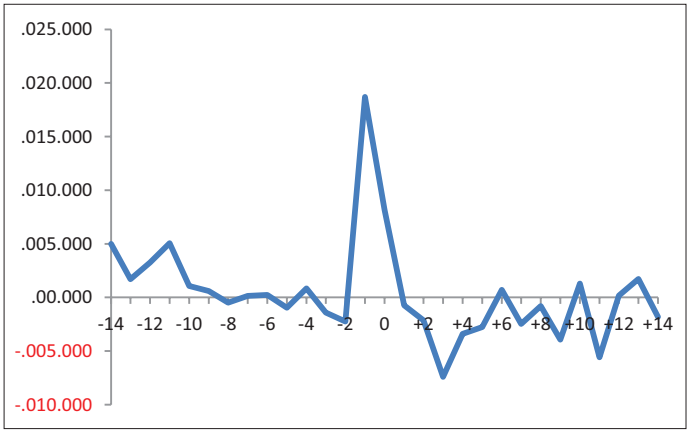


Table 3: CAR for 14 days after the rumor date

A. Descriptive statistics				
Name of variable	**Minimum**	**Maximum**	**Mean**	**Standard deviation**
CAR + 14	−0.5435	0.4726	−0.0263	0.1394
B. Result of t-test (N=658)				
Name of Variable	**df**	**t-statistic**	**P-value**	
CAR+14	657	−4.842	0.000	

CAR: Cumulative abnormal return

5. CONCLUSION AND DISCUSSION

This research provides empirical evidence that someone can manipulate the market by first accumulating a certain stock and then publishing rumors before starting to sell which resulted in zero position in the stock. The findings indicate that the stock market is not a level playing field. There are market-makers that have the power to influence stock prices using their larger capital and better access to information and media. Some market participants can be fooled by false information because of the high information asymmetry in the stock market (Holland, 1998; Lang and Lundholm, 2000; Lin et al., 2015).

Table 4: Test results with sample classification

A. Descriptive Statistics				
Sample group	**Variable**	**N**	**Min.**	**Max.**
Group 1	CAR−14	180	−0.5814	0.6204
	CAR+14	180	−0.5124	0.4356
Group 2	CAR−14	129	−0.4673	0.5960
	CAR+14	129	−0.4194	0.3158
Group 3	CAR−14	97	−0.5122	0.3158
	CAR+14	97	−0.4906	0.3115
Group 4	CAR−14	74	−0.3599	0.3911
	CAR+14	74	−0.4049	0.4726
Group 5	CAR−14	178	−0.4918	0.4870
	CAR+14	178	−0.5435	0.4261
Total sample	CAR−14	658	−0.5814	0.6204
	CAR+14	658	−0.5435	0.4726
B. Result of t-test (N=658)				
Sample group	**Variable**	**df**	**t-statistic**	**Sig.**
Group 1	CAR−14*	179	2.294	0.023**
	CAR+14	179	−2.503	0.013**
Group 2	CAR−14	128	1.465	0.145
	CAR+14	128	−3.037	0.003**
Group 3	CAR−14	96	−1.472	0.144
	CAR+14	96	−2.088	0.039**
Group 4	CAR−14	73	−1.962	0.054
	CAR+14	73	−1.790	0.078
Group 5	CAR−14	177	−1.445	0.150
	CAR+14	177	−1.757	0.081

CAR: Cumulative abnormal return *Test variable for Hypothesis 2. **Significant at 95% confidence level. CAR: Cumulative abnormal return

This study provides several research implications. In Indonesia, as in other countries, any kind of market manipulation is actually unlawful. The stock market is governed by Law Number 8 Year 1995 of the Republic of Indonesia Regarding Stock Market. The law contains Chapter XI entitled Fraud, Market Manipulation, and Insider Trading, that explicitly prohibits various kind of manipulation. The chapter has 10 articles detailing activities that are considered illegal, including publishing unsubstantiated information that can affect security prices. Perhaps it is now time for Indonesian law enforcement agencies to start scrutinizing published market information more closely to detect any possibility of fraud. Failure to do so may undermine the public's confidence in the capital market.

From the general investors' point of view, the findings of this research can be factored in making investment decision. The appearance of a rumor might be considered a signal to sell, provided the investor holds a long position in the stock in question (Posen, 2011; Astor and Veronesi, 2012). If the investor belief that the stock is a good investment in the long-run, repurchase can be done sometimes after the rumor appear for the third times. There is nothing wrong with the buy-low-sell-high strategy. In fact, the strategy is the very essence of stock market investment. Problems start coming when some parties can buy low by first disseminating false negative information ("bad news"), as in the case of short selling in US and Europe, or sell high by first publishing false positive information ("good news"), as in the case of Indonesia in which short selling is not allowed.

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