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Lombok's Tsunamis and Stock Abnormal Returns

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ABSTRACT

Natural disaster often brings damage to the economy, including the decrease of stock's market value. For this reason, this study aims to determine the effect of the tsunami earthquakes in Lombok in 2018 on abnormal returns and cumulative abnormal returns of insurance companies. This study used the event study approach, with three days window period after the three tsunami earthquakes from July to August 2018. The sample of this study is the stock price of 14 insurance companies listed on the Indonesia Stock Exchange. To test whether abnormal return exists, a one-sample t-test was used on the average abnormal and cumulative returns. The results show that the tsunami earthquake disasters in Lombok in 2018 have a significant effect on cumulative abnormal returns of insurance companies stocks, and this effect even bigger on the third tsunami. This finding shows that the market reacts to continuous disaster by considering the earthquake as negative information and thus decrease the stock price. This study implies that investors may buy the stocks after the disaster to get a cheaper price or hold the stocks to avoid loss.

INTRODUCTION

Natural events and disasters continue to cause severe and increasing damage to global economies (Worthington, 2008), and financially, the impacts are more serious to less developed countries (Keerthiratne & Tol, 2017). For instance, catastrophic natural disasters may increase the poverty rate in a short term and considerably trigger the poverty trap in a long run (Carter et al., 2007). Indonesia is one example of disaster-prone countries and confronts earthquakes, volcanic eruptions, tsunamis, typhoons, and other natural disasters (Kusumastuti et al., 2014). According to the Indonesian National Agency for Disaster Management (BNPB), there were over 86 million people affected by earthquakes with total economic consequences of 182 trillion (BNPB, 2020). This economic impact also brings financial impact to companies in terms of losses in their stock market values. Considering the significant impact of natural disasters, it is important to determine the impact of natural disasters on the stock market.

Most countries in the world compete to advance their capital markets because it is an indicator of the country's economy (Darmadji & Fakhruddin, 2011). The contribution of the capital market to economic growth reached 12% through state tax revenues and contributed as much as 10% in Indonesia (Glienmourinsie, 2017). The capital market provides opportunities for companies to obtain funding sources with low investment risks compared to short-term funding sources from the money market. For investors, the capital market is a means to obtain a reasonably high return (Fidhayatin & Dewi, 2012) in the form of dividends and capital gain (Muharam, 2018).

The stock price is considered to reflect the company's value because it indicates the future cash flow value and incorporates all relevant information (Arfan & Rofizar, 2013). Stock prices can be influenced by an event or information. The market will respond to information obtained both from the management and from mass media such as natural disasters as a signal of certain events that may affect the company's value (Supragita, 2011). If an event or information suddenly occurs, the market will react, and the stock price may fluctuate.

Various events may generate a positive impact on the market. A positive impact may result in a positive abnormal return. If the information is good news, the market will react positively to the events, and the company is considered capable of generating expected returns (Hartono, 2018). As an example, natural disasters may produce positive signals indicating that these events have positive effects on capital markets because of, for

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example, increasing demand for companies' products (Shelor et.al., 1992; Lamb & Kennedy, 1997; Yuwono, 2013; Natasha & Sumani, 2015). Conversely, another variety of events may generate a negative impact on the market. The negative impact may result in a negative abnormal return. This is bad news because the company is considered unable to generate expected returns and the market responds negatively to the event (Hartono, 2018). As an example, natural disasters may produce negative signals indicating that these events have negative effects on capital markets because companies bear losses due to the events (Yamori & Kobayashi, 2002; Worthington & Valadkhani, 2004; Najam & Mehmood, 2019).

Some studies do not always meet the researchers' expectations. An event study may result in an abnormal return that is not statistically different from zero, or the market is considered unresponsive to the event (Hartono, 2018; Purba, 2017). An unresponsive market is considered not incorporating the information, and the stock price does not reflect the effect of the event. For example, some natural disasters are found to not affect capital markets (Istanti, 2007; Luo, 2012; Worthington, 2008; Wang & Kutan, 2013; Feranita, 2014; Najam & Mehmood, 2019).

