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Market Reaction to Capital Expenditure: Evidence from Company in Bankruptcy Risk

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ABSTRACT

Objective - This study aims to examine whether the condition of the bankruptcy risk of a company will influence the market response to capital expenditure. The main hypothesis of this research is that the positive market reaction to the level of capital expenditure issued will be different in companies with a high level of bankruptcy risk and companies with low bankruptcy risk.

Methodology/Technique –The study was conducted on 56 companies with large capitalization on the Indonesia Stock Exchange for 2018-2021.

Findings - The results of hypothesis testing indicate that the market responds positively to capital expenditures and the company's bankruptcy risk conditions. In addition, it is proven that in companies at risk of bankruptcy, the market reacts positively to capital expenditures made by companies. In contrast, in companies that are not in a state of bankruptcy, the market does not respond to capital expenditures made by companies. The results of this study are expected to be used by market participants when they analyze the information on capital expenditures made by the company.

Novelty - This study contributes to the literature by providing empirical evidence which explores a company's bankruptcy risk as the unique factor that affects the relationship between capital expenditure and market response.

Type of Paper: Empirical

JEL Classification: G30, G31

Keywords: Capital Expenditure, Bankruptcy Risk, Market Response, Capital Investment

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1. Introduction

Company managers are constantly faced with three policy decisions: capital expenditure, dividend, and funding. Several studies have proven the impact of announcing the decision on funding (M'ng et al., 2019) and dividend (Almanaseer, 2019) on the stock price. Capital expenditure decisions are also known to influence market or investor response (Akbar et al., 2008) (Burton, 2005) (Chen & Chang, 2020). (McConnell & Muscarella, 1985) researched market reaction to capital expenditure decisions of industrial and public utility companies.

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They found that the announcement of an increase (decrease) in capital expenditure had a positive (negative) effect on stock returns. However, some researchers found that the announcement of capital expenditure decisions has little material effect on stock returns. Other researchers found that investors positively respond to new investments (Burton, 2005), capital expenditure announcement has a relevant value in the capital market when the company is entering an expansion period (S. Kim & byunghwan Lee, 2018). An announcement of capital expenditure has a positive relationship to abnormal stock returns (Akbar et al., 2008).

Decisions on capital expenditure can determine a company's future performance. Therefore, further explanation needs to be explored regarding the reason why the market well accepts some companies' capital expenditure announcements while others are accepted negatively. Previous research tried to relate the market reactions to the capital expenditure announcements made by high-tech companies (Chan et al., 1990). This grouping is viable, but it does not have an acceptable economic reason. In this research, the researcher argues that stock price reaction to capital expenditure announcements heavily relies on the market's assessment of a company's bankruptcy risk level. Companies at risk of bankruptcy are under pressure to adopt capital investment strategies that enable them to increase earnings (S. Kim et al., 2021). This capital investment strategy could signal that the company has developed a strategic plan for future expansion and consequently the firm's future cash flow prospects (Chen et al., 2007). When investors perceive this signal as positive it could res,ult in an expected return.

This study contributes to the literature by providing empirical evidence which explores a company's bankruptcy risk as the unique factor that affects the relationship between capital expenditure and market response. Many previous studies have examined market reaction to capital expenditure. However, rarely have examined companies at risk of bankruptcy which is most likely underestimated by investors. Therefore, the researcher hypothesizes that a company's bankruptcy risk will also the relationship between capital expenditure announcements and abnormal stock returns. The researcher uses the Altman Z score indicator to classify the sample of companies that have high or low bankruptcy risk. The results of this study provide important information for investors regarding companies in the group of high or low bankruptcy risk.

The remainder of this paper is organized as follows: Section 2 includes a review of the literature and the development of hypotheses, Section 3 describes the research methodology used in the study, Section 4 includes the findings and discussions, and Section 5 concludes.

2. Literature Review

Signaling theory consists of 4 elements, namely: signaler, signal, receiver, and feedback. It begins when the company's board of directors (signaler) decides to provide positive or negative information (signal) about new products or services that are being planned or implemented by the company to outsiders (receivers) in the hope of increasing the company's stock value (feedback) (Connelly et al., 2011) (Lugovskaya, 2010) (Matuszak & Różańska, 2019). Capital expenditure is an important financial decision made by a firm. This decision has an important impact on investors' reactions and increases the firm's value. Thus, a capital investment strategy could signal that the company has developed a strategic plan for future expansion. Specifically companies at risk of bankruptcy will have higher pressure to give a positive signal to the market to show that the management has a plan. This study tried to investigate the market reaction to capital expenditure made by the company as a signal to investors and the difference between companies at risk and not at risk of bankruptcy.

