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The Influence of Financial Distress Using Altman Z-Score, The Beta of Stocks and Inflation To The Stock Return

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ABSTRACT

Objective – Stock is one securities among other securities, as a high risk instrument. Stock classified as high risk due to reflection in the uncertainty of the rate of return to be received by investors in the future. The purpose of this research is to examine of financial distress as measured by the Altman Z-Score, systematic risk as measured by beta stocks and macroeconomic measured by inflation on stock returns Manufacturing Company listed on the Stock Exchange 2008-2012 period

Methodology/Technique – From 133 companies listed, 75 companies are taken as sample by using purposive sampling technique. Panel data regression analysis shows that the overall effect of variables is equal to 28.7%.

Findings – Partially, the variables that affect the stock returns are financial distress with Altman Z-Score, beta stocks and inflation.

Novelty – Financial distress with the measurement using the Altman Z-Score.

Type of Paper: Empirical

Keywords: Stock return; Financial distress; Altman Z-Score; Systematic risk; Beta stocks and Inflation

JEL Classification: E44, F14, G01.

1. Introduction

Financial risk is the risk associated with the company's decision to use debt in financing their capital. In this case the higher the proportion of debt in the capital structure resulted in a risk of bankruptcy that will happen is also getting bigger. The risk of bankruptcy can be avoided, but lead to higher costs incurred from the effort to avoid the risk of bankruptcy. This is where the trade-off to minimize losses that may arise from the use of excessive debt should be the sacrifice of the incurrence of costs in order to avoid the risk of financial distress or bankruptcy. Brigham and Gapenski (1996) said that the greater the financing from debt, and the greater the burden of fixed rate, the greater the probability that the decrease in earnings will lead to financial difficulties, so the higher the probability of financial distress will about to happen.

One source of information about the potential financial distress can be seen on the company's financial statements through the calculation of financial ratios. The main initiators of the research related to the company's bankruptcy risk (financial distress) is Beaver (1966), which presents the approach of a single

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variable (univariate) of the discriminant analysis approach which was later expanded into a dual variables (multivariate) by Altman (1968). In that study, financial distress of an enterprise was being proxied Altman's Bankruptcy Prediction Model (Z-Score). If we want to know about the contribution of the risk of a set of stocks with a good diversification, it is not good to think about how much risk from the shares individually if those are owned separately, but we need to measure market risk or often referred to systematic risk, and this brings us to measure how sensitive it is to the market movements. Systematic risk is the risk that cannot be eliminated by diversification, that risk is often referred to as market risk or beta (β).

As described above, financial distress by using the Altman Z-Score, beta stocks and inflation are some of the factors that is fathomed to have links with stock returns are generated. Thus, research is needed to examine the conceptual model of the effect of financial distress by using the Altman Z-Score, beta stocks and inflation to the share's return in companies that are listed in Indonesia Stock Exchange between the year of 2008-2012.

2. Literature Review

Share's return in this study is the change in the share price (capital gain / loss). According to Tandelilin (2001), in the capital market at least a risk that should be observed by investors in general are: a) Interest rate risk, b) Market risk, c) The inflation risk, d) risks of business, e) Financial risk, f) Liquidity risk , g) currency exchange risk and h) the risk of the countries. Each of these risks exists interrelatedly and dominantly. But sometimes those risks are completely unrelated.

Financial risk is the risk associated with the company's decision to use debt capital financing. In this case the higher the proportion of debt in the capital structure resulted in a bigger risk of bankruptcy. This is where the trade-off in which to minimize losses that may arise from the use of excessive debt should be the sacrifice of the incurrence of costs in order to avoid the risk of financial distress or bankruptcy. Other risks that affect stock returns are market risk (beta stocks) and inflation. Each of these variables that have an influence are as follows:

2.1 Financial Distress with Altman Z-Score Model and Stock Return

The company's risk from the standpoint of the investor can be derived from business risks and financial risks (Brigham et al., 2011). The company's financial risk can be drawn from the capital structure, the use of debt to capital as the basis for an investment company. The policy regarding capital structure involves a trade-off between risk and return (return). The optimal capital structure will enhance shareholder value through the decrease of the tax and the decrease in the cost of equity. The use of debt will reduce the tax burden in certain amount of interest, on the other hand the use of debt will also reduce the cost of capital stock. However, the use of excessive debt will increase default risk (financial risk) due to higher interest expense and debt's principal to be paid by the company. The condition of financial distress in a company in general is responded by external parties, one of which is the investor. Investors need this information to assess the company's business continuity (Foster, 1986). With the signal of financial distress, investors will decline and further down the share price, due to that market conditions, the demand for their shares declining. The declining of the share price will affect the decrease in stock return.

