

Analysis Prediction of Bankruptcy Business by Using the Method Altman Z-Score and Springate (Case Study in PT Holcim Indonesia TBK)

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Bankruptcy is a condition where a company has financial difficulties that make business failures and harm many parties. Bankruptcy itself becomes a threat to companies that do not realise early on the existence of business bankruptcy. Therefore, it is necessary to predict bankruptcy early on. There are several ways to predict bankruptcy by analysing financial ratios with the Altman Z-Score and Springate methods. This study aims to determine the company's financial performance by using the ratio of financial analysis and prediction analysis of bankruptcy method using the Altman Z-Score and Springate. This study uses secondary data obtained from the financial statements of PT Holcim Indonesia Tbk period 2010 to 2014. To know the financial performance of the company there are 5 ratios used consisting of liquidity, solvency, activity, profitability and market ratios. Then to predict bankruptcy by the Altman Z-score method and Springate, results showed the company's financial performance with ratio analysis from the period 2010 to 2014 and showed the company in good condition because there is no negative result even though every year the results fluctuate. The results of bankruptcy analysis by the method of the Altman Z-Score in the period 2010 to 2013 are categorised as not bankrupt and in 2014 categorised the company is in the grey or hesitant area. The results of bankruptcy analysis by Springate in the period 2010 to 2012, shows the companies are categorised as not bankrupt and in the period 2013 to 2014 companies are categorised as bankrupt.

Key words: *Bankruptcy, Altman Z-Score, Springate.*

Introduction

The cement industry is one of the large scale industries in Indonesia. On the macroeconomic side, the cement industry in Indonesia is an industry that still has positive prospects in the future. Based on data of ASI (Indonesian Cement Association) in 2014, domestic cement demand does not decrease if seen from the consumption of every region in Indonesia. In general, the increase occurred in almost all areas such as, in Sumatra 2.6%, Java 3.9%, Kalimantan 1.7%, Sulawesi 6.9%, Maluku-Papua 1.5%. The decline occurred only in Bali-Nusra at 0.7%.

Table 1: Cement consumption growth in Indonesia 2013-2014

| Region | January - October | | % Growth |
|------------------|-------------------|-------------------|------------|
| | 2013 | 2014 | |
| Sumatera | 9,916,191 | 10,170,610 | 2.6 |
| Jawa | 26,493,234 | 27,520,613 | 3.9 |
| Kalimantan | 3,576,278 | 3,638,289 | 1.7 |
| Sulawesi | 3,405,356 | 3,640,441 | 6.9 |
| Bali Nusra | 2,792,435 | 2,773,736 | (0.7) |
| Maluku Papua | 993,366 | 1,008,500 | 1.5 |
| T o t a l | 47,176,859 | 48,752,188 | 3.3 |

The increasing growth of cement consumption in Indonesia is proportional to the number of cement companies spread across the Indonesian territories. From the data of ASI, 9 cement companies have a production capacity that can fulfil domestic demand for cement consumption. However, the growth of cement demand each year has not increased significantly. For example, in 2013 in January-October and 2014 in the same months, it only increased by 3.3%. The market share of the cement industry in Indonesia in 2012 is still controlled by Semen Gresik Group with a market share of 39.74%. In the second position PT Indocement Tunggul Prakarsa Tbk has a market share of around 33%, PT Holcim Indonesia Tbk has a market share of 15.69% and other cement producers such as Bosowa and Lafarge controlled 11.53% of the market share. Competition among cement companies is increasing, therefore every company is required to improve its company's performance to win the competition. The financial condition of a company is one factor that can affect the survival of a company; this can be seen from the financial statements. The financial statements are the result of a recording process which is a summary of financial transactions that occurred during the relevant fiscal year (Kamaludin, 2011: 34). The financial statements published by the company make one source of information about the company's financial position, i.e. the performance and changes in its financial position, which is very useful for supporting the right decision-making.

