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FACTORS AFFECTING THE EARNINGS RESPONSE COEFFICIENT: AN INDONESIAN PERSPECTIVE

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ABSTRACT

Earnings Response Coefficient (ERC) describes how a market reacts to Earnings announcement which can affect the stock prices. Thus, it is important to know what factors are derived from financial statements that may affect market reaction. This study aims to analyze such factors as leverage, systematic risk, growth opportunities, and company size that have relationships with the ERC by using secondary data of property and real estate companies listed on the Indonesia Stock Exchange within the period of 2013 to 2015. The sampling method used is purposive sampling. The research data were processed by using multiple regression with statistical tools of E-Views program. The results show that growth opportunities have a relationship with ERC, while leverage, systematic risk and size do not have.

INTRODUCTION

Financial statement is a summary of the management performance for the reporting year. Generally, financial statements are used for decision making. Profit is always a major concern for users of financial statements because many strategic decisions can be taken based on the information in the financial statements such as financing, investment and dividend decision. Statement of Financial Accounting Concepts (SFAC) No.1 states that profit has benefits in assessing management performance, estimating long-term representative profits, predicting earnings and estimating risks in credit or investment.

Public companies have an obligation to publish their financial statements to the market. The market especially the investor always reacts to earnings announcements. A study by Sun, Steelyana, and Cahyadi (2014) revealed

that there is abnormal return of stock on the day of earnings announcement as a form of market reaction.

Moreover, the market will also be more interested in the unexpected earnings announcement, where this reaction can be positive or negative. The market reaction to unexpected earnings announcements attracts much empirical research on the relationship between market responses and firm's earnings. The relationship between unexpected earnings and market reaction is called Earnings Response Coefficient (ERC).

ERC describes the relationship between the firm's stock return and the unexpected earnings announcements. Thus, the announcement of unexpected earnings can lead to buying or selling panic as the reaction of market. The ERC is expressed as a regression between the return and the unexpected earnings.

Research on ERC was first performed by Ball and Brown (1968), and continued by Beaver, Clarke, and Wright (1979), then followed by Easton and Zmijewski (1989). Research by Kothari (2001) also proved that stock price changes are due to changes in corporate value from earnings changes. In addition, a recent study by M. Ariff & Cheng (2013) found that banking share prices are influenced by unexpected earnings.

ERC can be used to determine the quality of earnings listed in Financial Statements, so that investors can draw the right conclusions. A low ERC means less informative returns and high ERC signifies informative earnings information. Realizing the important role of ERC that can describe the market reaction to earnings announcement of a company, it is necessary to understand factors that can affect the ERC. By understanding the factors, the company can anticipate what factors can cause buying or selling panic in the market.

Many previous studies have focused on the way the market reacts to earnings. Investors have different reactions to earnings announcements. According to Scott (2009), various stock market reactions are caused by a number of different reasons, such as systematic risk (beta), capital structure, income quality, and investment growth opportunities.

It is proposed that leverage is one of the factors that can explain the ERC since the earnings announcement of companies with high leverage is more interesting to creditors than to investors. A study by Moradi, Salehi, and Erfanian (2010) also explained that firms with high leverage levels have lower ERC rates.

The other factors such as systematic risk called beta is a risk that cannot be diversified. Firms with low risk will be more favorable to investors. Thus, it has a high earnings response coefficient, and vice versa.

Moreover, opportunity to grow is also said to affect earnings response coefficient due to the argument that the opportunity has an impact on the company's share price and market response. Companies with greater growth opportunities will have high earnings response coefficients.

It is also mentioned that firm size will have a positive effect on earnings response coefficient since investors tend to have more confidence on large firms. If the size of the company is large, then the response coefficient will also be greater. Research by Rahayu and Suaryana (2015) shows that firm size has a positive effect on earnings response coefficient.

Therefore, this study will examine how leverage, systematic risks, growth opportunities and firm size influence the ERC of property and real estate firms listed on the IDX over the last three years, from 2013 to 2015. Property and real estate sector is used as a research object due to the phenomenon which occurred in the last two years; the property sector decreased because of the weakening of economic growth. The decreasing economic growth leads to the decreasing purchasing power in property and real estate.