In mid-2018, a series of earthquakes and tsunamis struck a region in Indonesia, i.e. Lombok, West Nusa Tenggara. Three major earthquakes were recorded, i.e. a magnitude 6.4 on July 29, a magnitude 7.0 on August 5, and two earthquakes on August 19, i.e. a magnitude 6.5 and a magnitude 6.0 (Suci, 2018). Based on the data from BNPB, there were 515 fatalities, 7,145 injuries, 431,416 refugees, 73,843 damaged houses, and 798 damaged public facilities between July 19 to August 21, 2018. The loss is estimated at 7.7 trillion IDR (Halim, 2018). The series of earthquakes and tsunamis caused severe loss of life and loss of homes. It is reasonable to relate this natural disaster to the service of insurance providers. As a result of the earthquake, the total claims submitted to the insurance companies reached 39 billion IDR (Muthmainah, 2018). These claims may have a direct impact on insurance service providers and trigger market reaction, especially for public insurance companies' market values. Hence, in this study, our research question is "Are Lombok tsunami earthquakes lead to abnormal returns of insurance companies in Indonesia?".

Prior studies have been conducted elsewhere to examine the existence of abnormal returns during the event window. For instance, Shelor, et al. (1992) conducted an event study around the California earthquake and found a positive abnormal return on insurance firm value. Yamori & Kobayashi (2002) found that the Hanshin–Awaji earthquake in Japan brought a significant negative abnormal return on insurance firms. This paper contributes to the literature by focusing on the earthquake and tsunami events in Lombok. This study adds to the knowledge by investigating the impact of series of earthquakes on the capital market in Indonesia.

While in prior studies the event is a single earthquake, this study is unique by investigating the impact of a series of three earthquakes. These natural disasters may have impacts on various business sectors and may be different from prior studies. Hence, the impact was tested by analyzing the abnormal return and cumulative abnormal return for each earthquake, implementing the signaling theory. The signal from this event can be good news or bad news as a response to the 2018 Lombok earthquake and tsunami on the abnormal stock returns. If an abnormal return is developed, the market is considered to incorporate the information related to the event. However, if no abnormal return is generated, the market does not incorporate the information from the event.

In stock investments, market makers attempt to obtain maximum profit. Prior to the transaction, the market makers may conduct a preliminary analysis to decide whether to buy or sell the company's stocks. In this case, market makers may conduct fundamental and technical analysis. Fundamental analysis is used to calculate the intrinsic value of a share using corporate financial data (Gunawan, 2011). However, market makers may carry out technical analysis to assist in deciding whether to buy or sell stocks by predicting stock price movements and future market trends by using stock price charts, trading volumes, and composite stock price indexes (Susanto & Sabari, 2010; Gunawan, 2011). Stock price movements can be observed from the closing price, which indicates the seller's requested price or the price that appears when the market closes (Halim, 2018). The closing price is used as a reference for the opening price the next day. The stock price may behave differently when information arises in the market. This can be explained by the signaling theory.

Signaling theory focuses on the effect of information on the behavior change of the information users (Spence 1973). The theory explains that an event that contains information may pass a message to the capital market that will use it to make decisions (Bhattacharya, 1979). The market response of an event is reflected in the abnormal return during the event period. An abnormal return at the value of zero indicates that the market is unresponsive to the event. Meanwhile, a positive abnormal return suggests that the event leads to a good signal (good news) which provides benefits for investors and vice versa (Kusumayanti & Suarjaya, 2018).

The capital market does not react to all information but only to certain events. Therefore, event studies can be conducted to test the events that will be responded to by the capital market (Ardani, 2017). The market may respond to information obtained from both the management and mass media as a signal from certain events that may affect the company's value (Supragita, 2011). Information asymmetry occurs because company managers have fully used the information and gave signals to the market and investors (Lisa, 2012). However, for events that cannot be predicted in advance, investors will not gain additional information other than the event itself. In other words, the information is spread symmetrically and leads to similar expectations from market makers regarding the stock returns (Istanti, 2007).

The market response to an event may be reflected by abnormal returns during the event period. The infor-

mation incorporated in an event may trigger managers to correct the information by conducting real actions that are being captured as unique signals and cannot be imitated by other companies (Tandelilin, 2010). Abnormal returns may occur due to certain events. For example, national holidays, the beginning of a year, uncertain political atmosphere, extraordinary events, stock splits, initial public offerings, and other events (Hidayat, 2018). In relation to natural disasters, prior studies show that different disasters brought different shocks to the stock market. A study showed no significant impact of the Yogyakarta earthquake on the stock abnormal return of insurance companies (Istanti, 2007). The Japanese earthquake in 2011 brought no impact on the market in Japan, Hongkong, the US, Canada, UK, and Germany although the market was negatively shocked by this earthquake (Luo, 2012). The tsunami in Aceh in 2004 also brought no impact on the stock market as the government announced this was a national disaster whereby rebuild costs were covered by the government, in addition to tons of donations nationally and internationally (Feranita, 2014).

