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Analysis of Stock Prices: A Case Study of Indonesia Stock Exchange

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Abstract---*This paper aims to examine the effect of bankruptcy predictions by the Altman Z-Score formulas to stock prices. This research was conducted on the basis of the phenomenon of retail companies throughout the period 2013-2017. This type of research is causal explanatory. The research population is 21 retail companies. The results showed that the prediction of bankruptcy using the Altman Z-score forumulas had a significant effect on stock prices in retail companies*

Keywords---*Bankruptcy Prediction, Altman Z-Score Method, Stock Price*

I. INTRODUCTION

Economic conditions in Indonesia that are still unstable have resulted in a high risk of a company experiencing financial difficulties or even bankruptcy. In such conditions, the share price of the company concerned tends to rise. But on the contrary, if the company goes bankrupt, there will be a decrease in the company's stock price on the stock market.[2] Investors and potential investors choose investment instruments in stocks because stocks are able to provide relatively fast capital gains and provide dividends.

S & P Analyst Global Ratings as reported by Business Insider, in the first quarter of this year there were around 20 companies at risk of going bankrupt due to default. The S & P report says, there are several retail industries that are at risk of default based on financial statements announced last month. There are even some retail industries that have filed for bankruptcy.[3]

Bankruptcy is uncertainty about the ability of a company to continue its operations if its financial condition has decreased. The risk of bankruptcy for a company can be seen and measured through financial statements, by conducting a ratio analysis of financial statements issued by the company concerned.Therefore the risk of bankruptcy is another challenge that must be faced by a company.

II. LITERATURE REVIEW

II.I. Altman Z-Score Method

Financial difficulties are a situation where cash flows from a company's operating activities are not enough to meet current liabilities and the company is forced to take action to correct them, this condition can be called bankruptcy, bankruptcy is a failure of the company in managing its finances.

Research on bankruptcy of the company was carried out by Altman in 1966 by taking a sample of 66 companies where half of the samples were bankrupt companies. Altman's research gets 5 ratios that can be combined for companies that are bankrupt, gray areas, healthy. [4]

$$Z=1,2X_1+1,4X_2+3,3X_3+0,6X_4+1,0X_5$$

Dimana ;

X_1= *NetWorking Capital/Total Assets*

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[2]Ovi Novi Irama, "THE EFFECT OF BANKRUPTCY POTENTIALS ON STOCK PRICES IN MANUFACTURING COMPANIES LISTED IN INDONESIA STOCK EXCHANGE," *Bisnis Net* 1, no. 1 (July 2, 2018): 1, accessed June 22, 2019, http://jurnal.dharmawangsa.ac.id/index.php/bisnet/article/view/39.

[3]"Bisnis Ritel Masih Lesu, 18 Perusahaan Terancam Bangkrut," *kumparan*, accessed June 24, 2019, https://kumparan.com/@kumparanbisnis/bisnis-ritel-masih-lesu-18-perusahaan-terancam-bangkrut.

[4]Edward I Altman, "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy," *The Journal of Finance* (n.d.): 24.

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X_2= *Retained Earnings/Total Assets*
X_3= *Earnings Before Interest and Tax/Total Assets*
X_4= *Market Value Equity/Book Value of Total Liabilities*
X_5= *Sales/Total Assets*

The Altman Z-score model developed by Altman (1968, 1984) succeeded in classifying companies that went public and did not go public in the category of not going bankrupt, bankrupt, or in the gray area. assessment criteria as follows:

1. *Z-score> 2.99 is categorized as a very healthy company so it does not experience financial difficulties.*
2. *Z-score <2.99 is in the gray area so that it is categorized as a company that has financial difficulties, but the possibility of being saved and the possibility of bankruptcy is as big as the decision of the company's management as a decision maker.*
3. *Z-score <1.81 is categorized as a company that has very large financial difficulties and is at high risk so the possibility of going bankrupt will be very large.*

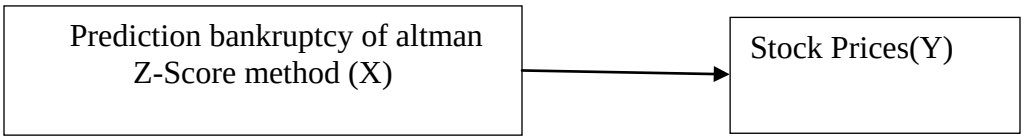
Ratio analysis using Altman Z-Score can be done both in open companies and closed companies, and for manufacturing companies and service companies. The ratios used in this study include liquidity ratios, profitability ratios, economic rentability, market value ratios and activity ratios.

