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Analysis Of The Impact Of Company Size On Systemic Risk Based On Capital Asset Pricing Model In Food And Beverages Companies Listed On The Indonesia Stock Exchange Year 2009-2011

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A R T I C L E I N F O

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ABSTRACT

Before investing, investors should consider the stock beta as a measure of systematic risk. By knowing beta stocks investors can directly determine the sensitivity of the return securities market returns. By knowing the sensitivity return, it automatically investors would be able to assess how much risk it will face when investing their funds in the company's stock. Investors can also adjust the investment that is fit to return they want to earn. This study aim is to determine the impact of company size on systematic risk based capital asset pricing models. Population of this study are all food and beverages manufacturing companies listed (listing) on the Indonesian Stock Exchange from 2009 to 2011. There are 16 companies that fit in the criteria and the sample was 12 companies. Data were analyzed by multiple linear regression analysis. Results of this study showed that the size of the company significant positive effect on the systematic risk with adjusted R square value of 0.994, which means the size of the company has a strong influence in predicting systematic risk.

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1. INTRODUCTION

In this study, only systematic risk will be examined. This is because it is considered that there is one distinct feature of systematic risk, which is that it cannot be eliminated through portfolio formation (diversification). Systematic risk is also known as market risk or general risk. It is called so because this risk is a risk associated with changes that occur in the market as a whole (Tandelilin, 2001). This risk is general in nature and applies to all shares in the relevant stock exchange (Halim, 2005).

Changes in the market that cause systematic risk can be influenced by many factors, such as foreign exchange rates, government policies, and so on (Halim, 2005). These factors cause a tendency for all stocks to move together and therefore systematic risk is always present in each stock (Parmono, 2001).

Before investing, investors need to pay attention to stock beta as a systematic risk measurement tool. By knowing the beta of the stock, investors can directly know the sensitivity of security returns to market returns (Tandelilin, 2001). By knowing the sensitivity of the return,

investors will automatically be able to assess how much risk they will face if they invest their funds in the company's shares. Investors can also adjust their investment with the return they want in the future.

Because systematic risk affects investors' investment decisions, companies must pay attention to the company's internal fundamental factors to ensure that companies can create stable betas in market conditions that are always fluctuating. That is why both companies and investors need to pay attention to the magnitude of systematic risk.

Systematic risk has the potential to affect capital market performance, firm performance, and firm value. A company with a beta greater than 1 is a high-risk company and also has a higher return, because the market return changes slightly, the stock return will also change larger. Vice versa, if the beta value of the company's shares is lower than 1 then the company is a group of companies with low risk because if the market return changes, the company's stock return will change smaller (Sugiyatno and Nuswandhari, 2009).

This study will try to continue the research from Akbari, Rostami, and Veismoradi (2012) which examines the effect of firm size on systematic risk by taking samples from manufacturing companies in the Tehran stock market in 2005-2010. This proves that the size of the company has a significant effect on systematic risk. Soedjiatno, Mediawati, and Widaningsih (2009) have also investigated the effect of operating leverage and firm size on financial leverage and their implications for stock systematic risk. The study concludes that simultaneously operating leverage, firm size, and financial leverage have a significant effect on stock systematic risk.

Parmono (2001) also examined the factors that influence systematic risk. From the results of his research, it is stated that firm size / company size partially does not affect systematic risk but simultaneously financial leverage, liquidity, asset growth, company size, earning variability, and beta accounting affect systematic risk. Based on the description above, the researcher is interested in conducting more specific research on the relationship between firm size variables and systematic risk. Researchers selected several food and beverage industry companies that met the criteria as samples.

2. RESEARCH METHOD

This type of research is descriptive qualitative. Qualitative descriptive research is research that draws past and present (current) variables that are natural and not manipulated by conditions (Arikunto, 2002).

2.1 Method Of Collecting Data

The data collection method in this study is a documentation technique, which collects data from each sample in the period 2009-2011 which is sourced from fact books published by the Indonesia Stock Exchange (IDX).

2.2 Data Analysis Method

The data analysis method used in this study is statistical analysis using SPSS version 18 software. The methods and techniques of analysis are carried out in the following stages:

a. Classical assumption test

The use of regression analysis in statistics must be free from classical assumptions. The classical assumption tests used in this study are normality, heteroscedasticity, and autocorrelation tests.

b. Hypothesis test

The hypothesis was tested by multiple linear regression analysis to analyze the effect of the independent variable on the dependent. To test whether the proposed hypothesis is accepted or rejected, t-test (t-test) and F-test (F-test) are used.

3. RESULTS AND DISCUSSIONS

3.1 Descriptive statistical analysis

Descriptive statistics provide an overview of the minimum value, maximum value, average value and standard deviation of the data used in the study.

