

A MODEL FOR STOCK RETURN PREDICTABILITY IN INDONESIA

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A MODEL FOR STOCK RETURN PREDICTABILITY IN INDONESIA

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Abstract

This study aims to develop a stock return model in Indonesian. Variables consist of stock returns as the dependent variable, profitability, earnings management, and liquidity as the independent variable, leverage as the moderating variable, and company size as the control variable. Researchers selected 20 most active shares in the volume of trading transactions during 2015-2018 and got 60 observations. The selection of this nonlinear regression model is based on the reason for the large coefficient of determination. The results of the data analysis show that liquidity has a significant effect on stock returns. Other independent variables, earnings management profitability, and leverage significantly do not affect stock returns. This finding shows that the changes in critical variables have not been responded to by investors, supported by relatively small numbers of determination coefficients. This research has a contribution to corporate decision-makers to improve its performance creatively to increase stock returns.

Keywords: stock return, profitability, liquidity, earnings management, leverage.

1. Introduction

The capital market is one of the significant financial markets in Indonesia. Investors who invest their capital in stocks have hopes to obtain stock returns. Therefore investors need information about return movements. The phenomenon in Indonesia shows that the change of stock returns on the Indonesia capital market is fluctuating. During 2018 the Composite Stock Price Index (CSPI) weakened 3.19%, while the top 10 LQ45 shares had the highest increase since the beginning of the year with a wide range of 4.11% - 113.43% (<https://invest.kontan.co.id>, 2018). The results of Aprika and Olii's research (2019) in the Pharmaceutical sub-sector showed that some stocks were overvalued and undervalued. In the consumer sector, the price of sharia shares listed on the Indonesian Sharia Stock Index during 2013-2018 is fluctuating in the period (Insyafiati, 2018).

Several researchers have reviewed several factors that influence firm value or returns of stock. Lee-Soon & You (2019) studied the impact of capital structure on enterprise value and shows there is a positive influence. Nurdin, et al. (2019) examined the impact of corporate social responsibility (CSR) disclosure on investor reaction. Arista & Astohar (2012) found that the ratio of debt to equity (DER) and the ratio of price to book value has an impact on returns of stock in a manufacturing company. This research finding is different from the result of Suharli (2018), which shows that the debt ratio does not affect returns of stock. Several other factors that affect returns of stock have been investigated. The impact of profitability, liquidity, and leverage on returns of stock have been investigated by Sutriani (2014) with the results of profitability and leverage that significantly influence stock returns. Sunardi (2010) examines company performance factors as measured by ROA and EVA. The result both of them do not affect returns of stock. These research findings are same with the result of Andini & Oemar (2016).

Other researchers, Antara et al. (2014), used return on equity (ROE) as a measurement for profitability ratios and find that ROE affect stock returns positively, while current ratios as measurement for liquidity ratios and assets turnover as measurement for activity ratios have a negative impact. Widyastuti (2007) examines the factors of leverage, profitability, earnings management, and company size with the results of leverage and firm size having a negative effect, while profitability and company size has a positive impact on returns of a stock. Adhariani (2017) produced findings that management of earnings affect returns of stock negatively. Surya & Januarti (2012) provide evidence that earning management patterns before and after an IPO affect stock returns. Muid (2007) found no difference in stock returns in companies that did earnings management and those that did not.

Haryanto (2012) used leverage as a moderating variable to measure the influence between accounting earnings and returns of stock. The result is leverage, not as a moderating variable. Octaviani and Astika (2016) find profitability and leverage as moderating variables to strengthen the

impact of dividend policy on corporate value. Some of the studies have not included the independent variable of real earnings management and moderating variable of leverage in the impact between profitability and liquidity on stock returns. Different from the previous study, we use variable profitability, liquidity, management of accrual-based earnings, management of real-based earnings as a factor that affects returns of stock. The originality of this research is the use of leverage as a moderating variable. Leverage will strengthen or weaken the impact of profitability and liquidity on returns of stock.

This paper is expected to have a contribution to corporate decision-makers to improve their performance creatively to increase stock returns. Companies with high stock returns will quickly get high sales results if they issue new shares. Also, potential investors and capital market practitioners can get information about factors that affect fluctuations in stock returns so that they can use it as a reference in choosing stocks that have good prospects in the future. The development of science provides evidence about the factors that influence fluctuations in stock returns. We divide this paper into five parts. The first part explains the background to the reason for this research. The second part of the authors reviews previous studies as a basis for developing hypotheses. The third section contains research samples, definition, and measurement of variables and data analysis techniques. The fourth part is data analysis and discussion. Finally, the fifth part is conclusions and suggestions.

