Factors affecting beta in manufacturing companies in Indonesia Stock Exchange

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ARTICLE INFO	ABSTRACT
ISSN: 2723-1097	<i>This research has want to know and prove the effect of dividend payout, asset growth, asset size, liquidity, financial leverage, earning variability and accounting beta to beta of stock simultaneously and partially in manufacturing companies at Jakarta Stock Exchange.</i>
Keywords: <i>Financial Factors; Beta of Stock; Manufacture Companies; Jakarta Stock Exchange</i>	<i>This research use secondary data which is collected based on time series data and cross section include 12 manufacturing company stocks as the sample. The data is collected from the online data of Jakarta Stock Exchange in YPKP, Indonesia Capital Market Directory, JSX Statistic, and Business News. The model of this research is estimated by Generalized Least Square (GLS) with Fixed Effect Model and Dummy Variable to estimate the effect of some financial variables specifically towards Beta of Stock.</i>
	<i>The result show that all of the variables in this research consistent with the theory as expected. The coefficient direction of asset growth, financial leverage, earning variability and accounting beta shows positive, while the coefficient direction of dividend payout, asset size, liquidity shows oppositely. All variables influence beta of stock, in the other side partially shows that asset growth, earning variability, asset size, and liquidity, have significant effect to beta, whereas dividend payout ratio, financial leverage and accounting beta do not have significant effect.</i>
	<i>One of the implications of this research is that the study of beta of stock should be more comprehensively, not only contains micro variables but also the macro variables as well include dimension of social economy and politic.</i>

Introduction

The recent rise of the stock market has been followed by an influx of new stock investors, particularly retail investors, who do not all understand the world of the capital market. Sufficient understanding of the capital market will help investors make the best decisions in each transaction. Thus, human resource is important to be managed as good as possible in order that to increase the effectiveness and operational efficiency of the institution or organization, as one of the functions in the organization which called the human resource management.

Stock investment has a relatively higher risk compared to other types of investment. The nature of the commodity is very sensitive both to the external conditions of the company such as politics, economy, monetary and laws as well as to

the condition of the company itself (internal). Transactional leadership is a leadership that gets the motivation of its subordinates by calling out their own interests. Leadership behaviour is oriented towards the results of the duties and relationships of good employees in exchange for the desired rewards. According to Thomas (2003: 63), transactional leadership directs leaders to adjust and their behaviour to understand the expectations of their subordinates as well).

Stocks are expected to have a high rate of return, so a high level of risk will also be followed. This is in accordance with the basis of investment, that the higher the rate of return offered by an investment object, the higher the risk of loss received by investors. One model that is widely used in describing the level of return with risk is the Capital Asset Pricing Model (CAMP).

This CAMP model is made on the basis of market equilibrium conditions where the level of profit expected by investors for a stock will be influenced by the risk of the stock. According to Schall and Halley (1991: 35), what is meant by the Capital Asset Pricing Model (CAPM), is: "A model of equilibrium rates of return (prices) in the financial markets. The CAPM provides an explicit equation for the expected rate of return on an asset and for equilibrium value of an asset".

Uncertainty is a situation in which there is the possibility of an uncertain situation, which can be in the form of profits, losses, or dangers that cannot be calculated in advance or there is no information or data to estimate the loss or danger.

Risk is a situation in which the occurrence of a loss can be predicted in advance by using a calculation from reliable data or information. The risk of an investment is defined as the variability (variation) of the possible returns. Risks are generated by many factors, both internal and external, including: economic factors, competition, technological developments, changes in consumer tastes, labor conditions, and so on. In order to reduce risk, many companies or investment managers carry out portfolios in conducting their business.

Portfolio risk consists of systematic risk (beta) and unsystematic risk. Systematic risk relates to risk factors that affect the market as a whole and consequently cannot be diversified, whereas unsystematic risk is the risk that only exists in a particular company or industry, which depends on economic, political, and other factors that affect the performance of a company. and in the end will affect the value of securities. Stock beta is a tool for measuring the risk of a stock. Beta measures the extent to which stock prices will rise or fall in line with rising and falling market prices.