Table 1. Descriptive Statistics

Variable	N	Minimum	Maximum	mean	Std. Deviation
Systematic risk	36	,01	93.95	9.4601	23.00933
Stock market value	36	50.00	359000.00	32242,1944	80970.75983
Stock book value	36	36.00	36859,00	5118,3611	10954.71009
Company sales rate	36	134.00	45332.00	4741,7778	11085,43866
Stock trading volume	36	,00	10912.00	980,3861	2258,82681
Price Earning Ratio	36	2.74	34.66	15,1300	8.60620
Valid N (listwise)	36				

Based on the data from table 1 it can be explained that:

a. The systematic risk variable (Y) has a sample (N) of 36, with a minimum (smallest) value of 0.01 , a maximum (largest) value of 93.95 , and a mean (mean value) of 9.4601 . The standard deviation of this variable is 23.00933.
b. company size variable (X) has a sample (N) of 36 for each indicator as described below.
c. The stock market value indicator has a sample (N) of 36, with a minimum (smallest) value of 50 , a maximum (largest) value of 359000 , and a mean (average value) of 32242,1944. The standard deviation of this indicator is 80970.75983.
d. The stock book value indicator has a sample (N) of 36, with a minimum (smallest) value of 36, a maximum (largest) value of 36859, and a mean (average value) of 5118.3611. The standard deviation of this indicator is 10954.71009.
e. The company's sales level indicator has a sample (N) of 36, with a minimum (smallest) value of 134 , a maximum (largest) value of 455332 , and a mean (average value) of 4741.7778 . The standard deviation of this indicator is 11085,43866.
f. The stock trading volume indicator has a sample (N) of 36, with a minimum (smallest) value of 0 , a maximum (largest) value of 10912 , and a mean (average value) of 980,3861 . The standard deviation of this indicator is 2258,82681.
g. The price earning ratio indicator has a sample (N) of 36, with a minimum (smallest) value of 2.74, a maximum (largest) value of 34.66, and a mean (average value) of 15.13. The standard deviation of this indicator is 8.60620 .

3.2 Classic assumption test

The classical assumption test in this study was carried out using the SPSS version 18 statistical program.

a. Normality test

This test aims to determine whether in the regression model, the confounding or residual variables have a normal distribution. In this study, graph analysis and statistical analysis were used as normality test tools.

1) Graph analysis

Graph analysis can be used with two tools, namely histogram graph and PP Plot graph. Good data is data that has a normal distribution pattern. In the histogram graph, the data that follows or approaches the normal distribution is the data distribution with a bell shape. In the PP Plot graph, a data is said to be normally distributed if the data points are not skewed to the left or right, but spread around the diagonal line. Normality test results with histogram graph and normal probability plot is as shown below:

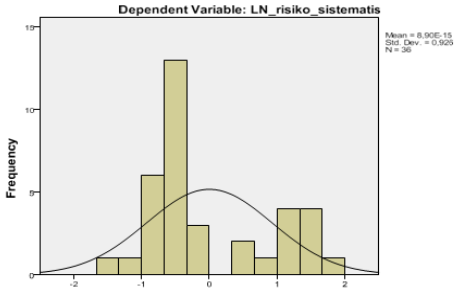

Figure 1. Histogram

The histogram graph shows that the data gives a normal distribution pattern.

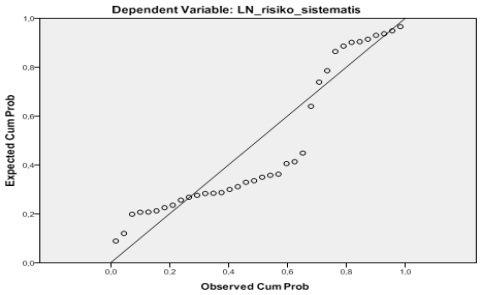

Figure 2. PP Plot Graph

The results of the normality test using a graph plot show that the points on the scatterplot follow the data along the diagonal line. This means that the data is normally distributed.

2) Statistic analysis

Statistical data test using the Kolmogorov-Smirnov model was conducted to determine whether the data was normally distributed or not. If the significance value or probability value is > 0.05, then the data distribution is normal but if the significance value or probability value < 0.05, then the data distribution is not normal.

Table 2. Kolmogorov-Smirnov . Model Test
One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		36
Normal Parameters, b	mean	,0000000
	Std. Deviation	.17797250
Most Extreme Differences	Absolute	,233
	Positive	,233
	negative	-,132
Kolmogorov-Smirnov Z		1.398
asymp. Sig. (2-tailed)		0.080

a. Test distribution is Normal.
b. Calculated from data.

Based on the results of statistical tests using the Kolmogorov-Smirnov model as shown in table 2, it can be concluded that the data are normally distributed. This can be seen from the value of Asymp.Sig.(2 tailed) Kolmogorov-Smirnov is 0.080 , because 0.08 > 0.05.

b. Heteroscedasticity test

The heteroscedasticity test aims to test whether in the regression model there is an inequality of variance from the residuals of one observation to another. If the variance from one observation to another is constant, it is called homoscedasticity and if it is different it is called heteroscedasticity.

How to detect the presence or absence of heteroscedasticity symptoms is to look at the scatterplot graph generated from data processing using the SPSS program. The basis for decision making is if there is a certain pattern, such as dots that form a certain regular pattern (wavy, widen then narrowed), then it indicates that heteroscedasticity has occurred and if there is no clear pattern, and the dots spread above and below the number 0 on the Y axis, then there is no heteroscedasticity (Ghozali, 2005). The following is attached a scatterplot graph to analyze whether heteroscedasticity symptoms occur or not by observing the spread of the points on the graph.