Disaster data from 1983 to 2002 in Australia were tested and resulted in a positive impact of bushfires on stock market prices (Worthington & Valadkhani, 2004). The Loma Prieta earthquake in California resulted in an increase in insurance companies' stock prices because this earthquake increased the demand for an insurance policy, and hence, the market considered this as good news and reacted positively (Shelor et al., 1992). Another earthquake in Lost Angeles also brought a positive impact on stock prices because a high demand for the insurance policy could cover the loss potential of insurance companies (Lamb & Kennedy, 1997). In Indonesia, the flood that hit Jakarta in 2013 brought a positive impact on consumer goods and retail industry dan sub sector retail (Yuwono, 2013). Further study also showed that the flood-affected positively on consumer good index, but negatively on property and real estate index (Natasha & Sumani, 2015). Hence, some news may bring positive impact to some industries, but negatively to other industries.

Negative abnormal returns indicate that the market reacts negatively, or the event generates a bad signal (bad news) for the capital market. For instance, a series of hurricanes that happened from 2001 to 2012 were seen consistently as bad news by the market and created negative stock abnormal return (Robinson & Bangwayo-Skeete, 2016). Natural disasters in Pakistan also impacted negatively on banks' abnormal returns and insurance companies' cumulative abnormal returns (Najam & Mehmood, 2019). A study on the Japanese nuclear disaster also showed negative significant abnormal returns and cumulative abnormal returns for Japanese utility firms (Ferstl et. al 2012). Another study on the 2011 Pacific Coast of Tohoku Earthquake in Japan shows a negative reaction to stock returns (Tao et al., 2019).

As the market behaves differently to natural disaster, we propose the following hypothesis:

H_1: There is a significant effect of the tsunami earthquake on the stocks' abnormal returns

The abnormal return generated during that period does not reflect any unpublished information. The cumulative abnormal return needs to be calculated in anticipation of the information leakage. Cumulative abnormal return is the sum of the previous day's abnormal returns within the event period, for each security (Dewi et al., 2017). A positive or negative cumulative abnormal return indicates a residual trend that implies market inefficiencies because the information is not fully incorporated in the stock price at the announcement date (Tandelilin, 2010). Hence, our second hypothesis is:

H_2: There is a significant effect of the tsunami earthquake on the stocks' cumulative abnormal returns

RESEARCH METHODS

The sample in this study were 14 active insurance companies listed on the Indonesian Stock Exchange at the time of the event dates (see Table 1). Insurance companies were chosen because the Lombok Tsunami's earthquake resulted in insurance claims reach up to 39 billion rupiahs (Muthmainah, 2018). The stock and market index data were obtained from the yahoo finance website. This quantitative research used an event study approach. Event study observes the impact of information release on the price of securities; information contained in the form of either good news that indicates positive market reactions or bad news that indicates adverse market reactions (Tandelilin, 2001; Dewi & Rahyuda, 2014). The event study on abnormal return was obtained from the analysis of historical data, through a comparison between actual returns and expected returns in the Indonesian Stock Exchange. The event study reactions can be measured by using returns as a price-change value or by using abnormal returns (Hartono, 2014; Hidayat, 2018).

This study examined the impact of the Lombok tsunami earthquakes on the market reactions, which are proxied by abnormal returns and cumulative abnormal returns. The variable in this study is the abnormal return, used as a tool to measure the difference in returns at the event. The initial step in this study was to determine the study period. The tsunami earthquake disaster in Lombok occurred three times between July and August 2018. The study period could be determined by referring to the event window. The first earthquake occurred on July 29, the second earthquake occurred on August 5, and the third earthquake occurred on August 19; all were

Table 1. Estimation and Window Period

Events	Estimation period		Event window	
	t-100	t-1	t	t+3
Event 1	21 Feb 2018	27 Jul 2018	29 Jul	1 Aug
Event 2			5 Aug	8 Aug
Event 3			19 Aug	23 Aug

Note: *estimation period is 100 days prior to the window period, adjusted for market trading days.