An announcement of an increase (decrease) in capital expenditures positively (negatively) influences stock returns (McConnell & Muscarella, 1985), and investors also respond positively to new investments (Burton, 2005). (S. Kim & byunghwan Lee, 2018) found that capital expenditures have more relevant values in the capital market when the company is entering a period of expansion and announcing capital expenditures has a positive relationship with abnormal stock returns (Akbar et al., 2008). Changes in capital expenditures to be bigger or smaller than the industry average give a positive or negative signal to the market (Kerstein & Kim, 1995). Based on the explanation above, this research hypothesizes that:

H1: *The market reacts positively to the level of capital expenditures issued by a company.*

(Altman, 1968) has been used as a proxy for bankruptcy risk conditions in various studies because the (Altman, 1968) Z-score model is considered to be the most effective tool for predicting companies' financial health. The Altman Z-score model provides accurate and reliable results for estimating bankruptcy risk. Previous studies (Garcia Osma & Guillamon-Saorin, 2011) (Lugovskaya, 2010) (Udin et al., 2017) used the Altman Z-score model to estimate bankruptcy risk. Many empirical studies of market reactions to bankruptcy announcements have been conducted (Beneish & Press, 1995) (Dawkins & Bamber, 1998) (Lang & Stulz, 1992) (Papakyriakou et al., 2019) (Beatty et al., 2019). This study shows that there is a negative abnormal return around the announcement day because a bankruptcy announcement is considered bad news. The decline in stock prices is related to the investors' assessment of the possibility of the company's bankruptcy. (Dunham & Garcia, 2021) found that increasing investor sentiment through media coverage will be able to reduce the impact of investors' assessment of the level of risk of corporate bankruptcy. Based on this explanation, this study hypothesizes that:

H2: *There are differences in market responses toward companies with high bankruptcy risk and ones with low bankruptcy risk.*

As explained before, the stock market reacts to capital expenditure announcements (Burton, 2005) (S. Kim & byunghwan Lee, 2018) (McConnell & Muscarella, 1985). This proves that the amount of a company's capital expenditure becomes information that is considered by investors when making decisions to buy or sell shares. On the other hand, investors also consider a company's bankruptcy condition when deciding to buy or sell shares. Empirical research proves that markets react to bankruptcy announcements (Beneish & Press, 1995) (Dawkins & Bamber, 1998) (Lang & Stulz, 1992). The market's response is indicated by the presence of negative abnormal returns around the announcement day because the bankruptcy announcement is considered bad news. However, there are very rare studies that examine the relationship between capital expenditure and companies at risk of bankruptcy. A study by (S. Kim et al., 2021) is the nearest to examine the association of capital expenditures in loss-making firms. They discovered that loss-making firms' capital expenditures have a greater influence on the absolute value of near-term earnings performance. Based on this argument, it can be assumed that market response as a result of the effect of capital expenditure will be different for companies with different bankruptcy conditions, so it is hypothesized that:

H3: *Market's positive reaction to the level of capital expenditure issued by a company will be different for companies with high bankruptcy risk and companies with low bankruptcy risk*.

3. Research Methodology

This research was conducted on companies listed on the Indonesia Stock Exchange. The sample selection uses purposive sampling based on companies that have large capitalization in the capital market. This criterion was chosen because companies with large capitalizations are more easily noticed by investors, more concerned with demonstrating future growth prospects, and more active in capital expenditures. Based on this criterion, 56 companies were selected for the 2018-2021 observation period, so 224 observations matched the sample criteria. Based on the type of business, the 56 companies are divided into 10 companies engaged in the banking industry and 46 companies engaged in the manufacturing industry. Several control variables were also tested alongside the model. Debt to equity ratio has been linked to a company's bankruptcy risk (Kozlovskyi et al., 2019) (Cepec & Grajzl, 2020). Free cash flow is considered a control variable since prior studies show that it is closely related to capital expenditure, as it exists when firms have poor growth opportunities (Brush et al., 2000). Lastly, management share ownership is also considered since previous studies suggested that there is a link between ownership on a company's risk of bankruptcy (Robinson et al., 2012) and capital expenditure decisions (Li & Lu, 2016) (H. S. Kim & Jang, 2018). The conceptual model of this study is presented as follows:

