

Analysis Of Factors To Predict Financial Distress (CASE STUDY IN THE CONSTRUCTION SECTOR OF STATE-OWNED ENTERPRISES OF 2009 - 2017)

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Abstract - This research aims to determine the factors that can be used to predict the financial distress potential in the Construction Sector of State-Owned Enterprises by using multiple discriminant analysis. For this study, financial statements of all Construction Sector of State-Owned Enterprises from 2009 to 2017 were used. The research results show that from 21 (twenty one) variables, only *debt to equity*, *return to asset*, *operating cash flow to net wealth* and *receivable turnover* that can be used to predict the *financial distress* potential at the Construction Sector of State-Owned Enterprises. There are positive effects from Debt to Equity and Receivable Turnover, as well as negative effects from Return to Assets and Cash Flow Operating to Net Wealth to the financial distress.

Keywords - financial distress, Construction Sector of State-Owned Enterprises, debt to equity, return to asset, operating cash flow to net wealth and receivable turnover.

Introduction

In 2018, the financial condition of State-Owned Enterprises in the Construction Sector has become an interesting issue and discussion. As reported in the Jakarta Globe on March 13, 2018, the Standard & Poor's Global Ratings remind the deterioration of SOEs balance sheet, especially those engaged in the construction sector. This is because the construction sector of SOEs have to meet the Government's plan to build massive infrastructure. The bankruptcy of Carillion, the largest construction company in the UK, becomes one of the major issues in the construction sector. Carillion was declared bankrupt after suffering losses in several large contracts and the accumulation of short-term payment obligations which amounted to billions of pounds to several creditors.

Financial Distress: Overview

According to Ross, Westerfield (2013), financial distress is difficult to define precisely because of the various events that occur in a corporation before experiencing financial difficulties. Several examples of these include reducing dividends, closing factories, firing and resigning of the CEO, and falling stock prices. Financial distress is a situation in which a company's operating cash flow is not enough to meet the current obligations, so the company is forced to take corrective action. Financial distress can lead a company to default.

According to Plat and Plat (2002), companies in Asia have the potential for financial distress if operating leverage is not adequate to support sales volume and obtain sufficient cash flow or operating profit before depreciation. Beaver (1966) is one of the earliest researchers who shows various forms of financial distress, depending on the type of event that occurred. Failing to pay bonds and unpaid dividend preferred stock can reflect the occurrence of financial distress. The same definition is also conveyed by Andrade and Kaplan (1998) by defining financial distress as a crucial time to determine whether a company's financial condition is healthy and unhealthy, so it requires corrective action to resolve the problem.

Denis and Denis (1990) identify financial distress when a company experiences losses (negative pre-tax operating income or net income) for at least 3 years. The results of an empirical analysis of dividend policy during financial distress show that after a

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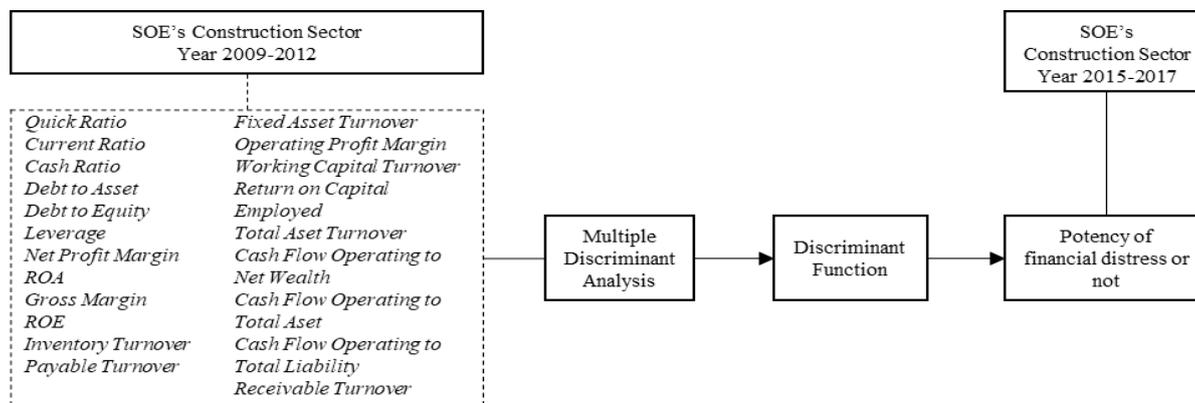
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company experiences financial distress, it will affect cash flow and the company is unable to pay dividends. Therefore, a rapid and aggressive reduction in dividends after a loss can be used to determine the financial distress situation.

Bankruptcy of companies in Indonesia is regulated in Law Number 37 of 2004 regarding Bankruptcy and Suspension of Debt Payment Obligations. Bankruptcy is general confiscation of all the bankruptcy Debtor's assets which are managed and authorized by the Curator under the surveillance of the Supervising Judge. A company can be declared bankrupt if it has two or more creditors and does not pay off at least one due date debts which are collectible, declared bankrupt by a court decision either at the company request or at the request of one or more of its creditors.