2. Review of Literature and Hypothesis Development

Signaling Theory

Researchers use signal theory as a basis for discussing the results of data analysis. The Signaling theory, according to Melewar and Tucker (2005), shows that companies will give signals through actions and communication (Assagaf, et al., 2019). The company adopted this signal in providing hidden information to stakeholders. The firm provides information through the statement of financial, gives signals on factors that affect the condition of corporate economics, and inform strategic and policy steps to increase business performance. We use signaling theory as the basis for examining company stock returns.

2.1. Returns of Stock and Profitability.

Return of stock is a tool to measure stock performance. Individual and composite stock returns consist of historical and expected future stock returns. Investors calculate expected stock returns based on past returns (K.Reilly & C. Brown, 2012). Wang & Chin (2004) have examined the interaction between historical returns and trading volumes in predicting returns. Realized stock returns of a company correlate with the overall returns of stock of listed companies on the capital market (Elton, Gruber, Brown, & Goetzmann, 2014).

Research on the company stock return and several factors that influence it has been widely carried out. Some researchers analyze the impact of firm performance on companies stock returns of (Amelzadeh (2011), Hao, Jin, & Zhang (2011), (Jia & Yan, 2017), (Oemar, 2018), Arista (2012), Suharli (2005), Kristiana and Sriwidodo (2012). (Hao et al., 2011; Jia & Yan, 2017) use profitability proxies for company performance and find that profitability affects stock returns. Companies that produce greater profits have an average higher average return (Ball, Gerakos, Linnainmaa, & Nikolaev, 2016). ROA or return on assets (Anwaar, 2016), NPM or net profit margin, and ROE or return on equity ((Martani & Khairurizka, 2009) positively affect stock returns. Kristiana and Sriwidodo (2012) found that only value-added economic variables had an effect on company stock returns on the Indonesian capital market. Previous research by Carlo (2014) found that return on equity had a significant impact on future company stock returns. Profitability with earnings per share proxy significantly affects stock returns (Nuryana, 2013; Emamgholipour, Pouraghajan, Tabari, Hanghparast, & Shirsavar, 2013). We state the research hypothesis:

H1: Profitability affect returns of stock positively.

2.2. Liquidity

Liquidity shows the corporate ability to pay off short-term obligations. High liquidity signals investors that the corporate has sufficient sources of funds to settle its short-term debts. Previous research conducted by Sutriani (2014) found that liquidity has an effect on company stock returns. Similar to that reference, we state the hypothesis:

H2: The level of liquidity affect returns of stock positively.

2.3. Management of Earning

Management of earnings is the manager's behavior to adjust earnings accordingly without violating accounting principles. Management of earnings is grouped into two types, namely accruals and real. Research by Ambarwati (2017) and Muid (2007) shows that the management of earnings affect returns of stock significantly. Similar to that research, this research proposes a hypothesis:

H3: Management of accrual-based earnings affect returns of stock positively.

H4: Management of real activities-based earnings affect returns of stock positively.

2.4. Leverage

Several researchers have studied the impact of capital structure on firm value with different proxies. They have used leverage as a proxy of capital structure. Arista (2012) found that the ratio of debt to equity and price to book value had an effect on the return of stock. Suharli (2005) found that two variables, namely debt to equity ratio and stock beta affect the return of stock. Other studies show the

debt-equity ratio positively influences stock returns (Nuryana, 2013). Haryanto (2012) found leverage as a moderating variable that strengthens the effect of independent variables on stock returns.

We state hypothesis:

H5: Leverage as a moderating variable that strengthens the effect of profitability on company stock returns.

H6: Leverage as a moderating variable that strengthens the effect of liquidity on the company's stock returns.

3. Methods of Research

We use a quantitative approach in this study. We collect secondary data by documentation technique. The research sample was selected using the purposive sampling method as the study of (Assagaf and Yunus, 2016; Assagaf, 2017; Assagaf, et al., 2017; Assagaf, et al., 2017b; Sayidah, et al., 2019; Sayidah and Assagaf, 2019; Sayidah, et al., 2019; Sayidah, et al., 2020). The criteria are the most active shares traded on the Indonesian stock exchange over the past three years and are listed in the LQ 45 group. Researchers selected 20 most dynamic companies in their stock transactions during 2015-2018. The result is 60 observations.