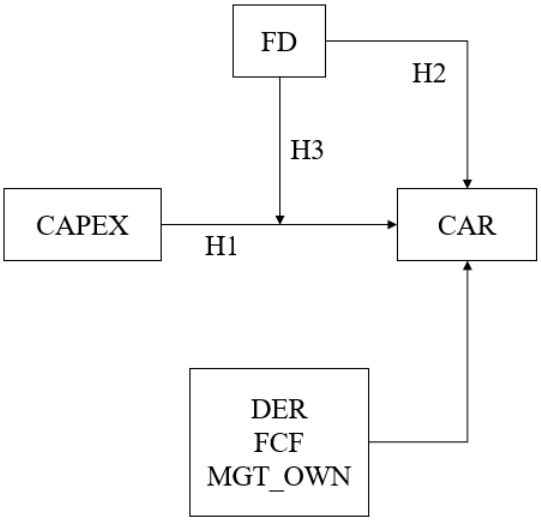

Figure 1 Conceptual Model

The market response is measured by using cumulative abnormal return (CAR) which is obtained by adding up the abnormal return (AR) with an observation period of 41 days (20,0,+20) around the publication date as follows:

$$CAR = \sum_{i=1}^{N} AR_{i,t}$$

AR is used to measure market response to certain published information that is measured with the following formula:

$$AR_{jt=} R_{i,j-} (\alpha_{j+} \beta_j R_{mt})$$

ɑ j and βj are estimated with a market model that has been widely used (Parveen et al., 2020), using the following model:

$$R_{jt=} \alpha_{j+} \beta_j R_{mt+} \varepsilon_{jt}$$

The estimations are made -120 to -20 days before the publication date.

Bankruptcy risk is measured using the Altman Z-score. The Altman Z-score provides a threshold level for predicting a company's financial health and its distance to bankruptcy risk. Companies with a score above 2.99 are less likely to go bankrupt and are considered to be in the "safe zone" and have no chance of immediate trouble. Z-score between 1.81 and 2.99 is categorized as a “grey zone” indicating that the company does not have financial problems right now but may face difficulties soon. In contrast, a score below 1.8 (1.8 Z) indicates that firms are prone to bankruptcy and are treated as “trouble zones” (Altman, 1968). This study classifies the sample companies into two groups: financially healthy and financially distressed (Udin et al., 2017). Companies that score above 1.81 are treated as financially healthy companies. On the other hand, companies that score below 1.81 are in a state of “distress” and are treated as companies experiencing financial difficulties.

This study examines the market response (CAR) to capital expenditures (CAPEX) moderated by the company's bankruptcy risk (FD) conditions. The market response is measured using the CAR indicator and the condition of bankruptcy risk is measured by a dummy, namely: a score of 1 for distressed companies, namely companies with Z-scores below 1.81, and 0 for companies not distressed, namely companies with Z-scores above 1.81. The regression equation model to test the hypothesis is as follows:

$$CAR_{i,t+1} = \beta_0 + \beta_1 CAPEX_{i,t} + \beta_2 FD_{i,t} + \beta_3 CAPEX * FD_{i,t} +$$

$$\beta_4 DER_{i,t} + \beta_5 FCF_{i,t} + \beta_6 MGT\_OWN_{i,t} + \varepsilon_{i,t}$$

The main independent variable in this study is capital expenditure (CAPEX) which is the amount of capital expenditure for the current year and bankruptcy risk (FD) as well as other control variables, namely leverage (DER), free cash flow (FCF), and management's share ownership (MGT_OWN).

CAR	Cumulative abnormal return for a period of 20 days before and after the publication date of financial statements.
CAPEX	Capital expenditure is scaled with the total asset of the previous year.
FD	Dummy variable for bankruptcy risk condition. 1 for bankrupt and 0 for not bankrupt.
CAPEX*FD	Interaction between capital expenditure and bankruptcy risk
DER	Long-term liabilities divided by equity (Stulz, 1990)
FCF	Free cash flow is a manifestation of agency problems because excess cash is not distributed to shareholders (Brailsford & Yeoh, 2004). Free Cash flow is calculated using the following approach (Lang et al., 1991): FCF= EBIT+ DEPR-TAX-DIV-INT-INV EBIT is earnings before interest and taxes; DPR is depreciation expense'; TAX paid taxes; DIV is dividends paid to common stockholders; INT interest expense; INV investment for the year
MGT_OWN	Management's share ownership

4. Results

4.1 Descriptive Analysis

Table 1 describes the average value for each variable. Panel 1 describes the average value of each sample company that is grouped by bankruptcy risk conditions, namely experiencing bankruptcy risk and not experiencing bankruptcy risk. Meanwhile, in panel 2, the value of each variable is described based on all samples.

