ANALYSIS OF THE BANKING INDUSTRY BANKRUPTCY: AN IMPLEMENTATION OF ALTMAN MODEL FOR PREDICTING BANKRUPTCY ON INDONESIAN BANKING INDUSTRIES

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ABSTRACT

In principle, a firm becomes bankrupt when the values of its assets equal the value of its debt. When this occurs, the value of equity is zero, and the stockholders turn over control of the firm to the bondholders. When this takes place, the bondholders hold assets whose value is exactly equal to owed on the debt. Bankruptcy occurs when the stated value of a firm’s liabilities exceeds the fair market value of its assets. A bankrupt firm has a negative stockholders’ equity. This means that the claims of creditors cannot be satisfied unless the firm’s assets can be liquidated for more than their book value. This paper is going to predict the bankruptcy of the banking company in Indonesia stock exchange, and ultimately the early warning for the companies in the future. The research is being made with the sample of the twelve banks at Indonesia Stock Exchange. The study then calculates the ratio of the five types of Camel as the key performance indicators. By using Atlman Model of Bankruptcy applied to the analysis of the banking industry for the twelve banks, found that the Indonesian banking industry are in a gray area category, meaning it could potentially go bankrupt if not handled properly under the terms set by the Central Bank of Indonesia. Limitations of the findings of this study are only using five variables of Camel, and the period of time the data is used only three-year accounting.

Keywords: Bankruptcy, Capital Adequacy Ratio, Asset, Earning, and Liquidity.

Introduction

A company needs to pay attention to its survival or going concern with both banking companies and other companies. Therefore, a manager need to predict what will happen with his company in the future whether it will grow continuously or showing symptoms of bankruptcy. Thus, the principle of going concern is applied, it means that business activities should be carried out continuously. Bankruptcy is usually interpreted as a failure of the company to run the company's operations to generate profit (Supardi, 2003:79). Meanwhile, according to the Law No. 4 1998, an institution is declared by a court decision when the debtor has two or more creditors and not pay at least one debt due and payable. Bankruptcy is often called liquidation or dissolution of the company or companies insolvibilitas (Wilopo, 2001).

Bankruptcy of a bank can be seen and measured through analysis of its financial report. The measurement is done by analyzing the financial report issued by the bank concerned (Umi 2006: 5). By doing financial analysis in the past, the weaknesses of companies and the results which have been considered as a good company are identified, and people are also able to know
the potential bankruptcy of the company as well. Bankruptcy analysis was conducted to obtain the early warning of bankruptcy. The earlier the signs of bankruptcy is found, the better for the management, because it can make improvements since the beginning (Hanafi, 2005: 263). One of the model assessment bankruptcies which are stated by Altman (1968) examines the benefits of financial ratios as a tool for predicting bankruptcy. Altman Discriminant models analyzes financial some ratios were then calculated separately for the Z-Score value of each company.

The system of the bank healthy assessment is based on the decree of directors of Bank Indonesia. 30/12/kep/DIR/2002 uses CAMEL method. The indicator of CAMEL is an assessment of the health level which is based on five factors, namely Capital, Assets, Management, Earnings, and Liquidity. These factors use financial ratios. It shows that financial ratios can be used to assess the soundness of banks (Wilopo, 2001). Based on the background above, this study tried to improve or develop models of Altman in the banking industry which are listed in the Indonesia Stock Exchange by promoting CAMEL ratios, capital adequacy ratio (CAR), problematic earning assets (APB), productivity, return on assets (ROA) , and the loan to deposit ratio (LDR).

Bank Bankruptcy

According to Jauch and Glueck in Adnan (2000:139) the factors that led to the bankruptcy of the company can be common factors consists of economic, social, technological, government. The other factors are external factors which consist of customers or clients, suppliers or creditors, and internal factors such as large bad debts, inefficient management, fraud and abuse of authority.

Altman Z-Score Model

Altman Z-Score analysis, the application of financial ratio analysis is limited because it is done separately, means that each ratio tested separately. To overcome the limitations of the ratio analysis, Altman has combined some ratios become the prediction model with the statistical technique that is discriminant analysis which is used to predict the bank bankruptcy with the Altman Z-Score. Z-Score is a score that is determined from the count-ratio times the standard financial ratio that will show the level of corporate bankruptcy probability (Supardi and Mastuti, 2003:73).

According to Altman, in Supardi and Mastuti, 2003: 90), states that the Altman model uses five financial ratios as variables, namely: (1) Liquidity ratio, ie the ratio of working capital and total assets (X1). Age of firm and cumulative profitability ratios, indicated the ratio of retained earnings to total assets (X2). Profitability ratio, ie the ratio between earnings before interest and tax to total assets (X3). Financial structure ratio, ie by the ratio between the book value of equity and book value of debt (X4). Total asset turnover ratio, ie by the ratio between sales and total assets (X5).