Conceptual Framework

There were 21 independent variables in this research in the form of financial ratios of SOEs Construction Sector in 2009 to 2017 that would be tested for the relevance and effect on the financial distress potential of SOEs Construction Sector as well as determining the discriminant function. Furthermore, the function would be used to describe the condition of SOEs Construction Sector in 2015 to 2017 whether there was a potential for financial distress or not.



Other Research Review

K. G. M. Nanayakkara and A. A. Azeez (2015) examined companies listed on the Colombo Stock Exchange from 2002 to 2011 covering 20 industrial sectors and 246 companies. The research aims to develop a better financial distress prediction model for Sri Lanka companies using Altman Z-score. The research concludes that the model built consisting of earnings before interest and taxes (EBIT) compared to interest expense, operating cash flow to total debt, retained earnings to total assets, and company size can be used to measure the company's financial distress prediction in Sri Lanka by 85.8% up to 91%.

Mahdi Salehi, Bizhan Abedini (2009) examined the ability of financial ratios in predicting financial distress in companies listed on Tehran Stock Exchange. The results show that accounting data can be used to predict financial distress. Even the occurrence of financial distress can be predicted in the previous 3 (three) years.

Pham Vo Ninh Binh (2017) conducted a financial distress and bankruptcy prediction research on 800 companies listed on Vietnam Stock Exchange from 2003 to 2016. The research concludes that the higher the liquidity, asset productivity, solvency, and the ability of assets to produce sales, the lower the possibility of financial distress.

Chan Kok Thim et al. (2011) in a research on the factors affecting financial distress in public companies on Malaysia Stock Exchange in 2005 – 2009, they concluded that company size has a significant impact and a positive relationship with financial distress. Interest coverage ratio also has a positive relationship with financial distress, while operating profit growth has a negative relationship with financial distress.

Research Objective

This research aims to analyze and test the variables affecting financial distress in the SOEs Construction Sector. In addition, this research is also expected to provide a description of SOEs Construction Sector condition, whether it has the potential to experience financial distress or it has a healthy financial performance. The research results are expected to contribute to the

development of models to predict financial distress conditions, especially in the SOEs Construction Sector. For shareholders and creditors, the research results are expected to be useful as an early warning system and for monitoring the performance of SOEs, especially in the construction sector.

Research Hypothesis

The hypothesis in this research is all the independent variable : Quick Ratio, Current Ratio, Cash Ratio, Debt to Asset, Debt to Equity, Leverage, ROA, ROE, Net Profit Margin, Operating Profit Margin, Gross Margin, Return on Capital Employed, Cash Flow Operating to Net Wealth, Cash Flow Operating to Total Asset, Cash Flow Operating to Total Liability, Receivable Turnover, Working Capital Turnover, Fixed Asset Turnover, Total Asset Turnover, Payable Turnover, and Inventory Turnover affect financial distress in the SOEs Construction Sector.

Research Method and Data

In this research, the dependent variable is the financial distress condition in SOEs in the Construction Sector, which is defined as financial difficulties experienced, so it must be restructured and/or bankruptcy suits by creditors. PT (Persero) Nindya Karya restructuring was performed since 2011, while, PT (Persero) Waskita Karya was restructured at the end of 2009. PT (Persero) Istaka Karya was originally to be restructured, however, prior to the restructuring, PT (Persero) Istaka Karya was sued for bankruptcy by its creditors, but in the end, the creditors and PT (Persero) Istaka Karya agreed to enter into a peace agreement in 2012.

This research use 21 (twenty one) financial ratios as independent variables, using multiple discriminate analysis. Financial statements in the SOEs Construction Sector are collected from Directorate Separated Asset and website of the company, since 2009 to 2017 from all SOEs construction sector, namely PT Hutama Karya (Persero), PT Pembangunan Perumahan Tbk, PT Waskita Karya Tbk., PT Wijaya Karya Tbk., PT Adhi Karya Tbk., PT Brantas Abhipraya (Persero), PT Nindya Karya (Persero), PT Amarta Karya (Persero), Perum Perumnas, and PT Istaka Karya (Persero). The independent variable included Quick Ratio, Current Ratio, Cash Ratio, Debt to Asset, Debt to Equity, Leverage, ROA, ROE, Net Profit Margin, Operating Profit, Gross Margin, Return on Capital Employed, Cash Flow Operating to Net Wealth, Cash Flow Operating to Total Asset, Cash Flow Operating to Total Liability, Receivable Turnover, Working Capital Turnover, Fixed Asset Turnover, Total Asset Turnover, Payable Turnover, and Inventory Turnover.