Based on table 1 (panel 1), it can be seen that the number of sample data that are experiencing distress is 102 and the sample data that are not distressed is 122. The market seems to respond more positively to companies that are experiencing bankruptcy risk conditions. Meanwhile, the capital expenditures, leverage conditions, and free cash flow of companies that have a risk of bankruptcy are greater than companies that do not. Overall, the CAR of the sample companies is minus 0.55, which means that the accumulated difference between the actual return and the normal return received by investors in the 20 days before and after the announcement date of the financial statements is minus 0.55%. The average capital expenditure of the sample companies is 11% of their total assets, total liabilities are 46% of equity, and the average share owned by management is 69%.

Table 1. Descriptive Statistic

	N		CAR	CAPEX	DER	FCF	MGT_OWN
Panel 1 Bankruptcy Risk							
Bankrupt	102	Mean	6.58	0.12	0.80	-10.01	0.68
		SD	50.27	0.24	0.79	46.53	0.16
Not Bankrupt	122	Mean	-6.50	0.10	0.18	-77.69	0.69
		SD	69.74	0.18	0.19	288.00	0.13
Total	224	Mean	-0.55	0.11	0.46	-46.87	0.69
		SD	61.85	0.21	0.63	217.10	0.14
Panel 2. Year 2018 Bankruptcy Risk							
Bankrupt	25	Mean	17.16	0.11	0.77	-11.33	0.68
Not Bankrupt	31		-0.42	0.12	0.17	-98.01	0.68
Total	56		7.42	0.12	0.44	-59.31	0.68
Panel 3. Year 2019 Bankruptcy Risk							
Bankrupt	26	Mean	8.48	0.07	0.79	-7.22	0.67
Not Bankrupt	30		-2.30	0.05	0.17	-49.48	0.69
Total	56		2.70	0.06	0.46	-29.86	0.68
Panel 4. Year 2020 Bankruptcy Risk							
Bankrupt	28	Mean	2.96	0.15	0.75	-0.91	0.68
Not Bankrupt	28		-1.64	0.02	0.19	-68.40	0.68
Total	56		0.66	0.09	0.47	-34.66	0.69
Panel 5. Year 2021 Bankruptcy Risk							
Bankrupt	23	Mean	-2.66	0.12	0.88	-22.78	0.69
Not Bankrupt	33		-20.15	0.17	0.16	-92.13	0.68
Total	56		-12.98	0.15	0.46	-63.65	0.69

Based on table 1 (panel 2 – panel 5) above, it can be seen that CAR is experiencing a downward trend from positive 7.42 in 2018 to minus 12.98 in 2021. The phenomenon of the decline in CAR is allegedly influenced by the weakening condition of the capital market in Indonesia due to pandemic covid 19. Even though CAR is experiencing a downward trend, the CAR for groups of companies with a risk of bankruptcy is consistently higher than the CAR for companies that do not have a risk of bankruptcy. Trends in capital expenditure (CAPEX), leverage (DER), and share ownership by management (OWN_MGT) from 2018 to 2021 are relatively the same.

4.2 Equations

The data structure obtained in this study is panel data, namely 56 companies for a period of 4 years (2018-2021). The panel data regression test used in this study uses the weighted least square (WLS) method. Table 2 shows the results of hypothesis testing using the WLS method. Model 1 shows the results of the hypothesis testing the effect of variables; capital expenditure (CAPEX) on market response as measured by using CAR without looking at the moderating effect of the bankruptcy risk variable (FD). Meanwhile, model 2 shows the

results of testing the hypothesis of the moderating effect of the bankruptcy risk variable (FD) on the relationship between capital expenditures (CAPEX) and market response (CAR).