The remainder of the paper is arranged as follows. Literature review is provided in section 2, followed by materials and methods in section 3. The results are presented in section 4. The last section outlines the conclusions of the research.

LITERATURE REVIEW

Signaling Theory

Signaling theory explains that information is an important element for investors as it presents explanations for both the past, present and future conditions of a company's financial situation, going concern and how it affects the company. Complete, accurate and timely information is needed by investors in the capital market as an analytical tool for making investment decisions. According to Connelly, Certo, Ireland and Reutzel (2011), Signaling Theory is an action taken by management to provide information or guidance to investors about the circumstances and prospects of the company. This theory is also associated with information asymmetry. Information owned by management differs from information held by external parties (e.g. investors) in terms of quantity and completeness of information. According to Godfrey, Hodgson, Tarca, Hamilton and Holmes (2010), if managers predict that the future growth rates of firms will be high, they will try to inform to investors. This provides information to investors that the company has good prospects. Conversely, if managers predict that the corporate growth is poor, then they will have a tendency not to report it.

Many previous studies have focused on the way the market reacts to earnings. Investors have different reactions to earnings announcements. The Earnings Response Coefficient (ERC) is to measure the abnormal return on a security in response to the unexpected earnings component reported by the company issuing the securities. In other words, ERC measures the sensitivity of the stock market to earnings reporting through the regression coefficient between abnormal return and expected earnings.

The explanation of the earnings response coefficient is that the investor has a calculation of earnings expectations long before the financial statements are issued. The period for calculating earnings expectation can reach one year before the announcement of the company's earnings. Before the issuance of financial statements, investors will have much more information in making an analysis of periodic earnings. The earnings response coefficient indicates the market reaction to earnings announced by the firm. Thus, it can be used to predict the content in the earnings information. If investors have confidence that the company's financial information has a high credibility, then the investors will strongly react to the financial

statements. Ghosh, Gu, and Jain (2005) prove that firms that express earnings increases have higher earnings and ERC.

Therefore, it is crucial to know what factors can affect the ERC. Several studies have been conducted to identify the factors that can affect the ERC. One of the factors is leverage. The greater the debt the company has, the greater the risk to pay the principal and interest. If the company has much debt, the manager prioritizes debt repayment rather than paying dividends to investors. Thus, information on earnings announcements from companies with high leverage may get a quick reaction from creditors but responded negatively by shareholders due to increasing risk to investors. Previous research conducted by Subagyo and Olivia (2012) examines the factors that affect the ERC of non-financial companies listed on Indonesia Stock Exchange in 2008-2009. The results showed that from the three factors studied, two of them are leverage and growth affecting earnings response coefficient. Other results of the study also explained that firms with high leverage levels have lower ERC rates (Moradi et al., 2010). However, this study contradicts the research of Santoso (2015) which concludes that leverage has no effect on ERC.

Systematic risk or market risk or non-diversifiable risk is a risk that is influenced by macroeconomic factors, such as economic performance in a country. This risk cannot be eliminated by diversification. This risk is denoted by β (beta). Beta equals to one indicating that the price of movements follows the movement of the market. The more sensitive the changes, the higher the beta (Delvira & Nelvirita, 2013). Therefore, they suggest that systematic risk has an influence on ERC. Meanwhile, according to Koriani, Sofianty, and Fadilah (2017) systematic risk does not affect the ERC.

Investors will be more interested in investing in the company because of the certainty of return to be received in the future (Farizky & Pardiman, 2016). A company can be regarded as growing by considering such factors as the high low margin, profit, and sales. The higher the growth opportunity of the company, the higher the chance of the company to increase the profit. The improved profit can have an impact on the ERC. Studies by Mulyani, Asyik, and Andayani (2007), Hasanzade, Darabi, and Mahfoozi (2013), and Mashayekhi and Aghel (2016) reveal that the opportunity to grow influences the earnings response coefficient. Meanwhile, according to research by Santoso (2015) and Subagyo and Olivia (2012), the opportunity to grow does not affect earnings response coefficient.