For the information obtained to be more useful in making decisions, financial data should be converted into useful information in economic decision making. This is done by analysing the

financial statements. The model that is often used in conducting such analysis is in the form of financial ratios. Financial statement analysis is also useful in assessing corporate bankruptcy, assessing the fairness of stock prices, and assessing the fairness of the financial statements presented. In some cases, go-public companies that went bankrupt, namely Eastman Kodak Company is a pioneer company of the world of photography. Kodak was still very popular in the 1980s, had financial difficulties in 1983 and the company announced profits that plummeted by 73%. In 2012, it eventually went bankrupt because it was unable to compete with competing companies who could better understand consumers who needed all-digital products (<http://www.gadget.gopogo.com>, accessed on January 14, 2015, 15:05 WIB). PT Batavia Air (Batavia Air) was an airline company in Indonesia operating in 2002. Batavia Air was declared bankrupt by Central Jakarta Commercial Court on January 31, 2013, due to Batavia Air being sued for bankruptcy by the International Lease Finance Corporation (ILFC). Batavia Air was sued for not being able to repay the debt due until December 13, 2012, which amounted to USD 4.68 million to ILFC (<http://www.merdeka.com>, accessed January 15, 2015, 16:10 WIB). It also does not rule out other go-public companies, such as PT Holcim Indonesia Tbk service providers and cement-based building materials whose business activities take place in two countries, Indonesia and Malaysia. Sales and profit data achieved by PT Holcim Indonesia Tbk are as follows:

Table 2: Net Sales and Net Profit Table PT Holcim Indonesia Tbk (Annual Report PT Holcim Indonesia, 2015)

| Year | Net Sales (Trillion) | Net Income (Billion) |
|------|----------------------|----------------------|
| 2010 | 5.96 | 830 |
| 2011 | 7.52 | 1064 |
| 2012 | 9.01 | 1351 |
| 2013 | 9.68 | 952 |
| 2014 | 10.5 | 669 |

The data shows net sales for five years continues to increase but the increase in profit is only for three years i.e. 2010 to 2012 while in 2013 and 2014 it has decreased. Predictions about financial difficulties or bankruptcy analysis are important analyses. Bankruptcy analysis is important with consideration of bankruptcy of a go-public company that will harm many parties. These parties include, among others, investors who invest in the form of shares or bonds, creditors due to Termination of Employment (PHK) and company management. This bankruptcy analysis is done to obtain an early warning of bankruptcy (early signs of bankruptcy). The earlier signs of bankruptcy are found, the better for the management, because it can make improvements from the beginning (Hanafi, 2003: 263) in Peter and Joseph (2011).

Frequent bankruptcy analysis used Altman's Z-Score analysis (1968). The bankruptcy analysis is known for its accuracy in determining bankruptcy predictions (R. Agus Sartono, 2008: 115). Bankruptcy analysis is done to predict a company as an assessment and

consideration of a company's condition. A similar study was conducted by Gordon L.V. Springate (1978) in predicting the potential (indication) bankruptcy of the company. Gordon L.V. Springate has finally found four ratios that can be used in predicting bankruptcy. The four ratios are combined in a formula formulated by Gordon L.V. Springate and later known as the Springate Method (Hernanta, 2013: 4).

Based on this problem, the authors are interested in examining the "Bankruptcy Analysis of Business by using the Altman Z-Score and Springate methods, especially in PT Holcim Indonesia Tbk. Thus the purpose of this study is to analyse the financial performance of PT Holcim Indonesia Tbk in the period 2010 to 2014 by using financial ratio analysis; and also to analyse the prediction of bankruptcy of PT Holcim Indonesia Tbk in the period 2010 to 2014 by using the Altman Z-score and the Springate method.

Literature Review

Bankruptcy Concept

Bankrupt is defined as an insolvent company that goes bankrupt following the law that says that bankruptcy is a juridical procedure to liquidate officially the activities of companies undertaken under the courts. Government involvement is needed to guarantee the payment of obligations to external parties and return shareholders' capital (for limited liability companies). A company goes bankrupt if the total amount of liabilities exceeds the total assets so that the company's wealth is negative. The state of bankruptcy can be achieved by voluntary reasons or chosen by the company itself that filed a petition to the district court for the company to go bankrupt. Interestingly, the creditor submits a request to the district court for the company to be bankrupt first (Ardiyos in Hanunu, 2013: 13).