3.1. Variables and Measurements

Dependent variable: Stock Return (Ret)

Stock returns are returns that result from the difference in price between the price of the current period (t) and the price of the previous period (t-1). Stock return is measured using the formula as follows Suharli (2005).

$$Ret = \frac{P(t) - P(t-1)}{P(t-1)}$$

Ret= stock return, P(t)= stock price current period, P(t-1)= stock price of the previous period.

Independent variable

a. Profitability Growth (X1)

Profitability growth is defined as the percentage rate of change between the return on equity (ROE) of the current period and the return on equity (ROE) of the previous period. The formula has been used by Carlo (2014).

$$P = \frac{ROE(t) - ROE(t-1)}{ROE(t-1)}$$

b. Liquidity (X2)

Corporate liquidity is defined as the firm's ability to pay off the short-term obligation that is due.

Current assets divided by current liabilities is a measurement to liquidity. The formula has been used by Lestari, et al. (2016).

$$\text{Liq} = \frac{\text{Current asset}}{\text{Current liabilities}}$$

c. Accruals-based Earning Management (X3)

Earnings management based on accruals is a management practice carried out to improve a company's financial statements using accrual transactions. This earnings management variable is taken using the total accrual measurement formula requested by Habib (2004), Baharuddin and Setyanugraha (2008) in Assagaf, et al. (2019) in the following,

$$X3 = \text{ACEM} = (\Delta CA - \Delta \text{Cash}) - (\Delta CL - \Delta \text{STD}) - \text{Depreciation}$$

Where: X3 or ACEM is total accruals; ΔCA is a change in current assets; ΔCL is a change in current debt; ΔCash is a change in cash and cash equivalents. ΔSTD is debt that is included in current debt.

d. Real activities produce management (X4)

Earning management based on actual activities is a management practice to influence the company's financial statements. Management uses credit sales transactions by giving excessive discounts, increasing production to reduce costs, and reducing discretionary expenditures that are not directly related to the company's revenue or profits. Measurement of real activity variables used in this study, included in Roychowdhury (2006) in Assagaf, et al. (2019), follows this. Equation (1): Cash flow operations (CFO),

$$\text{CFO}_t / A_{t-1} = \alpha_0 + \alpha_1 (1/A_{t-1}) + \beta_1 (S_t / A_{t-1}) + \beta_2 (\Delta S_t / A_{t-1}) + e_t$$

Equation (2): Cost of goods sold (COGS),

$$\text{COGS}_t / A_{t-1} = \alpha_0 + \alpha_1 (1/A_{t-1}) + \beta (S_t / A_{t-1}) + e_t$$

Equation (3): Changes in inventory (ΔINV),

$$\Delta \text{INV}_t / A_{t-1} = \alpha_0 + \alpha_1 (1/A_{t-1}) + \beta_1 (\Delta S_t / A_{t-1}) + \beta_2 (\Delta S_{t-1} / A_{t-1}) + e_t$$

Equation (4): Production (PROD),

$$\text{PROD}_t / A_{t-1} = \alpha_0 + \alpha_1 (1/A_{t-1}) + \beta_1 (S_t / A_{t-1}) + \beta_2 (\Delta S_t / A_{t-1}) + \beta_3 (\Delta S_{t-1} / A_{t-1}) + e_t$$

Equation (5): Discretionary expense (DISEXP),

$$\text{DEXP}_t / A_{t-1} = \alpha_0 + \alpha_1 (1/A_{t-1}) + \beta (S_{t-1} / A_{t-1}) + e_t$$

We use equation (1) to equation (5) to calculate the residual or abnormal of real activities.

$$X4 = \text{AREAL}_t = \text{ACFO}_t + \text{ACOGS}_t + \Delta \text{AINV}_t + \text{APROD}_t + \text{ADEXP}_t$$

Where: X4 or AREAL = abnormal or residual of real activities; ACFO = abnormal or residual cash flow operating; ACOGS = abnormal or residual cost of goods sold; ΔAINV = abnormal or residual changes in inventory value; APROD = abnormal or residual production costs; ADEXP = abnormal or residual discretionary expense; A_t = year end total assets t; S_t : sales period t.

e. Variable of Moderating: Leverage (X5)

Leverage shows the level of debt used to meet the funding needs of operations and investment programs of that company. The leverage variable is measured using the formula as Haryanto's (2012) research follows.

$$X5 = \frac{\text{Total hutang}}{\text{Total aset}}$$

f. Control Variables: Capital Expenditures (X6) and Firm Size (X7)

Capital expenditure (X6)

Capital expenditure is showing the amount of investment made by a company in a certain period. Measurement of capital expenditure variables using the formula as follows Rakhimsyah (2011).