The size of the company is the information that can be used by investors to assess the earnings generated by a company to take investment decisions. The larger the company, the greater the value of its assets is. The company will gain more trust form investors and creditors to engage with large firms because they have confidence in the firm's ability to pay dividends and debts (Scott, 2009). Research conducted by Subagyo and Olivia (2012) stated that firm size has an influence on earnings response coefficient. Rahayu and Suaryana (2015) also stated that firm size has a positive effect on earnings response coefficient. However, Koriani et al. (2017) and Santoso (2015) stated that the firm size does not affect earnings response coefficient.

Based on the above review of literature, the following hypotheses are formulated:

$H_{1.}$ Leverage affects Earnings Response Coefficient

$H_{2.}$ Systematic risk affects Earnings Response Coefficient

$H_{3.}$ Growth opportunity affects Earnings Response Coefficient

$H_{4.}$ Size affects Earnings Response Coefficient

MATERIALS AND METHODS

The explanation above reveals how Earnings Response Coefficient can describe how a market reacts to earnings announcement of companies. Therefore, it is important to investigate what factors can influence the Earnings Response coefficient. This research is conducted based on the following questions.

1. Does leverage affect Earnings Response Coefficient?
2. Does systematic risk affect Earnings Response Coefficient?
3. Does growth opportunity affect Earnings Response Coefficient?
4. Does company size affect Earnings Response Coefficient?

Data and Methodology

This quantitative study employs statistical tools for data processing and analysis. The population of this study include 47 properties and real estate companies listed in IDX within the period of 2013 to 2015. Then, to draw the sample for this study, several criteria have been set. For example, firms that do not publish their financial report were excluded (6 firms). Companies that filed loss during 2013 to 2015 were also ignored (7 firms). Further, firms that have no information about their stock price were omitted (7 firms). By those criteria, the sample obtained for this study includes 27 companies. With the time frame of the study, which is from 2013 to 2015, the sample data will be 81 data. The object of this study is different from that of the previous research, which commonly used manufacturing sector as a sample.

The required data related to this research are leverage, systematic risk, growth opportunity and firm size as independent variables to ERC as a dependent variable. The data were from financial statements that can be obtained from the official website of Indonesia Stock Exchange.

This study is expected to provide evidence that financial factors such as leverage, systematic risk, growth opportunities and firm size can affect the ERC.

Statistical test used in this research is descriptive statistic and multiple linear regression analysis consisting of model selection test, classical assumption test, and hypothesis test. The regression equation used to observe the relationship between leverage, systematic risk, growth opportunity, and firm size against ERC is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where

Y : *Cummulative Abnormal Return*

α : constant

β : Coefficients

X_1 : Leverage

X_2 : Systematic Risk

X_3 : Growth Opportunity
X_4 : Size
X_5 : *Unexpected Earnings*
ϵ : Error

Variables

1. CAR (Cumulative Abnormal Return)

$$\text{CARit}\ (-5,+5) = \sum_{t=-5}^{+5} \text{ARit}$$

Where,
AR_{it} = Abnormal *return* of firm i on day t
$CAR_{it(-5,+5)}$ = *Cumulative abnormal return* firm i on event window 11 days

2. *Unexpected Earnings* (UE)

Unexpected earnings are the difference between the actual and expected earnings,

$$UE_{it} = \frac{EPS_t - EPS_{t-1}}{P_{t-1}}$$

Where:
UE_{it} = *Unexpected* earnings firm i on period of t
EPS_{it} = Earnings per share firm i on period of t
EPS_{it-1} = Earnings per share firm i on period of t-1
P_{t-1} = Closing price on previous year

3. Leverage

$$DER = \frac{Total\ Debt}{Total\ Equity}$$

4. Systematic Risk

Risks are measured by (beta) using the market model

5. Growth Opportunity

The opportunity to grow is a market assessment on the possibility of a company to grow that measured by market to book ratio

$$Market\ to\ book\ ratio = \frac{Market\ value\ of\ equity}{Book\ Value\ of\ equity}$$