According to Martin. et al (1995) in Irma Thisca Indriyati (2010: 11-12), bankruptcy is a failure in several senses:

- a. Economic failure (economic failure): failure in the economic sense usually means the company cannot cover its own cost. This means the profit level is less than the cost of the capital or more.
- b. Financial failure (financial failure): financial failure can be interpreted as insolvency that distinguishes between basic cash flow and base.

In the case of insolvency based on the flow, there are two forms, namely:

- a. Technical insolvency (technical bankruptcy), the company fails if the company cannot meet the requirements at maturity. Insolvency is important if you do not want to meet the payment.

- b. Insolvency in the sense of bankruptcy: in this sense bankruptcy is about the size, because the expected net worth is less than the obligation.

Financial Ratio Analysis

Financial ratio analysis is the ratio of the numbers in the financial statements or between financial statements. After making comparisons, the financial position of a company for a certain period can be concluded. In the end, we can assess the performance of management in that period (Kashmir, 2010: 93).

According to James C. Van Horne in Kasmir (2010: 93), the financial ratio is an index that links the two accounting numbers and is obtained by dividing one number by another. Financial ratios are used to evaluate the company's financial condition and performance. From the results of this financial ratio will be seen the health condition of the company concerned. According to Kamaludin (2011: 40), financial ratios are designed to help evaluate financial statements or help identify some of the company's financial strengths and weaknesses. According to Kamaludin (2011), The types of financial ratios consist of 1). Liquidity Ratio, which is the ratio used to measure the company's ability to meet short-term obligations; 2). The solvency ratio is to answer the question of how the company finances its assets; 3). The activity ratio shows how far management can accumulate sufficient sales of the assets used; 4). Profitability ratios show an overview of the effectiveness of management in generating profits; 5). The market ratio shows a group of ratios related to the firm's stock price compared to the firm's earnings, the book value per sheet and the market value compared with the book value.

Previous Researches

The following researchers describe briefly the results of previous research that are closely related or even have similar themes with this research, namely:

Sinta Kartikawati (2009) entitled "Z-Score Analysis in measuring Financial Performance to predict Bankruptcy in seven Manufacturing Companies in Jakarta Stock Exchange." The results of analysis from seven Manufacturing Companies listed on the BEI are that there are only 2 companies that are in a healthy condition that is PT Gudang Garam Tbk & PT Kimia Farma Tbk, and 4 companies under a grey area and 1 bank in bankrupt condition i.e. PT Mayora Indah Tbk.

Yoseph (2011) entitled "Analysis of Bankruptcy with Altman Z-Score Method, Springate and Zmijewski on Pt. Indofood Sukses Makmur Tbk Period 2005 - 2009." "The results of this study are the financial performance of PT. Indofood Sukses Makmur Tbk in 2005, 2006 and 2009, with a poor performance in 2007 and 2008. Analysis of the Altman Z-Score in 2005 -

2009 is called potentially bankrupt. The analysis of the Springate bankruptcy in 2005, 2006, and 2009 is called not potentially bankrupt, and in 2007 and 2008 potentially bankrupt. Zmijewski bankruptcy analysis of 2005 - 2009 is called not potentially bankrupt.

Harnanta (2013) under the title "Prediction Analysis of Corporate Bankruptcy Using Altman Z-score and Springate Methods on Telecommunication Companies Listed in Indonesia Stock Exchange (BEI) Period 2008-2011." Based on the test results using the Altman method only PT Telkom Tbk was declared healthy in 2008-2011, PT Indosat Tbk and PT Bakrie Tbk in 2008 were in the grey area and 2009-2011 were in the bankruptcy area and for PT XL Axiata Tbk in 2008 are categorised as bankrupt and in 2009-2011 are in gray area. While testing by the Springate method the result was PT Telecom Tbk was in a healthy position, and in the period 2009 PT XL Axiata was otherwise healthy.