II.II. Stock Price

Stock prices are often used as a reflection of the performance of a company. Companies with ever-increasing stock prices are judged by investors to have a good performance, thus attracting their interest in buying the company's shares. The stock price in question is the price of shares traded on the stock market.

The stock price is "the price of shares in the stock market determined by market participants based on the demand and supply of the relevant shares on the stock market". More and more investors will demand a stock then the stock price will continue to rise, and vice versa.[5]

II.III. Framework of thinking



Based on this framework, the hypothesis is as follows:

H_0 : Bankruptcy prediction using the Altman Z-score method does not affect stock prices
H_1 : Bankruptcy predictions using the Altman Z-score method affect stock prices

III. RESEARCH METHODS

III.I. Types of Research

The type of research used is Causal explanatory research, Causal is a variable affecting other variables. Explanatory Research is research that aims to explain the relationship between variables and research phenomena[6] so Causal Explanatory is to explain the relationship between variables and testing hypotheses that have been formulated previously and aims to explain various events and research phenomena.

III.II. Populasi dan Sampel Penelitian

The population in this study are all shares of retail companies listed on the Indonesia Stock Exchange (IDX) for the period 2013-2017. That is 21 companies. And the sample used is purposive sampling.

[5]Irama, "THE EFFECT OF BANKRUPTCY POTENTIALS ON STOCK PRICES IN MANUFACTURING COMPANIES LISTED IN INDONESIA STOCK EXCHANGE."

[6]Donald R. Cooper and Pamela S. Schindler, *Business Research Methods* (McGraw-Hill/Irwin, 2011).

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List of samples of retail companies listing from 2013 - 2017

No.	Stock code	Issuer Name
1	ACES	Ace Hardware Indonesia Tbk
2	AMRT	Sumber Alfarian Trijaya Tbk
3	CENT	Centrama Telekomunikasi Indonesia Tbk *d.h Centrin Online Tbk*
4	CSAP	Catur Sentosa Adiprana Tbk
5	ECII	Electric City Indonesia Tbk
6	ERAA	Erajaya Swasembada Tbk
7	GLOB	Global Teleshop Tbk
8	GOLD	Golden Retailindo Tbk
9	HERO	Hero Supermarket Tbk
10	KOIN	Kokoh Inti Arebama Tbk
11	LPPF	Matahari Department Store Tbk *d.hPacific Utama Tbk*
12	MAPI	Mitra Adiperkasa Tbk
13	MIDI	Midi utama Indonesia Tbk
14	MPPA	Matahari Putra Prima Tbk
15	RALS	Ramayana LestariSentosa Tbk
16	RANC	Supra Boga Lestari Tbk
17	RIMO	Rimo International Lestari Tbk *d.h Rimo Catur Lestari Tbk*
18	SKYB	Skybee Tbk
19	SONA	Sona Topas Tourism Industry Tbk
20	TELE	Tiphone Mobil Indonesia Tbk
21	TRIO	Trikomsel Oke Tbk

Source : idx.co.id

III.III. Data Analysis Technique

The data analysis technique used is simple linear regression analysis with the help of SPSS version 23.0. The regression equation is:

Y = a + bX + e

Where:

Y : Stock Price
X : Z-Score Value
a : Constant
b : free liner regression
e : error

VI. RESEARCH RESULTS AND DISCUSSION

VI.I. Research Result

In this study, the independent variable is the prediction of bankruptcy with the Altman Z-Score method and the dependent variable is the Stock Price, before hypothesis testing, these independent variables are measured using 5 ratios and entered into the Altman Z-Score Method, that is :

$$Z=1,2X_1 + 1,4X_2 + 3,3X_3 +0,6X_4 +1,0X_5$$

VI.II. Data Analysis and Hypothesis Testing

The results of processing the Z-Score Altmat Method, then the researchers used simple regression analysis to determine the effect of independent variables on the dependent variable.