6. Size

Total assets are selected as a proxy of firm size because the objectives of the study is to measure the economic size of the company.

$$Size = Ln\ (Asset)$$

RESULTS AND DISCUSSIONS

Descriptive Statistics

Table 1. *Result of Descriptive Statistics*

	CAR	LEV	Beta	Growth	Size	UE
Mean	-0.004202	0.838475	0.870093	1.657276	29.14681	0.023135
Median	-0.005599	0.812364	0.659565	1.164748	29.16386	0.009263
Maximum	0.181682	2.241868	2.339619	6.710800	31.35253	0.805575

Minimum	-0.250345	0.085554	-0.174448	0.153055	25.89168	-0.356077
Std. Dev.	0.075329	0.461997	0.675076	1.443036	1.331238	0.140698
Skewness	-0.028327	0.719739	0.264743	1.613241	-0.506808	2.338004
Kurtosis	3.739440	3.244950	1.679705	5.190618	2.714448	15.60786
Jarque-Bera	1.856186	7.195827	6.829426	51.33034	3.742732	610.2784
Probability	0.395307	0.027381	0.032886	0.000000	0.153913	0.000000
Sum	-0.340324	67.91649	70.47750	134.2393	2360.891	1.873930
Sum Sq. Dev.	0.453962	17.07528	36.45821	166.5882	141.7756	1.583683
Observations	81	81	81	81	81	81

Table 1 presents the descriptive statistics of the data. Descriptive statistics for all data reveals that the distribution of raw data is normal and also exceeds the entire classical assumption test.

Regression Results

The study uses Eviews 9 for the regression analysis. Before the regression test, the study must conduct the Chowtest, Hausman and Lagrange Multiplier to execute the most suitable regression model.

Chow test, Hausman and Lagrange Multiplier

Chow test is performed to determine the method that will be used: common effect or fixed effect. The test criteria are as follows:
H_0: Common effect
H_1: Fixed effect
Decision-making based on:

a. If p-value <0.05 then H_1 is accepted
b. If p-value > 0.05 then H_1 is rejected

The result of Chowtest shows that p-value of chi-square is 0.1261 > 0.05. Therefore, chowtest result recommends the common effect.
Based on Chow test above, it can be seen that the conclusion is using the Common Effect Model. So, the Hausman test is required. Hausman Test is conducted to determine whether Fixed effect or Random Effect will be used. The test criteria are as follows:
H_0: Random effect
H_1: Fixed effect
Decision-making based on:

a. If p-value <0.05 then H_1 is accepted
b. If p-value > 0.05 then H_1 is rejected

Hausman test recommends random effects since p-value 0.2955 > 0.55.
Chow test and Hausman test obtained different results. Chow test result shows that the exact model to be used in the test is a common effect when compared to the fixed effect. However, when the Hausman test is performed, the result obtained that the better model used for this study is the random effect compared to the fixed effect. Therefore, to know which model is actually more appropriate among the three types of models, it is necessary to run the Lagrange Multiplier test. This test can define which model is the best to use, whether the random effect or common effect model.

Lagrange Multiplier (LM) needs to be conducted to confirm the model.

The test criteria are as follows:
H_0: Common effect
H_1: Random effect
Decision-making based on:
a. If *Breusch-Pagan* < 0.05 then H_1 is accepted
b. If *Breusch-Pagan* > 0.05 then H_1 is rejected
Based on the results of the LM Test, Breusch-Pagan is greater than 0.05 that is equal to 0.4868. Then, the result shows that the suitable model to be used is common effects model.
Thus, the regression is conducted using common effects model to analyze the influence of independent to dependent variable:

Table 2. *Regression Result*

Variable	Coefficient	t-Statistic
Intercept	-0.098496	-0.397879
LEV	0.025204	1.305481
Beta	-0.005850	-0.351352
Growth	0.013984	2.367341*
Size	0.001783	0.196467
UE	0.134229	2.377047*
n	81	
Adjusted R^2	0.119	

**indicates significance at 0.05*

The statistical result reveals that Leverage does not influence ERC significantly since its p-value >0.05. This result means H_1 is rejected. The result of this study is accordance with the study of Santoso (2015). However, it is contradicted to result of (Subagyo & Olivia, 2012).