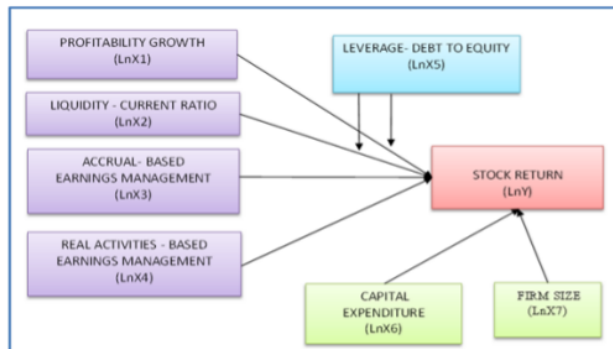
$$X6 = (\text{Fixed assets (t) - Fixed assets (t-1)}) / (\text{Fixed assets (t-1)})$$

The size of the company shows the value of assets used by the company, as stated in the financial statements. Measurement of company size variables using formulas, as Sudarsono et al. (2014) follow. Amel-zadeh (2011) found past company performance to be a conditional factor in explaining the effect of company size on the return of stock.

$$X7 = \text{Total assets}$$

We describe our variables in the following conceptual framework:

Figure 1. Conceptual Framework



3.2. Technique of Analysis

Researchers used nonlinear regression analysis techniques because this model has an adjusted R² (0.162) compared to the linear model (0.102). The nonlinear equation model used is based on Ln. The equation formula is as follows:

$$\text{LnY} = \beta_0 + \beta_1 \text{LnX1} + \beta_2 \text{LnX2} + \beta_3 \text{LnX3} + \beta_4 \text{LnX4} + \beta_5 \text{LnX5} + \beta_6 \text{LnX6} + \beta_7 \text{LnX7} + \beta_8 \text{LnX1X5} + \beta_9 \text{LnX2X5} + e.$$

LnY = return
 LnX1 = profitability
 LnX2 = liquidity
 LnX3 = management of accruals-based earnings
 LnX4 = management of real activities earnings
 LnX5 = debt to equity
 LnX6 = capital expenditure
 LnX7 = company size
 LnX1X5 = interaction of X1 and X5
 LnX2X5 = X2 and X5 interactions
 β_0 = constant
 $\beta_1 \dots \beta_9$ = coefficient
 e = error

4. Results and Discussion

4.1. Statistics of Descriptive

Statistics of descriptive as in table 1 below, describes the structure of every variable used in this research. Stock returns as a dependent variable Y with an average value of -3,289 spread between the minimum value of -6,601 to a maximum of -0,928, and the magnitude of the deviation or standard deviation of 1,144.

Table 1. Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
LnY	60	(6.601)	(928)	(3.289)	1.144
LnX1	60	(5.044)	40	(1.505)	1.164
LnX2	60	(798)	1.944	724	681
LnX3	60	(2.011)	4.220	1.019	1.034
LnX4	60	(6.370)	(322)	(2.459)	1.277
LnX5	60	(1.873)	2.825	(53)	1.023
LnX6	60	(6.822)	917	(2.188)	1.167
LnX7	60	1.880	2.431	2.301	86
LnX1X5	60	(5.218)	2.251	(1.558)	1.647
LnX2X5	60	(1.358)	4.254	740	1.197
Valid N (listwise)	60				

Data structures of the independent variable, respectively, are (a) structured profitability, or X1 with an average value of -1.505, spread between a minimum score of -5.044 to a maximum of 40. the magnitude of the deviation or standard deviation of 1.164; (b) liquidity or X2, structured with an average value of 724 spread between the minimum score of -798 to a maximum of 1944, and the magnitude of the deviation or standard deviation of 681; (c) accrual-based earning management or X3, structured with an average score of 1,019 spread between a minimum score of -2,011 to a

maximum of 4,220, and the magnitude of the deviation or standard deviation of 1,034; and (d) real activities base management or X4, structured with an average score of -2.459 which is spread between a minimum score of -6,370 to a maximum of -322, and the magnitude of the deviation or standard deviation score of 1,777.