The data or the results of the calculation will then be analyzed further by using the formula:

\[
Z\text{-Score} = 1,2 X_1 + 1,4 X_2 + 3,3 X_3 + 0,6 X_4 + 1,0 X_5
\]

According to Endri (2008), from the calculation of Z-Score, it will be known the financial condition of the company as follows: (1) If the value of Z-score is less than or equal to 1.81 means the company is experiencing financial difficulties and high risk. (2) If the Z-Score values is between 1.81 and 2.99 then the company is considered at grey area. In this condition, the company is experiencing financial problems that must be handled with appropriate management arrangements. If it’s too late and there is no proper handling, then the
company may go bankrupt. So, in this grey area there is a possibility that the companies went bankrupt or some are not. All need to do is the management company immediately takes actions to solve the problems in the company. (3) If the Z-Score value is more than 2.99, it shows that the company is in a very healthy state so that the probability of bankruptcy is very small (Almilia, 2005).

**Bank Bankruptcy Based on the Criteria of Bank Indonesia**

Assessment system of the bank which is under the decree of directors of Bank Indonesia 30/12/kep/DIR/2002 uses CAMEL. CAMEL indicator is defined as the health level assessment which is based on five factors, namely Capital, Assets, Management, Earnings, and Liquidity. This scoring system uses a qualitative approach on several aspects that affect the condition and development of the bank. While the calculation of each factor uses a quantitative approach that is by quantifying the components that are included in each of these factors in order to obtain certain values or numbers (Akyar, 2000).

According to Kashmir (2002), assessments conducted by Bank Indonesia covers several aspects: The first is the capital that is based on the bank's capital adequacy. CAR is a comparison between bank capital and risk-weighted assets based on the percentage risk. The second is the quality of assets, a comparison between the total percentages of earning. The ratio of non-performing assets (APB) demonstrates the ability of bank management in managing non-performing assets to total earning assets. Problematic earning assets are the one classified as substandard, doubtful and loss. The third is management regarding to the quality of bank management. The quality of management which can be seen in the productivity ratio as represented by the labor force is described in terms of the ability of employees, branches, and certain assets in obtaining the profit (Harahap, 2007). Elleuch (2009) mentioned that this ratio is defined as the change in the increase of sales per employee. The greater the value, the better is the sales because it shows a high level of productivity. Hence, this ratio is the comparison between the total profit and total employees. The fourth is earning, a bank's ability to increase its profits, whether it is for each period or to measure the level of business efficiency and the profitability achieved by the banks concerned. A healthy bank is measured by the increasing (Munawir, 2007). Assessment was also done, according to Circular Letter No. BI 3/30DPNP date December 14, 2001, stated that the ratio of earnings to total assets (ROA). The last is liquidity, which is means as the ability of a bank to pay all its debts, especially savings deposits, demand deposits, and deposits that can also be billed and fulfilled all financed eligible for credit. In general, this ratio is the ratio between the amounts of current assets divided by current debt, which is usually seen from the loan to deposit ratio (LDR). This ratio is used to assess the liquidity of a bank by dividing the number of loans granted by the bank to deposit.

**Research Methodology**

This research used the data from the financial statements of 12 banks in Indonesia Stock Exchange with a purposive sampling method. The data was used to calculate the study variables to examine the possibility of bankruptcy of the company with Altman Discriminant Analysis model. Twelve samples of the company's research are pt. Bank Central Asia Tbk; pt. Bank Bukopin; pt. State Bank Indonesia (Persero) Tbk; pt. Bank Rakyat Indonesia (Persero) Tbk; pt. Bank Danamon Indonesia Tbk; pt. independent banks (Persero) Tbk; pt. Bank CIMB Niaga Tbk; pt. Bank International Indonesia Tbk; pt. artha bank tbk international calls; pt. Bank Mega Tbk; pt. Bank Himpunan Saudara 1906 tbk, and the last is pt. Bank Permata Tbk. While research variables used include: (X1) Capital Adequacy Ratio, (X2) Troubled Assets, (X3) Productivity, (X4) Return On Assets, (X5) Loan to Deposit Ratio. The formula of calculation
the Z-Score value in this study still used the basic formula of $Z$-Score = $1.2 \times X_1 + 1.4 \times X_2 + 3.3 \times X_3 + 0.6 \times X_4 + 1.0 \times X_5$).

**Results and Discussion**

Based on the results of Altman model calculation for the five variables of CAMEL which were promoted as variables of research, it can be said that Z-Score value of each year for three months can be explained as follows.

In 2009 the company acquired three categories: (1) companies that went bankrupt with criteria predicted $Z < 1.81$ consist of PT Bank Bukopin Tbk, PT Bank Negara Indonesia (Persero) Tbk, PT Bank Rakyat Indonesia (Persero) Tbk, PT Bank Danamon Indonesia Tbk, PT Bank CIMB Niaga Tbk, PT Bank Internasional Indonesia Tbk, PT Bank Artha Graha Internasional Tbk, and PT Bank Mega Tbk, (2) the company which is predicted could potentially bankrupt or gray area with the criteria $1.81 < Z < 2.99$ consists of PT Bank Central Asia Tbk and PT Bank Mandiri (Persero) Tbk, and (3) a company which is predicted as a healthy company with the criteria $Z > 2.99$ consists of PT Bank Himpunan Saudara 1906 Tbk and PT Bank Permata Tbk.