Methodology

This research is descriptive, that is by collecting, classifying, analysing, and interpreting data obtained from a company/institution to describe with the actual situation (Arikunto, 2010: 234). According to Sugiyono (2010: 11), "Descriptive research is a study conducted to determine the value of independent variables, either one or more variables (independent) without making comparisons, or connect with other variables".

By means of obtaining them, this study uses secondary data types. Secondary data in this research is a balance report and an earnings report of the annual Report PT. Holcim Indonesia Tbk for four years from 2010 to 2014, taken from PT Holcim Indonesia Tbk website. In this research, data collection techniques used is the method of documentation by recording and tracking data on the website of PT. Holcim Indonesia Tbk. The data was contained on the Indonesia Stock Exchange in the form of a balance sheet of financial statements and profit and loss of PT. Holcim Indonesia Tbk in the year 2010-2014.

Altman Z-Score Analysis

The study of the prediction of corporate failure was done by Edward I. Altman called multiple discriminant analysis. In his analysis, Altman uses several ratios that can illustrate the degree of bankruptcy. the list of ratios used can be seen in Table 3 below:

Table 3: Ratio in z-score (Prihadi, 2008: 144)

| Z-Score | Z'-Score | Z''-Score |
|--|--|--|
| 1. Working Capital / Total Asset | 1. Working Capital / Total Asset | 1. Working Capital / Total Asset |
| 2. Retained Earnings / Total Asset | 2. Retained Earnings / Total Asset | 2. Retained Earnings / Total Asset |
| 3. EBIT / Total Asset | 3. EBIT / Total Asset | 3. EBIT / Total Asset |
| 4. Market Value of Equity / Book Value of Debt | 4. Book Value of Equity / Book Value of Debt | 4. Book Value of Equity / Book Value of Debt |
| 5. Sales / Total Asset | 5. Sales / Total Asset | |
| 1. Manufacture 2. Public | 1. Private (non-public) | 1. Services 2. Public & Private |

The Z-score formula can only be used for public and manufacturing companies because at the moment Altman takes samples from public manufacturing companies. Due to the limited use of Z-scores that can only be used for public and manufacturing companies, Altman developed two variants of Z-score, Z'-score and Z''-score. Z'-score is intended for non-public corporations by way of reforming the ratio used, i.e. removing the value of the equity market and replacing it with the book value of equity. While Z''-score is aimed at service companies; in this last model the ratio of sales to total assets is eliminated with industry expectations, in terms of firm size related to assets or sales which can be eliminated. Below Table 4 is a formulation Altman Z-score, Z'-score and Z''-score as follows:

Table 4: Formula Altman Z-score, Z'-score dan Z''-score (Prihadi, 2008: 180)

| |
|--|
| $Z = 1,2 x_1 + 1,4 x_2 + 3,3 x_3 + 0,6 x_4 + 1,0 x_5$ <p>Where:</p> <p>$x_1 = \text{Working Capital} / \text{Total Assets}$</p> <p>$x_2 = \text{Retained Earning} / \text{Total Assets}$</p> <p>$x_3 = \text{Earnings Before Interest Tax} / \text{Total Assets}$</p> <p>$x_4 = \text{Market Value of Equity} / \text{Book Value of Debt}$</p> <p>$x_5 = \text{Sales} / \text{Total Assets}$</p> <p>Bankrupt Criteria:</p> <p>< 1.81 = Predicted to be bankrupt</p> <p>> 2.99 = Predicted to be not bankrupt</p> <p>1.81 – 2.99 = Gray or hesitant area</p> |
| $Z' = 0,717 x_1 + 0,847 x_2 + 3,107 x_3 + 0,420 x_4 + 0,998 x_5$ <p>Where:</p> <p>$x_1 = \text{Working Capital} / \text{Total Asset}$</p> <p>$x_2 = \text{Retained Earnings} / \text{Total Assets}$</p> <p>$x_3 = \text{Earnings Before Interest Tax} / \text{Total Assets}$</p> <p>$x_4 = \text{Book Value of Equity} / \text{Book Value of Debt}$</p> |