In 1968, Altman, Edward conducts research that successfully creates a model known as Altman's Bankruptcy Prediction Model (Z-Score). Altman's Z-Score can be used as an assessment tool to assess financial performance and can also be used as predictors of bankruptcy. In this study, financial distress of an enterprise is proxied by Altman's Bankruptcy Prediction Model (Z-Score). In Altman's Bankruptcy Prediction Model (Z-Score), The higher the Z-Score, the lower the risk of bankruptcy of a company and the better the health of the company is. So, financial distress that is assessed by using indicators of Altman Z-Score had a positive effect on stock return.

2.2 Beta Shares and Stock Return

Systematic risk is the risk that cannot be diversified (avoided). These risks are related to conditions prevailing in the market in general, such as changes in the macro economy, interest rate risk, etc. This risk affects all companies and cannot be eliminated by diversification. Systematic risk has an impact on the market, so the risk is often referred as market risk. Parameters that can be used to calculate the systematic risk is beta (β).

Systematic risk (beta) can not be eliminated by forming an investment portfolio. Therefore, for the investors that risk will be more relevant to be considered in choosing the combination of stocks in the portfolio that they develop. So, to determine the level of profits that are required or expected (expected return) of a stock, then it must be associated with systematic risk (which is inevitable) of the stock concerned. The relationship between the systematic risk with profit levels can be seen from the pictures below:

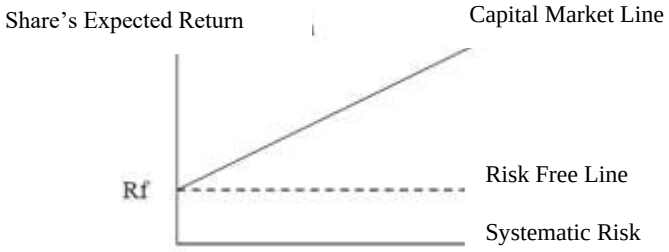

Figure 1. Relations Risk and Return (Tandelilin, 2001)

The expected profit is depicted in the vertical axis, while systematic risk is described in the horizontal axis. Linear line (slash) which describes the systematic risk with an expected profit rate is called the capital market line.

From the picture above, the expected profit is higher than the risk-free rate profit (risk free rate / RF). The capital market line shows that the greater the systematic risk, the higher the level of expected return (expected return) that expect from the investors. Tilt (slope) of the capital market line shows how much an investor showed their dislike for risk (risk averse). The increase of the steep slope of the capital market line shows the investor's dislike of risk.

In portfolio theory of Capital Asset Pricing Model (CAPM) states that the greater the risk of an investment, the greater the returns required by investors. Thus the relationship between return and risk required by investors is positive and linear. Risks are often associated with the deviation of outcome that received compared with the expectation. On the concept of CAPM, beta can be estimated by regressing stock returns to the market return. Beta is a measure of return volatility of a security or a portfolio to the market return. Volatility is the fluctuation of the return of a security in a given period. If the statistical' fluctuations of securities returns following the return fluctuations of the market, the beta of the securities is 1. For example, if the market's return increased by 5%, then the investor will expect an increase in return securities by 5% too. From the description above, it can be concluded that there is a positive influence between beta stocks and stock returns.

2.3 Inflation and Stock Return

Inflation occurs because of demand pull inflation that is led to the increase of demand for goods and services, and moreover caused the increase of demand for factors of production. Finally, it will cause the price of goods produced by companies increased, while the number of goods produced decreased. This will cause the level of corporate profitability declining. If profits decline, slowly the company's performance will also decrease. This is a bad news for investor, which can result in reduction of investor's interest in the company's stock and can cause a drop in stock prices and stock returns will also decrease (Gitman, 2003).

A high inflation rate indicates that the risk to make large investments because of high inflation will reduce the rate of return of the investor. Inflation affects the economy through income and wealth, and through changes in the level and efficiency of production. Unpredictable inflation usually favors the debtor, profit-seeker, and speculators. From the description above, it can be concluded that the higher the inflation rate, the lower the stock returns will be, or in other words inflation have a negative effect on stock returns.

Based on the study of the theory and the results of previous research in the relationship between financial distress by using the Altman Z-Score, beta stocks and inflation on stock returns, the authors make the research model as follows:'