VI.III. Normality Test

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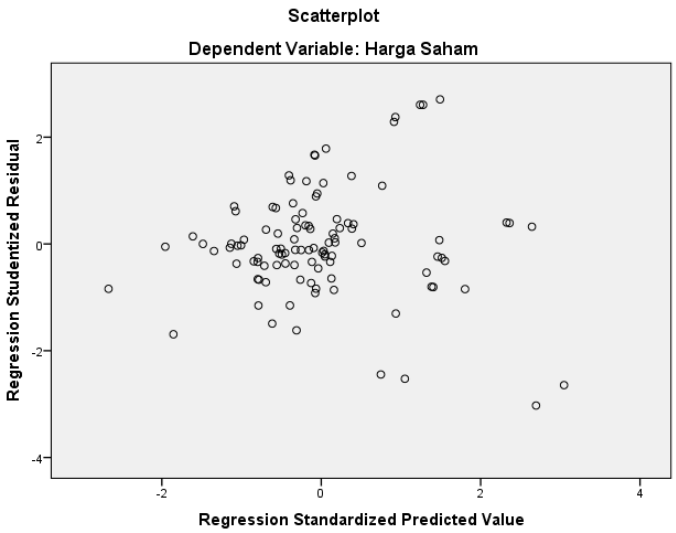
Kolmogorov-Smirnov Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		105
Normal Parameters[a,b]	Mean	0
	Std. Deviation	1.0443084
Most Extreme Differences	Absolute	0.12
	Positive	0.12
	Negative	-0.103
Kolmogorov-Smirnov Z		1.225
Asymp. Sig. (2-tailed)		0.099
a. Test distribution is Normal.		
b. Calculated from data.		

Source: Output SPSS

Based on the table, it can be concluded that the data is normally distributed.

Heteroscedasticity Test



The results of heteroscedasticity test showed that the variables studied did not violate the assumptions of heteroscedasticity in the regression model.

Autocorrelation TestValue of Runs Test Statistics

Runs Test	
	Unstandardized Residual
Test Value[a]	2.79663[b]
Cases < Test Value	104
Cases >= Test Value	1
Total Cases	105
Number of Runs	3
Z	0.139
Asymp. Sig. (2-tailed)	0.889
a. Mode	
b. There are multiple modes. The mode with the largest data value is used.	

Source: Output SPSS

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Based on the results, it can be concluded that in the regression model there is no problem of autocorrelation.

VI.IV. Simple Linear Regression Analysis

The results of the calculation of a simple linear regression coefficient based on research data using SPSS for Windows version 23.0 obtained the results of regression analysis as follows:

Results of the Regression Coefficient

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.104	0.222		27.469	0
	Bankruptcy prediction (altman *Z-Score*)	0.31	0.124	0.239	2.498	0.014
a. Dependent Variable: Harga Saham						

Source: Output SPSS

Based on the table above, it shows that the effect of bankruptcy prediction by the Altman Z-Score method on stock prices is 0.310, so the regression equation is obtained as follows:

$$Y = 6{,}104 + 0{,}310\ X$$

a. A constant of 6.104 means that if the Altman Z-Score bankruptcy prediction variable is zero, then the share price variable is 6.104.
b. The coefficient of the Z-Score (X) value of 0.310 means that if the predictive bankruptcy variable of the Altman Z-Score method increases by one unit, then the variable share price will increase by 0.310.

V. DISCUSSION

V.I. Retail Company Stock Prices for the 2013-2017 Period at the Indonesia Stock Exchange.

Overall, the development of stock prices of retail companies listed on the IDX in the period 2013-2017 continues to decline every year. This decline is certainly a lot caused by various factors.In 2017 the average stock price of Retail companies listed on the Stock Exchange became the lowest compared to previous years (Saudi, 2018).

PT. Rimo International Lestari Tbk the company with the lowest share price from 2013 to 2016 is IDR 70, then in 2017 PT Centrama Telekomunikasi Indonesia Tbk became a company with the lowest share price of Rp 80. While the company that has the highest share price during 2013 to 2017 is PT Matahari Department Store Tbk.

V.II. Effect of Prediction of Bankruptcy Altman Method Z-Score to Stock Prices

Based on the results of the regression coefficient it is known that 0.310 is positive and the results of the t-test, obtained value of t-count is greater than t-table (2,498> 1,983) and the p-value significance value is smaller than alpha, or (0.014 <0.05). Artinya tolak H_0 dan terima H_1, so the prediction of the bankruptcy of the Altman Z-Score method has a significant effect on stock prices.

VI. CONCLUSION

Prediction Bankruptcy with the Altman Z-Score method on stock prices shows a significant positive effect

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