At estimation period		At event windows	
1. Calculate stock and market return	2. Run OLS regression for each company $R_{i,t} = \alpha + \beta_i RM_t + \varepsilon_{it}$	3. Calculate predicted returns $E(R_{i,t}) = \alpha + \beta_i RM_t$	4a. Calculate AR $AR_{i,t} = R_{i,t} - E(R_{i,t})$ 4b. Calculate 3 days CAR $CAR = \sum_{t=1}^{N} AR_{i,t}$ 4c. Calculate Average AR
$R_{i,t}$ and RM_t	α and β_i	$E(R_{i,t})$	Average AR and CAR

Figure 1. Steps in hypothesis testing

on Sunday. For each event, the window period was set until three days after the earthquake (3-days window). Prior studies use 1 to 10 days event windows (see for example Ramiah et al., 2016; Ferstl et al., 2012), but it is suggested to use shorter period (McWilliams & Siegel, 1997). As most stock markets in developing countries are less efficient (Rizvi et. al, 2014), the market takes a longer time to process the information to be reflected in the stock price. Hence, we chose 3-days window to capture the impact of natural disasters and avoiding confounding factors for longer time period (see for example Qian et al.,2020). After determining the event window, we calculated 100 days prior to the first earthquake as the estimation window (see Table 1).

To calculate abnormal returns and test the hypotheses, we follow normal event study procedures as shown in Figure 1. At the estimation period, we collected the daily closing stock price of 14 companies (Pi,t) and daily Indonesian composite index (PIt), then calculated stock return (Ri,t) and the market return (RMt) by using the following formulas (eq1 & eq2):

$$R_{i,t} = \frac{P_{i,t}}{P_{i,t} - P_{i,t-1}} \quad \text{.....1}$$

$$RM_t = \frac{PI_t}{PI_t - PI_{t-1}} \quad \text{.....2}$$

After obtaining stock return and market return, we performed a separate regression for each company using the data in the estimation period and storing the alpha (intercept) and beta (independent variable coefficient). We used a market model, utilizing market risks to find the expected returns according to the risk level (Hartono, 2018). We used 14 companies' data, and hence, 14 regressions were run, resulting in 14 alphas and 14 betas (this process was conducted automatically by using Stata loop function).

$$R_{i,t} = \alpha + \beta_i RM_t + \varepsilon_{it} \quad \text{.....3}$$

Once we obtain the alphas and betas (eq3), we calculated the expected returns of each stocks E(Ri,t) at the event days by using the following equation (eq4).

$$E(R_{i,t}) = \alpha + \beta_i RM_t \quad \text{.....4}$$

The final step was calculating the daily abnormal return (ARi,t) obtained from the difference between the actual return (from equation 1) and the expected return (from equation 4) for each day within the event window, formulated as follows (eq5).

$$AR_{i,t} = R_{i,t} - E(R_{i,t}) \quad \text{.....5}$$

After the daily abnormal return was determined, the next step was to calculate three days cumulative abnormal return (CARi) in the window period (eq6):

$$CAR = \sum_{t=1}^{N} AR_{i,t} \quad \text{.....6}$$

Once the daily abnormal returns (ARi,t) and the cumulative abnormal return (CARi) were calculated, we test the hypothesis in this study by using a one-sample t-test. The standard statistic was computed to find out whether the average abnormal returns within the event windows were statistically different from zero. In addition, we also investigate whether cumulative abnormal returns within three days event window were statistically different from zero. Three possible outcomes from these tests are no abnormal return, positive abnormal return, and negative abnormal return. This t-test is commonly used in event studies (see for example Qian et al., 2020; Ramiah et al., 2016; Luo 2012; Robinson & Bangwayo-Skeete 2016).

RESULTS AND DISCUSSIONS

Table 2 shows the average stock prices of 14 insurance companies. When comparing stock prices on the estimation period to event windows, most companies' stock prices have decreased at the event windows, except for the stock prices of Asuransi Jiwa Syariah Jasa Mitra Abadi. Lombok tsunami earthquakes killed at least 564 people and injured 1568 people (Halim, 2018). This information might increase public awareness of the importance of life insurance. Hence, this natural disaster escalates the demand for life insurance. This increase may be seen as positive news and affects the stock price.

Table 2 also shows that stock prices on the second earthquake were mostly higher than the first earthquake, but these values on the third earthquake was mostly lower than the first and second earthquake. This implies that series of earthquakes bring a different information content to the market. Thus, market reacts differently.