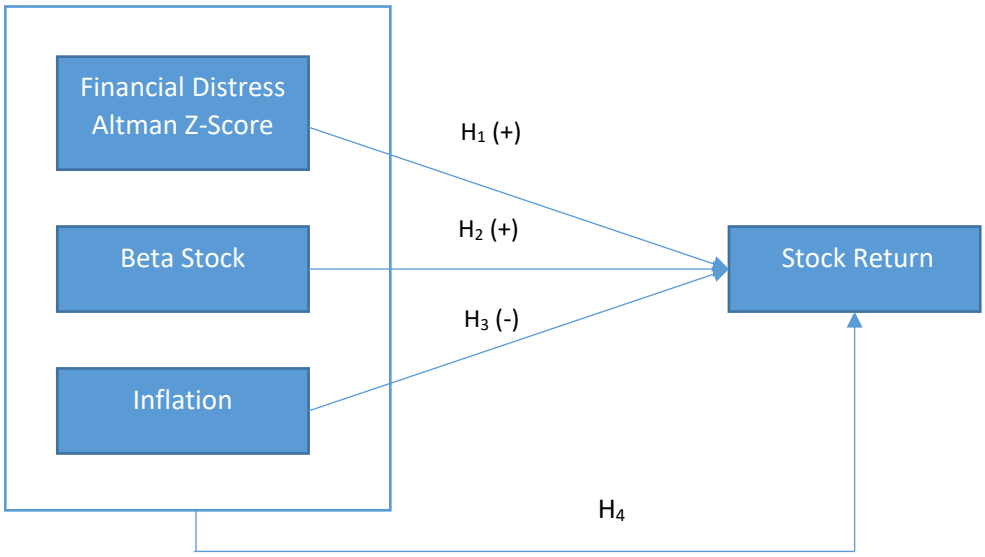

Figure 2. Research Model

2.4 Research hypothesis

The hypothesis is a temporary answer to the problem of research, with the truth remains to be tested empirically. Based on the theory and the results of previous studies, the hypothesis of this study can be formulated as follows:

Hypothesis 1: Financial distress by using the Altman Z-Score has a positive influence on stock return in the manufacturing companies listed in Indonesia Stock Exchange in the year of 2008-2012.

Hypothesis 2: Beta Stocks have a positive effect on stock returns in the manufacturing companies listed in Indonesia Stock Exchange in the year of 2008-2012.

Hypothesis 3: Inflation has a negative influence on stock returns on companies listed in Indonesia Stock Exchange in the year of 2008-2012.

Hypothesis 4: Financial Distress by using the Altman Z-Score, Beta stocks and inflation simultaneously affect the stock returns on companies listed in Indonesia Stock Exchange in the year of 2008-2012.

3. Methodology

The research object (population) in this research is manufacturing companies listed in Indonesia Stock Exchange (BEI) in the year of 2012 in the amount of 133 companies and samples taken in the amount of 75 companies. The selection of samples using purposive sampling, i.e. sampling based on certain criteria (Hartono, 2004).

Type of research that was used in this research is the study associative / relationship. This study uses the panel data regression model. Data collection techniques used in this research are documentation study. The data used in this research secondary data that are the company's annual financial statements that have been

audited by independent auditors on all manufacturing companies. Data obtained from the official website of the Indonesian Stock Exchange (www.idx.co.id) and the rate of inflation and interest rate (BI rate) were collected from the site www.bi.go.id and individual stock prices and JCI through the site finance.yahoo.com.

4. Results

The result of hypotheses testing above are as follow:

Table 2. Research's Result Summary

No	Variable	Hypotheses	Result	Decision
1.	Altman Z-Score	+	+	Ho rejected
2.	The Beta of Stock	+	-	Ho rejected
3.	Inflation	-	-	Ho rejected
4.	Altman Z-Score, The Beta of Stock, and Inflation	Simultaneously influential	Simultaneously influential	Ho rejected

5. Discussion

5.1 Analysis The Effect of Altman Z-Score to Stock Return

In this study stated that the first hypothesis was accepted. The result showed that the bankruptcy prediction model Altman Z-Score had a positive and significant influence on stock return. Z-Score measures the potential of bankruptcy of a company and if the value of the Z-Score gets bigger, it indicates that the potential of bankruptcy will get smaller and vice versa. The cause of the negative and the low value of the Z-Score of a company because the company has a lower operating income, thus demonstrating the company's ability to generate profits from the used-assets is small. Besides, the low value of the Z-Score of the company is due to debt accumulation that cannot be paid, especially short-term debt thereby it affects the company's working capital. Company with negative working capital will have problem in covering short-term liabilities due to the unavailability of sufficient current assets to cover those obligations.

Although the value of the Z-Score each year has a high negative value, investors will still respond to that value, because investors will need that value for predicting the potential of bankruptcy of a company in the future. With the increase in the value of the Z-Score indicates that the company's financial performance has improved from the previous value despite of previous negative Z-Score. The potential of bankruptcy using Altman Z-Score also illustrates the ability or failure to create a cash flow for the company so it can be distributed to the shareholders or to the company's creditors.

5.2 Analysis of Effect of Variable Beta Shares to Stock Return

The higher the beta of the stock in a company, the higher the stock returns received by investors should be; because the company's stock price is sensitive to changes in the stock index or a market index will be very risky. But in this study, the result is the opposite, where the higher the beta of the shares of a company, the lower stock returns that will receive by investors.