In determining a managerial decision such as company policy in capital and asset structure decisions, investors need to understand the factors that can affect stock beta as a measure of stock risk. The variables that can affect beta are dividend payout,

asset growth, asset size, liquidity, financial leverage, earning variability, and accounting beta (Beaver, et al, 1970).

The industrial sector of a company that is influenced by the macroeconomic cycle will determine the systematic risk (beta) of the resilience of an industrial sector to shocks to the economic cycle. The more sensitive it is to the macroeconomic cycle, the greater the beta.

The purpose of this study was to analyze how much influence the dividend payout factor and asset growth have. Asset size, liquidity, financial leverage, earning variability, and accounting beta simultaneously and partially on stock beta in manufacturing companies on the Jakarta Stock Exchange.

Investation

The decision to invest, in macroeconomic terms, is generally based on a comparison between the expected rate of return and the real interest rate. The real interest rate is the opportunity cost of an investment. The greater the level of profit expected, the greater the amount of investment carried out. Conversely, the lower the interest rate the greater the amount of investment carried out (Parkin, 2000: 583).

Investment Risk

Risk can be stated as the possibility of loss that deviates from the expected. The size of the spread can be used to measure risk, because it can measure how far the value obtained deviates from the expected. The size of the spread is expressed as standard deviation (σ) or by variance (σ^2).

Beta

Stock beta is a measure that describes the percentage change in returns on a particular stock compared to changes in the market index in which the stock is traded. In the world of investing and trading stocks on the stock exchange, the term stock beta refers to an indicator that shows the level of risk of a stock against the level of market risk. One of the benefits of knowing stock beta is that investors can assess the level of sensitivity of a stock to existing market risks (Maniati, P., 2011).

Koeifisen beta is a measure that shows the systematic risk of a stock that can show the level of risk that investors will bear with their investment (Karacic, D. & Bukvic, I.B., 2014)

Single Index Model

Using time series data, stock beta can be calculated through a functional relationship (linear regression) between the stock rate of return as the dependent variable and the market portfolio rate of return (market index) as the independent variable. The single index model formula is as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}$$

Capital Asset Pricing Model (CAPM)

CAPM is a balance model. This model is the risk factor measured by beta. The CAPM formula is the risk-free rate of return added by the beta of the security or portfolio multiplied by the expected market return minus the risk-free rate of return. This formula yields the expected return on the security. Beta versions of a security measure systematic risk and its sensitivity relative to changes in the market. Securities with beta one have a perfectly positive correlation with their market. This indicates that as the market increases or decreases, a security increases or decreases over time with the market. Securities with a beta greater than 1 carry more systematic risk and volatility than the market, and a security with a beta less than 1 carries more systematic risk and volatility than the market (Fama, E.F & French, K.R., 2004)

Research Methods

Research Design

This research includes explanatory research or explanatory research. Singaribun and Effendi (1995) state that the research design provides answers to the problems faced by explaining the causal relationship between variables through hypothesis testing. The hypothesis proposed in this study is

H₁ Dividend payout ratio affects the beta of manufacturing companies' shares in Indonesian Stock Exchange

H₂ Asset growth affects the stock beta of manufacturing companies in Indonesia Stock Exchange

H₃ Asset size affects the stock beta of manufacturing companies in Indonesia Stock Exchange

H₄ Liquidity has an effect on the beta of shares of manufacturing companies in Indonesia Stock Exchange

H₅ Financial leverage affects the stock beta of manufacturing companies in Indonesia Stock Exchange

Sampling Method

The population of shares listed on the Jakarta Stock Exchange (BEJ) is 114 shares. Sampling in this study used the Judgment Sampling method, which is to select subjects in the best position to provide the necessary information. According to Uma Sekaran (2000: 278) "Judgment sampling involves the choice of subjects who are in the best position to provide the information required". Samples taken are 12 stocks of manufacturing companies that have been listed on the Indonesia Stock Exchange