Table 2. Hypothesis Test Result

	Model 1			Model 2		
	Coefficient	t-stat		Coefficient	t-stat	
Const	-2.204	-0.345		-3,407	-0,540	
CAPEX	11.343	2.149	**	1,760	0,231	
FD	8.069	3.196	***	6,542	2,354	**
DER	-3.696	-3.033	***	-3,944	-3,213	***
FCF	0.002	0.379		0,002	0,358	
MGT_OWN	-1.554	-0.174		1,790	0,202	
CAPEX*FD				17,904	1,682	*
R Square		0.073			0.089	
Adj.R Square		0.052			0.064	
F-stat		3.449			3.553	
Sig		0.005			0.002	

*** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level

Based on Table 2 above, it can be seen that the Adjusted R Square value of model 1 is 0.052 and increases to 0.064 in model 2 after including the moderating role of the FD variable. Meanwhile, the significance value of F for both model 1 and model 2 has a value less than a significance value of 0.05, which means that all variables simultaneously influence market response (CAR). Furthermore, the results of Table 2 (model 1) show that the significance value (p-value) of the CAPEX variable is smaller than the significance level α = 0.05, which means that the CAPEX variable has an effect on CAR. In model 2, the CAPEX*FD interaction variable has a significance value of less than 0.10, which means that the interaction variable has a significant influence. Assuming the variables DER, FCF and MGT_OWN are constant, the results of the regression analysis above can be analyzed as follows:

When the condition is not bankrupt, or FD = 0, then:

$$CAR_{i,t+1} = \beta_0 + \beta_1 CAPEX_{i,t} + \beta_2 FD_{i,t} + \beta_3 CAPEX * FD_{i,t}$$

$$= -3.407 + 1.760\, CAPEX + 6.542 * 0 + 17.904 * CAPEX * 0$$

$$= -3.407 + 1.760\ \text{CAPEX}$$

When the condition is bankrupt, or FD = 1, then:

$$CAR_{i,t+1} = \beta_0 + \beta_1 CAPEX_{i,t} + \beta_2 FD_{i,t} + \beta_3 CAPEX * FD_{i,t}$$

$$= -3.407 + 1.760\, CAPEX + 6.542 * 1 + 17.904 * CAPEX * 1$$

$$= 3.135 + 19.664\ \text{CAPEX}$$

From the calculation above, it can be seen that bankruptcy has a bigger positive coefficient, which means that when a company is in a state of bankruptcy, the market responds more to CAPEX spending than companies that are not in a state of bankruptcy. In order to visualize the difference in this relationship, it can be described as follows:

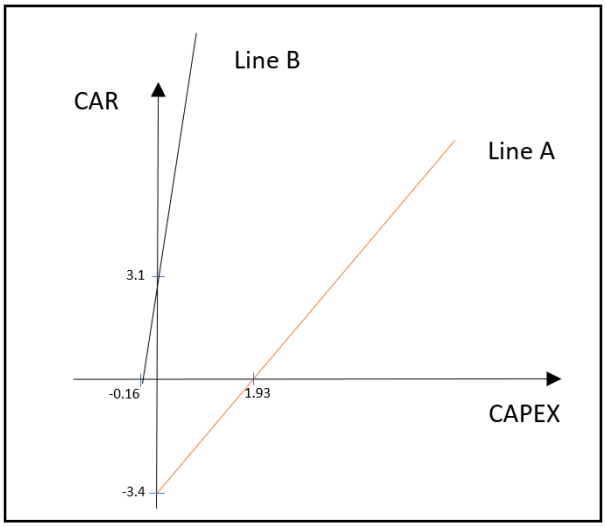

Figure 2 Market reaction to CAPEX Graph

Information:
Line A = non-bankrupt condition
Line B = Bankrupt condition

From Figure 1 above, the non-bankrupt conditions (Line A) have a sloping graph which shows a weaker relationship in the market responding to CAPEX. This is different compared to companies in bankruptcy (Line B) which has a steeper graph showing a stronger relationship in the market responding to CAPEX. In other words, with the same increase in CAPEX, the impact on the earnings market response for companies that are not bankrupt (Line A) is weaker than for companies that are bankrupt (Line B). These conditions indicate that the market responds more to capital expenditures of companies in a state of bankruptcy than companies that are not in a state of bankruptcy.

5. Discussion

This study hypothesizes that the market reacts positively to the level of capital expenditure issued by the company. The announcement of an increase in capital expenditure has a positive effect on stock returns. The amount of capital expenditure made by the company is a positive signal for investors to decide to buy company shares so that it will increase share prices. The increase in stock prices will increase the returns received by investors. The results of the hypothesis test shown in model 1 in table 2 show that the capital expenditure variable (CAPEX) has a positive coefficient of 11.343 and a significance value below 0.05, which means that the CAPEX variable has a positive effect on the CAR variable. The greater the capital expenditure made by the company, the greater the accumulation of abnormal returns. These results prove that the market responds positively to capital expenditure issued by the company. The results of this study are in line with research conducted by (McConnell & Muscarella, 1985), that the announcement of an increase (decrease) in capital expenditures has a positive (negative) effect on stock returns; (Burton, 2005), that investors respond positively to new investments; and (Akbar et al., 2008), that the announcement of capital expenditures has a positive relationship to abnormal stock returns.