Data on moderating variables, X5 (leverage), is structured with an average score of -53. The minimum score of this variable is -1,837, and the maximum is 2,825, and the magnitude of the deviation or standard deviation of 1,023. The control variable, X6 (capital expenditure), is structured with an average score of -2.188, which is spread between a minimum score of -6,822 to a maximum of 917, and the magnitude of the deviation or standard deviation of 1.167; (c) firm size variable or X7, structured with an average value of 2,301 which is spread between a minimum score of 1,880 to a maximum of 2,431, and the magnitude of the deviation or standard deviation.

4.2. Correlation

The coefficient of correlation, as in table 2 below, shows the linear relationship between each variable used in this research. The correlation between stock return variables and independent variables shows that only the liquidity variable has an effect on stock returns. In contrast, the other independent variables have no impact on stock returns.

Table 2. Correlations

	Y	X1	X2	X3	X4	X5	X6	X7	X1X5	X2X5
LnY	1									
LnX1	0,215	1								
LnX2	.366**	0,0767	1							
LnX3	0,187	0,025	0,212	1						
LnX4	-0,195	-0,126	-.468**	-0,208	1					
LnX5	-0,149	0,131	-.261*	-0,071	-0,002	1				
LnX6	0,027	0,017	-.297*	-0,039	0,098	0,172	1			
LnX7	-0,241	-0,178	-0,032	-0,029	0,134	-0,074	.276*	1		
LnX1X5	0,059	.788**	-0,108	-0,026	-0,091	.714**	0,119	-0,172	1	
LnX2X5	0,017	-.254*	.312*	-0,232	0,086	-0,153	-0,227	0,114	-.275*	1

*. Correlation is significant at the 0.05 level (2-tailed).
 **. Correlation is significant at the 0.01 level (2-tailed).

4.3. Hypothesis Testing

The results of simulations with SPSS 25, as in table 3, show that only the H2 hypothesis or the X2 (Liquidity) variable is proven to have a positive impact on stock returns. While other variables do not support our hypothesis. The control variable is not proposed as a hypothesis. Capital expenditure or X6 as control variable has a positive impact on returns of stock at the significant level of 5%, and company size or X7 as control variable has a negative effect at significant level of 1%.

4.3.1 Regression Coefficient

The calculation results, as in table 3, show that some variables have an effect, and others are not significant or do not support the hypothesis. Variable liquidity or X2 has a positive influence of 0.068 and a significant level at 5%, which means that each increase of liquidity is one unit that will increase stock returns by 0.068 units. The relationship that shows the magnitude of the impact of every variable on stock returns is expressed as the following regression equation.

$$\text{LnY} = 5543.6 + 0.157 \text{LnX}_1 + 0.608 \text{LnX}_2 + 0.125 \text{LnX}_3 + 0.026 \text{LnX}_4 - 0.139 \text{LnX}_5 + 0.235 \text{LnX}_6 - 3.746 \text{LnX}_7 - 354.3 \text{LnX}_1\text{X}_5 + 0.035 \text{LnX}_2\text{X}_5$$

The control variable has effect on returns of stock, namely: Capital expenditure or X6 has a positive influence of 0.235, which means that each increase in capital expenditure by one unit will increase stock returns by 0.235. While the firm size or X7 has a negative impact of -3.764, which means that each increase company size by one unit will decrease stock returns by 3,764 units.

Table 3. Coefficient of Regression

Variables	Predict.	Coefficient	Significant
(Constant)		5543,651	0,177
LnX1	+	0,157	0,218
LnX2	+	0,608	0,030 **
LnX3	+	0,125	0,386
LnX4	+	0,026	0,840
LnX5	+	-0,139	0,334
LnX6	+	0,235	0,078 *
LnX7	+	-3,746	0,034 **
LnX1X5	+	-354.319	0,369
LnX2X5	+	0,035	0,805
Adjusted R ²	0,162		
F-Statistics	2,421		
Sig.	0.000		
Obs	60		

4.3.2 Classical Assumption Testing

Classical assumptions are required when using a linear regression model. Testing includes the tests of normality, multicollinearity, autocorrelation, and heteroscedasticity. While the nonlinear regression model, as used in this study, does not require a classic assumption test.