Operational Definition of Variables

The independent variables used in this study are

1. Dividend payout ratio, is the ratio between dividends paid and net income earned.
2. Asset growth. According to Beaver, Kettler and Scholes (1970: 660) growth as the natural logarithm of the ratio of the terminal asset size divided by the initial asset size

$$\text{Growth} = \frac{\text{Total asset}_t - \text{Total asset}_{t-1}}{\text{Total asset}_{t-1}} \times 100\%$$

3. Asset size. According to Jogiyanto (1998: 254), variable asset size is measured as the logarithm of total assets.
4. Liquidity, is the company's ability to pay debts which must be met immediately with current assets (Riyanto, 1984: 266). Formulated:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liability}}$$

5. Financial Leverage, is financial leverage is the use of debt financing (Weston and Brigham, 1993). One measure of financial leverage is:

$$Debt\ ratio = \frac{debt}{Total\ asset}$$

And the dependent variable in this study is stock beta as measured by Accounting beta, is the beta arising from the time series regression of company earnings on the average profit of all (samples) of companies (Beaver, Kettler, and Scholes, 1970).

Data analysis method

The data analysis method used, the model applied by Beaver, Kettler, and Scholes (1970) to estimate the factors affecting beta, with adjustments for the case of the Jakarta Stock Exchange. The basic equation of the model is:

$$\text{Beta} = \delta_0 + \delta_1 DP + \delta_2 AG + \delta_3 AZ + \delta_4 L + \delta_5 FL + \mu_i$$

Where :

DP : diviend payout

AG : asset growth

AZ : asset size

L : liquidity

FL : financial leverage

δ_0 : constant, here measuring the unbiased change in productivity

δ_{1-7} : regression coefficients, are used according to general definitions.

μ_i : distraction variable.

Classic assumption test

To analyze linear regression, it is necessary to test the classical assumptions. There are three kinds of assumptions that must be met, namely:

1. Non multicollinearity

The way to detect multicollinearity is to perform regression between explanatory variables. If there is a significant statistical t value, it means that there is

multicollinearity, or by looking at the partial correlation coefficient between the explanatory variables.

2. Heteroscedasticity

The heteroscedasticity test was performed using the Glesjer test, as follows:

$$|e_i| = \beta_1 X_i + v_t$$

Where:

$|e_i|$ = absolute residual value of the equation estimated

X_i = explanatory variable

v_t = disturbance element

If the t statistical value β is significant, it can be concluded that there is heteroscedasticity.

3. Non-autocorrelation

Autocorrelation occurs when the disturbance value in a certain period is related to the previous disturbance value. Autocorrelation detection was done by using the Durbin Watson d test and the Breusch-Godfrey (BG) Test.

Result and Discussion

Regression results estimation using Fixed Effect and Random Effect

The random effect model, assumes that the variation over time is also between individuals or there may be differences between unit variables.

In the significance test of the fixed effect model (F-test), it turns out that the results of rejecting H_0 are found, because the μ value in the F-test exceeds the critical value in the table according to their respective degrees of freedom, then the fixed effect model is significant and can be accepted as an estimation model. Meanwhile, in the random effect model, the LM value is less than χ^2 which means that H_0 is accepted, which means that the random effect model is not accepted so that there is no tendency between time and individuals between the dependent and independent variables.