For the year of 2010, the company acquired three categories, (1) the company which is predicted to go bankrupt by criteria $Z < 1.81$ consists of PT Bank Bukopin Tbk, PT Bank Negara Indonesia (Persero) Tbk, PT Bank Rakyat Indonesia (Persero) Tbk, PT Bank Danamon Indonesia Tbk, PT Bank CIMB Niaga Tbk, PT Bank Internasional Indonesia Tbk, PT Bank Mega Tbk, and PT Bank Permata Tbk. (2) the company which is predicted that could potentially bankrupt or gray area with the criteria $1.81 < Z < 2.99$ consists of PT Bank Central Asia Tbk and PT Bank Mandiri (Persero) Tbk, and PT Bank Artha Graha Internasional Tbk, (3) the company which is predicted soundless with the criteria $Z > 2.99$ consists of PT Bank Himpunan Saudara 1906 Tbk.

Furthermore, from the calculation of Altman Z-Score in 2011, it can be seen that there are three categories which were gotten by the company, namely (1) the company which is predicted to go bankrupt by criteria $Z < 1.81$ consists of PT Bank Rakyat Indonesia (Persero) Tbk, PT Bank Danamon Indonesia Tbk, PT Bank Internasional Indonesia Tbk, PT Bank Mega Tbk, and PT Bank Permata Tbk. (2) the predicted company which could potentially bankrupt or gray area with the criteria $1.81 < Z < 2.99$ consists of PT Bank Central Asia Tbk, PT Bank Negara Indonesia (Persero) Tbk, and PT Bank Mandiri (Persero) Tbk, PT Bank CIMB Niaga Tbk and PT Bank Artha Graha Internasional Tbk, (3) the company which is predicted as a healthy company with criteria $Z > 2.99$ consists of PT Bank Bukopin Tbk and PT Bank Association
Table The calculation of the Z-Score of bank industries in BEI

<table>
<thead>
<tr>
<th>Variables</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>0.17988</td>
<td>0.17724</td>
<td>0.17712</td>
<td>0.17808</td>
</tr>
<tr>
<td>X2</td>
<td>0.03486</td>
<td>0.02786</td>
<td>0.0259</td>
<td>0.02954</td>
</tr>
<tr>
<td>X3</td>
<td>0.74481</td>
<td>0.87846</td>
<td>1.27281</td>
<td>0.96558</td>
</tr>
<tr>
<td>X4</td>
<td>0.01224</td>
<td>0.01596</td>
<td>0.0171</td>
<td>0.01512</td>
</tr>
<tr>
<td>X5</td>
<td>0.7521</td>
<td>0.795</td>
<td>0.818</td>
<td>0.7884</td>
</tr>
<tr>
<td>Z-Score</td>
<td>1.72389</td>
<td>1.89452</td>
<td>2.31093</td>
<td>1.97672</td>
</tr>
</tbody>
</table>

Based on Table above, it can be seen that the calculation of Altman Z-Score in the banking industry in BEI per year from 2009 to 2011 produces a Z-Score below 2.99, which means that it is not in a healthy condition. In 2009, Z-Score value is about 1.72389, which means the banking industry in BEI is in the condition of bankruptcy due to Z <1.81. In 2010, the value of the Z-Score showed an increase up to 1.89452 which means that the banking industry in BEI tries to improve its financial performance and condition which are in the category of Grey Area, and in 2011 the value of the Z-Score back showing the improvement at 2.31093 which suggests that the industry banking in Indonesia Stock Exchange in the condition of Grey area where the potential for bankruptcy and saved is equal depends on the policy used.

From the table above, it is also shows that the calculation of the Z-Score banking industry from 2009 to 2011 is about 1.97672 which means that the banking industry in BEI are not in secure areas or gray area that is 1.81 <Z <2.99 so that the banking industry during the research period is categorized in unsanitary conditions.

Conclusions

The results showed that the banking industry which is listed on the Indonesia Stock Exchange from period 2009 to 2011 is categorized in a condition of Grey Area since the Z-Score value is 1.97672. While in 2009 the value of the Z-Score is 1.72389, which means the banking industry in BEI is predicted in a state of bankruptcy because Z <1.81. In 2010 and in 2011 the value of the Z-Score increases respectively 1.89452 and 2.31093 which indicates that the banking industry in BEI keeps trying to improve its financial performance and condition which are predicted in the category of Grey Area.

It is estimated that a bank which has been predicted to be bankrupt is still operated as they continually improve its performance. After this condition happened, the bank still exists because for an analysis company, the model of Altman is used as an early detection tool for the bank manager.

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