The second hypothesis is that there are differences in market response in companies with a high level of bankruptcy risk and companies with a low level of bankruptcy risk. The results of the hypothesis test shown in table 2 show that the bankruptcy risk variable (FD) has a positive coefficient value of 8.069, a significance value below 0.01 (model 1), a positive coefficient of 6.542, and a significance value below 0.05, which means that the FD variable has a positive effect to the CAR variable. The results of this hypothesis test indicate that the market responds positively (negatively) to companies experiencing bankruptcy (not bankrupt). This result

is consistent with the data described in table 1, which shows that the CAR of the group of companies with the risk of bankruptcy in the 2018-2021 observation period is always higher than the CAR of companies without the risk of going bankrupt. This result contradicts the previous research which showed negative abnormal returns around the announcement day because bankruptcy announcements are considered bad news (Beneish & Press, 1995) (Dawkins & Bamber, 1998) (Lang & Stulz, 1992) (Papakyriakou et al., 2019) (Beatty et al., 2019). The results of the analysis of the type of industry sample companies show that all sample companies in the banking industry are included in companies with a risk of bankruptcy. However, the market still responded positively to the banking company. Even Bank BRI and Bank Pan Indonesia during the 2018-2021 observation period were always responded positively by the market. The phenomenon of a positive response to banking stocks despite their inclusion in the bankrupt category may be due to the certainty of government protection against the risk of bankruptcy in the banking sector where some banks are state-owned. Several state-owned enterprises such as Perusahaan Gas Negara and Jasa Marga also received a positive response from the market despite being identified as experiencing bankruptcy risk.

This study hypothesizes that the market's positive reaction to the level of capital expenditure issued by the company will be different for companies with high bankruptcy risk and companies with low bankruptcy risk. The results of hypothesis testing in table 2 (model 2) show that the interaction coefficient of capital expenditure and bankruptcy risk (CAPEX*FD) has a positive and significant coefficient, and the capital expenditure coefficient (CAPEX) has a positive but not significant coefficient. These results indicate a phenomenon that in the group of companies with no risk of going bankrupt, the market does not respond to capital expenditures made by companies, but the market responds positively to capital expenditures made by companies in the bankrupt risk group. Capital expenditures in companies with bankruptcy risk are relatively the same compared to the no bankruptcy risk group. However, investors respond positively to capital expenditures made by companies with bankruptcy risk. This study complements a previous study by (S. Kim et al., 2021) which examines the association of capital expenditures in loss-making firms. Aligned with this study, they found different effects between loss-making firms and profit-making firms in capital expenditures influences. The result of this study proves that the market response as a result of the effect of capital expenditure will be different for companies with different bankruptcy conditions.

6. Conclusion

Based on the results of hypothesis testing, it can be concluded that the market responded positively to capital expenditures issued by the company but failed to prove a negative market response to the company's bankruptcy risk conditions. This study finds the opposite phenomenon that the market responds positively to companies experiencing bankruptcy risk. In addition, it is proven that in companies at risk of bankruptcy, the market reacts positively to capital expenditures made by companies, while in companies that are not in a state of bankruptcy, the market does not respond to capital expenditures made by companies.

There are implications for both investors and management from the result of this study. First, investors need to be aware of the fact that capital expenditure announcements made by companies at risk of bankruptcy attract positive market reactions. This could be linked to the high-risk-high-return principle where the market could have a high expectation that companies at risk of bankruptcy to rebound in a shorter time. Besides the possible high return, the investors' awareness of the risk of investing in companies at risk of bankruptcy is crucial. Second, the management of companies at risk of bankruptcy could reflect from this study to design capital expenditure strategy. Since the market has higher expectations of the capital expenditure decision of this group, management could utilize capital expenditure as a positive signal that its company has future plans to grow.

This study focuses on the short-term market reaction to the capital expenditure of the company with risk and no risk of bankruptcy. Thus, future research could explore the long-term performance of capital expenditure made by the company with the risk of bankruptcy. Furthermore, not all public companies were used as samples in this study since only large capitalization companies were chosen. Thus, public companies with small

capitalizations are not represented and future studies could explore the generalizability of the results of this study.

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