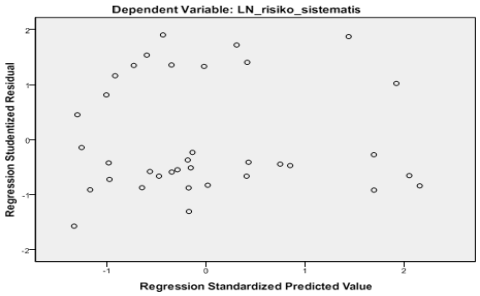

Figure 3. Scatterplot

From the scatterplot graph, it can be seen that the points spread randomly with no clear pattern and are spread both above and below the number 0 on the Y axis. Thus, it can be concluded that there is no heteroscedasticity.

c. Autocorrelation test

This test aims to see whether in a linear model there is a correlation between the nuisance error in period t and the error in period t-1 (previous). A good regression model is one that is free from autocorrelation. Autocorrelation problems generally occur in regressions with time series data. There are several ways that can be used to detect problems in autocorrelation including the Durbin-Watson test. The conditions for the Durbin-Watson test are as follows:

1) DW numbers below -2 means that there is a positive autocorrelation,
2) DW number between -2 to +2 means there is no autocorrelation,
3) DW numbers above +2 mean that there is a negative autocorrelation.

Table 3. Durbin-Watson Test Results
Model Summaryb

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,997a	,995	,994	,19223	,382

d. Regression analysis

Based on the results of the classical assumption test that has been carried out above, it can be concluded that it is feasible to carry out further statistical analysis, namely testing the hypothesis. To test the hypothesis, the researcher used multiple analysis. The results of data processing with regression analysis are as follows:

Table 4. Regression Coefficient
Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-7,712	,237		-32.597	,000
	LN_value_market_stock	1.048	.044	1.052	23,755	,000
	LN_book_value_stock	-,072	0.060	-0.056	-1,211	,235
	LN_sale_level	-,002	0.030	-,001	-,066	,947
	LN_volume_trade_ share	-,002	,010	-,003	-,209	,836
	LN_PER	-,096	0.056	-,025	-1,710	,098

a. Dependent Variable: LN_systematic_risk

3.3 Hypothesis test

To test the hypothesis, the researcher used multiple regression analysis. One way is to test the coefficient of determination. The value used to see the coefficient of determination test is the Adjusted R2 value, essentially measuring how far the model's ability to explain the variation of the dependent variable is. In this case Adjusted R2 is used to determine how much influence the size of the company has on systematic risk. "Adjusted R2 is considered better than R2 because the value of Adjusted R2 can increase or decrease if one independent variable is added to the model" (Ghozali, 2005). Based on the results of data processing with statistical programs, the following results are obtained:

Table 5. Adjusted R2
Model Summaryb

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,997a	,995	,994	,19223	,382

a. Predictors: (Constant), company size

b. Dependent Variable: LN_systematic_risk

In the summary model above, it can be seen that the overall regression analysis results show an R value of 0.997 indicating that the correlation or relationship between systematic risk (dependent variable) and firm size (independent variable) has a very close relationship, namely 99.7%. If the number R is between 0.8 and 0.99 then the relationship between the independent variable and the dependent variable is very close.

The results of the study using data from manufacturing companies in the food and beverage industry from 2009 to 2011 show that company size has a significant relationship with systematic risk. This is indicated by the significance value of the company size indicators which have a Sig value. of 0.000 < 0.05 after the F test.

The results of this study are in line with research by Tandelilin (1997) which states that firm size has a significant positive effect on systematic risk. Likewise with Elton's (2003) research which results state that company size affects stock beta.

The results of simultaneous variable testing (F test) show that the independent variable, namely firm size, has a significant relationship with systematic risk. This is indicated by a significance value of 0.000 which is smaller than 0.05.

The adjusted R square value of 0.994 indicates that 99.4% of the variability of systematic risk can be explained by company size indicators, while the remaining 0.6% is explained by other factors outside the study.

Thus, it can be concluded that company size can be used simultaneously to see its relationship with the systematic risk of manufacturing the food and beverage industry listed on the Indonesia Stock Exchange in 2009-2011. The results of this study are in line with previous studies which show that simultaneously the variables studied have a relationship with systematic risk.

4. CONCLUSION

This study aims to prove the impact of firm size on the systematic risk of food and beverage manufacturing companies listed on the Indonesia Stock Exchange during the 2009-2011 period.

Based on the data analysis and discussion that has been presented in Chapter IV, the conclusion that can be drawn is that indicators in measuring companies simultaneously have a significant relationship with systematic risk, which is indicated by a significance value of 0.000 which is smaller than 0.05 after being carried out. F test. The adjusted R square value of 0.994 indicates that 99.4% of the variability of the company's health can be explained by the size of the company, while the remaining 0.6% is explained by other factors outside the study.

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