5.3 Analysis of The Influence of Variables of Inflation on Stock Return

These results indicate that higher inflation will lead to lower stock returns, because it causes a rise in prices of goods in general. This condition affects the cost of production and the selling price will be higher. High prices will lead to the decreasing of purchasing power and this will affect the company's profits and ultimately

affect the stock prices' decline. The results of this study support the findings of researchers Siklos and Kwok (1999), Crosby (2001), Spyros (2001), Ugur and Ramazan (2005), Yeh and Chi (2009), Ahmed and Mustafa (2012) who found a negative relationship between inflation and stock returns.

5.4 Analysis of Effect of Variable Altman Z-score, Beta Stocks and Inflation on Stock Return

The F-Test's results showed that the variables of Altman Z-Score, beta stocks, and inflation has a simultant influence on stock returns. The magnitude of the overall effect of variables is 28.7%, and the remaining 71.3% is influenced by other factors. The influence of these variables tends to be smaller because the result is less than 50%, so it can be said that there are other factors affecting the stock return. Other factors that can affect stock returns among others, are the company's fundamental factors, company size, BI Rate, and other factors.

6. Conclusion

From the test results that has been described in the previous chapter, it can be summarized as follows: (1) Financial distress with the measurement using the Altman Z-Score has a positive influence on stock returns. That means the information of the company's performance in terms of financial distress here used Altman Z-Score has influenced the market reaction / investor. (2) systematic risk measured by the beta of stock (β) had a negative on stock returns. This means that the information about a company's performance using systematic risk beta affects the stock market reaction / investor, but with a negative coefficient direction (opposite). (3) The inflation rate has a negative effect on stock returns. This means that macro-financial information used here is inflation and may affect the reaction of the market / investor.

References

Ahmed, R. & Mustafa, K. (2012). "Real Stock Returns and Inflation in Pakistan". *Research Journal of Finance B and Accounting*. *3*(6), 97-102.

Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The journal of finance*, *23*(4), 589-609.

Beaver, W.H. (1966). "Financial Ratios as predictors of failure". *Journal of Journal of Accounting Research*. *4*, 71-111.

Brealey, R. A., Myers S. C,. & Marcus, A.J. (2001). *Fundamentals of Corporate Finace*. Third Edition Singapore: Mc Graw-Hill.

Brigham, E. F., Gapenski, L. C. (1996), *Intermediate Financial Management*, Fifth Edition.

Brigham, E. F & Houston J.F. (2011). *Financial management.* Eighth Edition. Jakarta: Erlangga.

Crosby, M. (2001). Stock returns and inflation. *Australian Economic Papers*, *40*(2), 156-165.

Dichev, I. D. (1998). Is the risk of bankruptcy a systematic risk?. *the Journal of Finance*, *53*(3), 1131-1147.

Foster, G., (1986). *Financial Statement Analysis*. Second Edition. Prentice Hall International. NJ: Englewood Cliffs.

Gitman, Lawrence J. (2003). *Principles of Managerial Finance*, seventeenth edition. Massachusetts: Addison-Wesley Publishing Company

Graham, F. C. (1996). Inflation, real stock returns, and monetary policy. *Applied Financial Economics*, *6*(1), 29-35.

Hartono, J. (2004). *Business Research Methodology: Misguided and Experiences*. Yogyakarta: BPFE-UGM.

Patra, T., & Poshakwale, S. (2006). Economic variables and stock market returns: evidence from the Athens stock exchange. *Applied Financial Economics*, *16*(13), 993-1005.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, *16*(3), 289-326.

SANDOVAL A, E. D. U. A. R. D. O., & SAENS N, R. O. D. R. I. G. O. (2004). The conditional relationship between portfolio beta and return: evidence from Latin America. *Cuadernos de economía*, *41*(122), 65-89.

Siklos, P. L., & Kwok, B. (1999). Stock returns and inflation: a new test of competing hypotheses. *Applied Financial Economics*, *9*(6), 567-581.

Spyros, I. (2001). "Stock returns and inflation; evidence from emerging markets". *Applied economics letter*. *8*, 447-450.

Tandelilin, E (2001). *Investment Analysis and Portfolio Management*. Yogyakarta: BPFE.

Ugur, S., & Ramazan, S. (2005). Inflation, Stock Returns, and Real Activity in Turkey. *The Empirical Economics Letters*. *4*(3), 181-192.

www.bps.go.id, [Online] [February 2014].

www.idx.co.id, [Online] [February 2014].

Yeh, C.C & Chi, C. F. (2009). The Co-Movement and Long-Run Relationship between Inflation and Stock Returns: Evidence from 12 OECD Countries. *Journal of Economics and Management*. *5*(2), 167-186.