Table 3 shows the descriptive statistics of the abnormal returns and cumulative abnormal returns within the event window periods. The data shows all ARs dan CARs are negative, indicating that there was a shock in the market due to the earthquakes. This results in a negative market reaction and causes insurance company stocks to decline. It can also be seen that AR is getting lower from the first to the third earthquake. A similar pattern is also shown in the CAR values. The lowest score is in the third earthquake, showing that a series of natural disasters create bad news in the market and market participants react negatively towards this infor-

Table 2. Average stock prices by the company on estimation periods and event windows

	Company	Estimation	Event 1	Event 2	Event 3
1	Bina Dana Arta	7574.50	7600.00	7016.67	6550.00
2	Bintang	319.28	300.00	320.00	290.00
3	Dayin Mitra	1063.20	1050.00	1060.00	1043.33
4	Harta Aman Pra.	98.76	79.33	79.67	74.00
5	Jasa Tania	343.12	290.00	302.67	346.67
6	Jiwa Jasa Mitra Abadi	799.00	901.67	928.33	906.67
7	Kresna Mitra	754.25	728.33	740.00	748.33
8	Muaguna	355.96	347.33	348.67	348.00
9	Ramayana	2202.39	2154.17	2154.17	2154.17
10	Lippo General	4005.30	3800.00	3500.00	3500.00
11	Malacca Trust W.	123.25	119.00	122.33	109.67
12	Maskapai Reasi.Indo.	5395.00	6100.00	6033.33	6025.00
13	Panin Insurance	1130.80	1020.00	1070.00	996.67
14	Victoria Insurance	134.11	127.67	129.33	121.00

mation. This condition is also supported by the enlarged standard deviation that represents increasing risk of the insurance stocks.

Table 4 shows the result of the abnormal return hypothesis testing using a one-sample t-test. The result indicates the 2018 Lombok earthquake and tsunami did not affect the abnormal return of insurance company stocks at the Indonesian Stock Exchange (although the first and third earthquake are marginally significant). This finding shows that the information, although negative, is not strong enough to affect.

The results of this study are consistent with the studies by Istanti (2007), Worthington (2008), Luo (2012), Wang & Kutan (2013), and Feranita (2014). That the insurance companies were unaffected may be caused by the reinsurance parties who have overcome and assisted their loss. The General Insurance Association of Indonesia (Asosiasi Asuransi Umum Indonesia/ AAUI) states that the companies have already prepared claim reserves, therefore, were not overburdened with the payment (Sari, 2019). This probably triggers investors to speculate that the Lombok earthquake did not have a significant loss of return. The Lombok tsunami earthquake has caused many casualties and enormous losses. However, this negative information does not contain enough impact to differ the abnormal returns. Thus, the decline of the stock prices of insurance companies is not significantly different from zero.

Another possibility that caused the Lombok earthquake and tsunami not to affect the capital market is because several earthquakes have occurred in Indonesia. Hence, this event is not considered as new information that may cause fluctuations in the market. This is in line with the study conducted by Istanti (2007) which discovered that there was no information content in the Yogyakarta earthquake event for insurance company stocks. A subsequent study carried out by Feranita (2014) also found that there was no abnormal return of LQ45 company stocks in the 2004 Aceh tsunami. Investors preferred to wait and see in the days following the earthquake.

The results of this study do not comply with the signaling theory which states that an event that contains information will pass a message to the capital market that will use it to make decisions (Sugeng, 2017; Choiriliyah et al., 2016). The information that the 2018 Lombok earthquake and tsunami was a national natural disaster was officially published by mass media. Therefore, it was widely distributed to the market makers. However, the investors assumed that the information of the earthquake event was not sufficient to influence the decisions to invest in the capital market. This is shown by the absence of the Lombok tsunami earthquake effect

Table 3. Descriptive statistics AR and CAR

Events	Mean	Std Dev	Min	Max
Earthquake I				
AR	-0.0005	0.0218	-0.0754	0.0753
CAR	-0.0015	0.0255	-0.0738	0.0368
Earthquake II				
AR	-0.0021	0.0190	-0.7558	0.0435
CAR	-0.0063	0.0292	-0.0829	0.0485
Earthquake III				
AR	-0.0064	0.0407	-0.2145	0.0767
CAR	-0.0192	0.0616	-0.2154	0.0416

Table 4. CAR & AR t-test results

Variables	Earthquake 1	Earthquake 2	Earthquake 3
AR Mean	-0.0005	-0.0021	-0.0064
t Stat	-0.378	-1.379	-2.002
p-value	0.071	0.175	0.052
CAR Mean	-0.0005	-0.0021	-0.0064
t Stat	-2.567	-9.361	-13.591
p-value	0.010	0.000	0.000

on the abnormal return. If the event does not affect the abnormal return, the market is considered unresponsive to the event (Hartono, 2018), indicating that the market did not incorporate the information of the Lombok tsunami earthquake and that the stock prices did not reflect the effects of the event.