Analysis of Estimation Results of Regression Equations

The results of the regression test carried out in this study are as follows, as summarized in the table below:

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	1.212768	0.838900		
DPR	-0.172684	0.230070	1.045673	0.1954
AG	0.436370	0.569141	1.231301	0.2534
AZ	-0.357338	0.108276	-2.264962	0.0001
LQ	0.085981	0.050445	0.214986	0.3093
FL	0.054678	0.368705	2.079093	0.8863
R Square	0.816569			
Adjusted R-Square	0.742324			
S.E. of regression	0.395336			
F-Statistic	10.99819			
Prob(F-Statistic)	0.000000			

Based on the regression results above, the regression equation of this research model is as follows

$$\text{Beta} = 1.212768 - 0.172684\text{DP} + 0.436370 \text{ AG} - 0.357338 \text{ AZ} + 0.085981\text{LQ} + 0.054678\text{FL}$$

The Adjusted R² value is 0.816569 in the fixed effect model. This shows that the 81,66 % variation change in the dependent variable can be explained by the independent variable in the model, while the remaining 18,34 % is explained by other variables outside the model used.

In the F test, it can be seen that the Fcount value is 10.99819, far above the Ftable value. So in the fixed effect model, the hypothesis which states that dividend payout, asset growth, asset size, liquidity, financial leverage, earning variability, and accounting beta have a simultaneous or joint effect on stock beta in manufacturing companies on the Jakarta Stock Exchange can be proven.

Dividend payout ratio in theory is negatively related to risk (beta) can be proved. A high level of dividend can be said that the investment made in these stocks is risk-friendly, which means that when the dividend payout ratio is high, the risk faced by investors is low

The relationship between asset growth and beta shows the desired outcome in theory. Judging from the level of significance of asset growth, it has a significant impact on increasing risk (beta). The coefficient value of asset growth is 0.437887, which means that any increase in asset growth of 1 percent will increase the beta level of shares by 0.437887 percent. Documentation of asset growth will lead to perceptions

of rational asset pricing that will work so that the indirect effect of asset growth will affect stock beta (Machado, M.A.V & Faff, R. , 2018)

The value of the asset size coefficient is -0.357338, which means that every 1 percent increase in asset size will reduce the beta level of the stock by 0.357338 percent. Total assets owned by the company shows the actual size of the company to carry out operational activities which is closely related to the return desired by investors. The high total assets will indicate the possibility of a high return that will be received by investors which can also indicate a low systematic risk when investors invest in these stocks (Akbari, P, et all, 2011)

The coefficient of liquidity has a significant negative impact on the beta of manufacturing companies' shares on the JSE of 0.085981 percent. liquidity can show or be perceived to see long-term returns on the investment made and this will impact the risk that will be borne by investors. When liquidity is low, the risk that will be borne by investors on their investment includes a fairly high systematic risk which will impact on the high beta of stocks (Ibbotson, R.G. et all, 2013).

Financial leverage ratio, gives a positive contribution to stock beta. leverage is closely related to the cost of equity that is generated when the leverage used by the company is high, it will also have an impact on high equity so that it will increase the risk received by investors as reflected by the increase in stock beta (Baker M, et all., 2019).

While from the t test partially only the asset size variable has a significant effect on stock beta, while the dividend payout ratio, asset growth, liquidity and leverage have no effect on stock beta.

Conclusion

During the observed period, all variables used in the analysis show a direction consistent with the theory expected. The test of the coefficient of asset growth, financial leverage, earning variability, and accounting beta which theoretically is expected to be positively related, as well as the sign of the dividend payout coefficient, asset size, liquidity, which theoretically is expected to be negatively related, is proven in this study.

The F test in this study uses in the fixed effect model shows that the model used in this study is to include variables dividend payout, asset growth, asset size, liquidity, financial leverage, earning variability, and accounting beta have is a good model and feasible to use to see the variation in factors that affect stock beta

Partially asset growth and earnings variability have a significant positive impact on beta. Asset size and liquidity, dividend payout ratio, financial leverage in the estimation of this study are not significantly proven.

Suggestions that can be given in connection with the results of this study include:

1. Further studies are needed regarding a more comprehensive stock beta which not only contains micro variables but also includes macro variables including socio-economic and political dimensions so that a more complete stock beta profile will be obtained.
2. It is necessary to use a longer observation period, to prove whether the stock beta on the IDX can be estimated for a longer period of time, so that the results obtained will later provide a clearer picture of the stock beta estimation.

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