| |
|--|
| $x_5 = \text{Sales} / \text{Total Assets}$ Bankrupt Criteria: > 2,90 = Predicted to be bankrupt < 1,23 = Predicted to not be bankrupt 1,23 - 2,90 = Gray or hesitant area |
| $Z'' = 6,56 x_1 + 3,26 x_2 + 6,72 x_3 + 1,05 x_4$ Where: $x_1 = \text{Working Capital} / \text{Total Asset}$ $x_2 = \text{Retained Earnings} / \text{Total Assets}$ $x_3 = \text{Earnings Before Interest Tax} / \text{Total Assets}$ $x_4 = \text{Book Value of Equity} / \text{Book Value of Debt}$ Bankrupt Criteria: > 2.60 = Gray or hesitant area < 1.1 = Predicted to be not bankrupt 1.1 – 2.60 = Gray or hesitant area |

Springate Model Analysis

This model was developed in 1978 by Gorgon L.V. Springate. Following Altman's developed procedures, Springate used step-wise multiple discriminate analysis to select four of the 19 popular financial ratios to distinguish companies in bankruptcy zones or safe zones. The four ratios are WCTA, EBITDA, EBTCL, and STA (Harnanta, 2013: 51). The Springate method formulates as follows:

$$S = 1.03A + 3.07B + 0.66C + 0.4D$$

Where :

A = Working Capital to Total Assets Ratio

B = Net Profit before Interest and Taxes to Total Assets Ratio

C = Net Profit before Taxes to Current Liabilities

D = Sales to Total Assets

Result & Discussion

Application of Altman Z-score Method

Here are the results of the prediction of bankruptcy at PT. Holcim Indonesia Tbk using the Altman Z-score method as shown in Table 5 as follows:

Table 5: Altman Z-Score Calculation and Criteria for Bankruptcy Period 2010-2014

| year | 1,2X1 | 1,4X2 | 3,3X3 | 0,6X4 | 1,0X5 | Z-Score | Criteria |
|------|-------|-------|-------|-------|-------|---------|--------------|
| 2010 | 0.11 | 0.07 | 0.36 | 3.28 | 0.56 | 4.38 | Not bankrupt |
| 2011 | 0.08 | 0.14 | 0.46 | 2.62 | 0.68 | 3.99 | Not bankrupt |
| 2012 | 0.06 | 0.21 | 0.50 | 4.78 | 0.73 | 6.28 | Not bankrupt |
| 2013 | -0.10 | 0.18 | 0.30 | 2.10 | 0.64 | 3.13 | Not bankrupt |
| 2014 | -0.11 | 0.14 | 0.20 | 1.42 | 0.60 | 2.25 | Gray area |

Application of Springate Methods

Here are the predicted results of bankruptcy PT. Holcim Indonesia Tbk using the Springate method as shown in Table 6 as follows:

Table 6: Calculation of the Springate Method and Criteria for Bankruptcy Period 2010-2014

| Tahun | 1.03A | 3.07B | 0.66C | 0.4D | Z | Criteria |
|-------|-------|-------|-------|------|------|--------------|
| 2010 | 0.09 | 0.34 | 0.56 | 0.23 | 1.22 | Not bankrupt |
| 2011 | 0.07 | 0.43 | 0.60 | 0.28 | 1.38 | Not bankrupt |
| 2012 | 0.05 | 0.46 | 0.79 | 0.30 | 1.60 | Not bankrupt |
| 2013 | -0.08 | 0.28 | 0.27 | 0.26 | 0.72 | Not bankrupt |
| 2014 | -0.09 | 0.18 | 0.17 | 0.24 | 0.51 | Not bankrupt |