Investors usually pay more attention to the debt level of a company since High leverage indicates high risk. However, high leverage also has a positive impact on the management because they will be more motivated to improve their performance so that the company's debts can be fulfilled and the company will be more developed. Delvira & Nelvirita (2013) also said that the use of debt can provide benefits in the form of deductible tax. Firms that use leverage with the aim of decreasing the cost of capital is a positive sign that can increase shareholder value. Due to the positive and negative sides of debt, it can be concluded that leverage may have no impact on ERC.

The second Hypothesis (H_2) is also rejected since the p-value >0.05. The result shows that Systematic risk has no effect on ERC. This is consistent with the result of Koriani et al. (2017) but contradicted the research of Delvira & Nelvirita (2013).

High risk firms can promise high returns. On the other hand, the level of uncertainty will also be high. Thus, it can make investors more cautious in making decisions at higher risk firms. Investors will be slower or even do not react to the company's earnings announcement.

Next, the results of the analysis show that H_3 is accepted. The p-value is < 0.05 and the coefficient is 0.013984. It means that growth opportunity has a positive relationship with ERC. The results of this study are in line with the results of research conducted by Mulyani et al. (2007), Hasanzade et al.

(2013), and Mashayekhi and Aghel (2016) indicating that the opportunity to grow significantly influences the earnings response coefficient. This can happen because the greater the opportunity to grow of a company, the greater the return earned by investors in the future. A high opportunity to grow can lead to high ERC since investors have more trust to companies that have a high growth opportunity to increase profits than those with small growth opportunities. However, this result is different from the results of Santoso (2015) and Subagyo and Olivia (2012) which indicate that growth opportunity has no impact to ERC.

Last, H_4 is rejected since its p-value >0.05. The result means that size of a company has no relationship with ERC. This outcome is accordance with the study of Santoso (2015) and Koriani et al. (2017). The information about the company is available throughout the year (both small and large companies), that enables market participants to interpret the information presented in the financial statements to predict cash flow more accurately and lower the uncertainty. Thus, firm size does not affect ERC since small and large companies have the same opportunity to increase the ERC.

Nevertheless, this study does not support the studies of Subagyo and Olivia (2012) and Rahayu and Suaryana (2015) which indicate that size affects ERC. They argue that the large assets of a company show that the company has reached the maturity stage where it has a good prospect and sustained development. Thus, it can provide a stable return that leads to positive market response.

CONCLUSIONS

This research was conducted to examine the influence of such factors as leverage, systematic risk, growth opportunities and firm size to Earnings response coefficient. The sample used in this study includes 81 data on property and real estate companies in Indonesia Stock Exchange from 2013 to 2015. The sample selection was done by using purposive sampling technique. In this research, data analysis was conducted by using Eviews 9. Based on the results of the hypothesis testing, it can be concluded that: Leverage does not have a relationship with the ERC since leverage leads to trade-off between risk and return to investor. This result is supported by Santoso (2015); however, it is contrary to the result of Subagyo and Olivia (2012).

The second factor is systematic risk, which has no effect on ERC. This result is in line with the result of Koriani et al. (2017) but it contradicts the result of Delvira and Nelvirita (2013).

Next, the growth opportunity of companies can influence the ERC. It is argued that investors believe that companies with high growth opportunity can generate more value than small growth companies. This outcome is accordance with the results of Mulyani et al. (2007), Hasanzade et al. (2013), and Mashayekhi and Aghel (2016), and contrary to the result of Santoso (2015) and Subagyo and Olivia (2012).

Last, the size of company does not have an impact on ERC since both small and large companies have the same opportunities to increase the ERC. This result is consistent with the result of Santoso (2015) and Koriani et al. (2017). However, it is different from the result of Subagyo and Olivia (2012) and Rahayu and Suaryana (2015).

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