The choice of a linear or nonlinear regression model is dependent on the distribution of research data, which can be tested through scatter plots and the coefficient of determination test. The results can show more appropriate model choices between linear or nonlinear models. We examine the determination coefficient to ensure the accuracy of this research model. The results showed that the nonlinear regression model was more appropriate than the linear model. This research does not require a classical assumption test.

4.3.3 Determination Coefficient (R²)

The calculation result of the determination coefficient (adjusted R²) shows a score of 0.162, which means that this study can explain the phenomenon of 16.2%. This coefficient indicates that the variable of independent can explain 16,2% of the change in the variable of the dependent return of shares. Other variables outside this study describe the remaining 83.8%.

4.3.4 F test and t-test

The significant analysis of the impact of independent variables on stock returns simultaneously shows that the value of F-statistics = 2,421 or significant 0,000, which means that the variable of independent has a significant effect on returns of stock. After the F statistical test, we examine the effect of each independent variable on returns of stock. Table 3 shows that the variables that have an effect on returns of stock, namely: (a) independent variable liquidity or X2 significance level of 0.030 or 3%, (b) variable control of capital expenditure or X6 significant level of 0.078 or 7.8%, and (c) firm size control variable or X7 significant level of 0.034 or 3.4%. Whereas the other variables, namely X1, X3, X4, and X5, have no effect on the dependent variable company stock return on the Indonesian capital market.

4.4 Discussion

Based on table 3, which shows the regression coefficient, statistics t-test, statistics-F test, and the determination coefficient of adjusted R², we explain that the independent variable that has an effect is only the liquidity variable or X2. In contrast, the other independent variables have no significant impact. This impact is mainly due to liquidity's role in the smooth operation of the company and supporting the acquisition of a decent level of profitability. The increase in the value of variable X2 will provide an attraction for investors to choose the company's shares in their investment decisions.

Other independent variables, such as profitability (X1), management of accruals-based earnings (X3), management of real activities earnings (X4), and the ratio of debt to equity (X5), have no effect on returns of stock. Our findings indicate that investors tend to make transactions oriented to short-term margins. Investor decisions only follow demand and supply trends on the Stock Exchange. They only pay attention to key variables that are considered strategic in determining the smooth operation of the company, such as liquidity (X2) described above.

The significance level of the influence of the liquidity (X2) and investor decisions that tend to do short-term speculation is evidenced at the relatively small coefficient determination, 0.162. This coefficient also means that investment decisions are influenced by various factors besides the critical factors used in this study. Investors only tend to pay attention to short-term fluctuations in the issuer's stock prices so that the frequency of transactions for investors is very smooth to conduct buying and selling transactions in a relatively short period, for example, weekly or monthly.

Control variable Capital expenditure or X6 and company size or X7 have a significant effect on stock returns, which means that both of these variables have functioned well as control variables. If not used as a control variable, then this variable has the potential to cause bias or affect the results of this study. Amel-zadeh (2011) found past company performance to be a conditional factor in explaining the effect of company size on returns of stock. While the leverage variable or X5 has no impact on returns of stock, and its function as a moderating variable shows that this variable does not moderate the impact of profitability and liquidity variables on stock returns.

5. Conclusions and Sugestion

The purpose of this research is to find a model for stock return in Indonesia. We use stock returns as the dependent variable, profitability, earnings management, and liquidity as the independent variable, leverage as the moderating variable, and company size as the control variable. Based on the data analysis, we conclude that (a) the independent variable liquidity or X2 has a significant effect on stock returns, especially since investors respond to this variable as a variable that affects the smooth running of operations and company performance. (b) other independent variables such as X1 (profitability), X3 (accrual-based earnings management), and X4 (real activities earnings management), have no significant effect on stock returns because investors tend to speculate on short-term margin trends and only pay attention to vital strategic variables such as X2 referred to above. (c) this study only

explains the phenomenon of about 16.2% as the coefficient determination or adjusted $R^2 = 0.162$, and other variables explain the remaining 83.8% outside of this research variable.

Managerial implications of this research are management must have innovative strategies and creative policies for key variables that have a significant effect on company stock returns. Managerial decisions related to investment, the composition of the use of debt or leverage, cash flow from operating, and company size, are the determining factors for changes in stock returns. It is recommended in subsequent studies to develop the results of this study by using a broader and more specific sample of companies according to the company sector on the Indonesian Stock Exchange.

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