Table 4 above also shows the results of the cumulative abnormal return hypothesis testing. This table shows that the Lombok tsunami earthquake did affect the CAR. This indicates that the natural disaster brings a negative impact on the CAR the market responded negatively to the event. The result of this study supports previous studies by Yamori & Kobayashi (2002), Worthington & Valadkhani (2004), and Najam & Mehmood (2019). However, it does not support the studies by Shelor et. al. (1992), Lamb & Kennedy (1997), Yuwono (2013), and Natasha & Sumani (2015).

The result of this study complies with the signaling theory which states that the market will respond to information obtained from both the management and the mass media as a signal of certain events that can affect the company's value (Supragita, 2011). The cumulative abnormal return data demonstrates the impact (positive/negative) of an event on all types of stocks (Samsul, 2006). This is consistent with the results of the CAR test, which discovers that the third earthquake contained more bad signals shown by the most negative average CAR value.

The activity of foreign investors was one of the reasons that lead to the third Lombok earthquake and tsunami to have a significant negative effect on the capital market. The Indonesian capital market was dominated by foreign investors by 52%, while local investors only 47% (Okefinance, 2019). Between August 8 to August 20, 2018, there were foreign activities in the form of net sales (Nugroho, 2018). The withdrawal of foreign investors' funds from the Indonesian capital market may lead to the weakening of the Composite Stock Price Index (Indeks Harga Saham Gabungan/IHSG). This affects the abnormal return of companies in the insurance sector at the Indonesian Stock Exchange.

Another possibility that caused the third Lombok earthquake and tsunami to have a significantly negative effect on the insurance companies was due to the delay in the market's response to the information. The market response only appeared after the abnormal return was accumulated within a few days before the third earthquake. This may also be influenced by the market's slow response to the first and second earthquakes. Delays in the market response to the events may be due to investors still estimating the losses or still in the process of accumulating the losses of insured properties (Shelor, et. al., 1992). Investors may require time to assess the damage caused by the event and its impact on future income. Thus, investors need not panic when facing the possibility of future natural disasters because the impact is diversified far at the capital market level (Wang & Kutan, 2013).

CONCLUSIONS

This study focuses on the effect of the 2018 Lombok earthquake and tsunami on the abnormal return and cumulative abnormal return of insurance companies in Indonesia. Based on the tests carried out, it can be concluded that the events of the 2018 Lombok earthquake and tsunami did not affect the abnormal stock return. This is because insurance companies had prepared claim reserves, and the reinsurance parties had overcome and assisted the losses due to the earthquake. Also, the Lombok earthquake and tsunami did not happen for the first time in Indonesia; thus, it was not considered as new information which may cause fluctuation in the market.

However, all Lombok earthquakes and tsunamis had a significant adverse effect on the cumulative abnormal return. Furthermore, the market's slow response to the first and second earthquakes shows that the market only responded when abnormal returns were accumulated within a few days of the third earthquake. Thus, the market responded negatively three days after the earthquake and especially in the third earthquake because the events repeatedly occurred; therefore, the losses were very high.

The results of this study, apart from addition to the current literature on the impact of natural disasters on the stock market, can be used as a consideration by capital market players. This study can be used as a factor to consider when conducting stock investments using technical analysis. Capital market players can consider factors such as signals from events that can affect stock prices. They may buy stocks at and until three days after the period of natural disaster because the stock price is lower than the normal period. For those who currently hold the stocks, the occurrence of natural disasters should not be overreacted by selling those stocks at and until three days after the period of natural disaster to avoid losses due to negative abnormal and cumulative abnormal returns. As we cannot conclude the exact day of the disappearance of negative effects, it is suggested for future research to prolong their study period 10 to 30 days after the natural disasters. This longer period may provide information on the normal period after the earthquake. Hence, market players may use this information to buy, sell or hold the stocks. Also, future studies may further observe the impact of the Lombok earthquake and tsunami on other industries at the Indonesian Stock Exchange using the event study approach.

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