Financial Ratio Calculation

In 2010 sampai to 2012 shows the value of Net Working Capital / Total Assets Ratio positive although there is a decrease, while in 2013 and 2014 it has a negative ratio; this shows the value of networking capital is negative, meaning that the current assets are smaller than the current debt. Retained Earnings to Total Assets or retained earnings compared to the number of company assets in 2010 to 2012 has increased significantly, but in 2013 and 2014 decreased sharply. This shows that the retained earnings decreased compared with the number of company assets. Net Profit before Interest and Taxes / Total Assets Ratio or profit before tax compared to total assets in 2010 to 2012 increased, while in 2013 and 2014 it decreased, and it shows that profit before tax and interest has decreased in the last two years. Market Value of Equity to Book Value of debt in the market compared to the total book value of debt from 2010 to 2012 increased, while in 2013 and 2014 is decreased. This shows that the price per share in the stock decreased or the amount of debt increased. Sales / Total Assets or the comparison between the number of sales with the amount of property that has fluctuated and in the last two years has decreased significantly.

Altman Z-Score Method Analysis

The Altman Z-score calculation above is obtained in 2010 with a value of Z-Score 4.38 which is classified not bankrupt because the Z-score in 2010 was above 2.99. In 2011 the

value of the Z-score has decreased to 3.99 but the Z-score is still classified as not bankrupt because the value is above 2.99. In 2012 the value of Z-score increased to 6.28 and classified not bankrupt because it is far above 2.99. In 2013 the value of Z-score decreased to 3.13 and classified in a position as not bankrupt because the value is still above 2.99. However, in 2014 the value of Z-score decreased to 2.25, which means that the value of the Z-score is between 1.81 to 2.99 and classified companies in the grey area are where the company is in a position of near bankruptcy.

Springate Method Analysis

The calculation of the Springate method then obtained in 2010 has a value of Z that is 1.22 which classified companies do not go bankrupt because the value is above 0.82. In 2011 the value of Z is 1.38 and classified companies do not go bankrupt because the value is above 0.82. In 2012 the value of Z increased to 1.60 and classified companies do not go bankrupt because the value is also above 0.82. In 2013 and 2014 the value of Z decreased to 0.72 and 0.51 and the company was predicted to go bankrupt because it values is less than 0.82.

Conclusion

The conclusions of this study are as follows:

1. The calculation of financial ratios shows that the five ratios have the same tendency that from 2010 to 2012 increased, but in 2013 and 2014 experienced a significant decrease.
2. The results of the calculation of the Altman Z-score method analysis can explain the state of PT Holcim Indonesia Tbk in the period 2010, 2011, 2012 and 2013. The Z-score calculation is on the prediction of companies not going bankrupt because the Z-score is above 2.99. While in the period 2014 the Z-score value of 2.25 is on the prediction of the grey area because the Z-score is between 1.81 to 2.99.
3. The results of the calculation of the Springate methods in 2010, 2011 and 2012 predicted the company did not go bankrupt In 2013 and 2014; the value of Z decreased to 0.72 and 0.51 which dikriteriakan companies predicted bankruptcy because the value is less than 0.82.

Suggestion

Assessment of bankruptcy analysis with the Altman Z-score method in the period 2010 to 2013 indicated that no chances of the bankruptcy of the company during the above mentioned period and required that the company must maintain that condition as much as long. In addition, it is also required that the company should improve its performance to avoid the chances of the bankruptcy of the company. Moreover, the period 2014 which is in the grey area and chances of bankruptcy required that the company should lower its short-term liabilities because it is not comparable with the short term assets that may lead the company

towards the bankruptcy. The calculation of bankruptcy analysis by the Springate method in the period 2010 to 2012 which is a condition of not being bankrupt and required that the company should maintain this condition in future. In the period 2013 and 2014 the company predicted bankruptcy; this should be a material evaluation company to improve the performance of the company and the company should be able to do debt management well. Additionally, this study also suggested to the policymakers that they should develop the policies that enhance the protection against the bankruptcy of the company. This study also recommended to the future studies that they should add more companies into their analysis to expand their scope of the study.

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