Results and Discussions

Assumption Test

From the discriminant assumption test stage, only 7 (seven) variables were included in the discriminant model with significant values less than 0.05 respectively, while the variable of Quick Ratio, Current Ratio, Cash Ratio, Return on Equity, Return on Capital Employee, Net Profit Margin, Operating Profit Margin, Cash Flow Operating to Total Assets, Cash Flow Operating to Total Liability, Working Capital Turnover, Fixed Asset Turnover, Total Asset Turnover, Payable Turnover, and Inventory Turnover could not be included in discriminant model, because those had a Sig value more than 0.05.

Discriminant analysis has the assumption that there are no multicollinearity or a correlation between independent variables which makes it difficult to exert individual effects. According to Ghozali (2016) and Hair Jr. et al. (2007), a figure of 0.9 or more indicates a high correlation. Correlation test results between variables show that some variables have a high correlation. However, 4 variables including Debt to Equity, Return on Assets, Cash Flow Operating to Net Wealth and Receivable Turnover indicate a correlation value less than 0.9.

To determine which variables in the discriminant function, it is necessary to conduct the stepwise analysis method by entering variables one by one into the discriminant model, which allows one or more independent variables to be removed from the model, depending on the significant level of results to be obtained from the test results. Four variables were included in the discriminant model. This stage was performed by looking at the significance value, in which the acceptable significant value and

the variables to be included in the discriminant function had the significant value of <0.05. Cash Ratio, Debt to Asset, and Gross Margin had significant values more than 0.05 so they were not included in the discriminant function.

Estimation of Discriminant Function Coefficient

The discriminant function in this reasearch can be written in the following form:

$$Z = -2.782 + 0.168 \text{ Debt to Equity} - 0.048 \text{ ROA} - 0.012 \text{ Cash Flow Operating to Net Wealth} + 0.295 \text{ Receivable Turnover}$$

To determine the cut-off of financial distress grouping methods or not financial distress can be calculated by the following formula:

$$Z = \frac{Na.Zb + Nb.Za}{Na + Nb}$$

- Z = critical numbers, function as cut-off score
- Na and Nb = Number of samples from group 1, and 2, in this case financial distress and not financial distress.
- Za and Zb = centroid numbers in group 1 and 2.

Centroid numbers of non-financial distress company are -0.806 and centroid numbers of financial distress company are 3.762.

The cut-off classification can be calculated as follows:

$$Z = \frac{Na.Zb + Nb.Za}{Na + Nb} = \frac{28.(3.762) + 6.(-0.806)}{28 + 6} = \frac{100.50}{34} = 2.95$$

The calculation above shows the result of Z/cut-off by 2.95. So, if the Z score > 2.95, then it is classified as the financial distress group, and if the Z score <2.95 then it is classified as the non-financial distress group.

Canonical Discriminant Function Coefficient Test results show the correlation obtained by 0.874, which is then used as the coefficient of determination (R squared) to see how much the diversity of the dependent variable that can be explained by the independent variable. The value of R squared was $0.874^2 = 0.7632$, which showed that the independent variable was able to explain 76.32% of the dependent variable, while 23.68% was explained by other independent variables outside the model.

Debt to Equity

Debt to equity shows how a company finance their business, basically in two ways : equity and debt. Instead of equity, companies often use debt to expand their business. But, higher amount of debt could increase company risk. This ratio also can be used to measure the level of company solvency, which is the ability of a company to pay the company's obligations. From the discriminant function above, coefficient of debt to equity is positive 0.168. It means that every increase of one unit value of the debt to equity variable then increases the discriminant score by 0.168. Higher debt to equity indicates lower ability of the company to pay all of its debt or loans and higher risk. Positive number shows every increase in debt to equity will increase potency of financial distress.

ROA

ROA shows the percentage of net profits obtained by the company compared to all assets owned. ROA also shows all stakeholder (director, shareholder, creditor) the profitability of the company and how efficient a company using its assets to generate earnings or income. Coefficient of ROA is negative 0.048, which is means every increase of one unit value of ROA variable value reduces the discriminant score by 0.048. Negative number shows that every increase in ROA will reduce potency of financial distress.

Cash Flow Operating to Net Wealth

Operational cash flow is cash flow related to the company's operational activities, such as customer cash receipts, account receivable income, debt payments, employee salaries, interest income, tax payments, and other receipts/expenses related to operational activities. Coefficient of Cash Flow Operating to Net Wealth is negative 0.012, which is means every increase in one unit value of the Cash Flow Operating to Net Wealth variable reduces the discriminant score by -0.012 and higher Cash Flow Operating to Net Wealth means lower potency of financial distress.

Receivable Turnover

Receivable Turnover shows the frequency of a company collecting its receivables in a given year. This ratio is obtained based on the relationship of receivable and sales. Coefficient of Receivable Turnover is negative 0.295, which means every increase one unit value of the Receivable Turnover increases the discriminant score by 0.295. Negative number shows that every increase in Receivable Turnover will reduce potency of financial distress.

Significance of the Discriminant Function Coefficient

Receivable Turnover, Debt to Equity, ROA, and Cash Flow Operating to Net Wealth have a significant effect simultaneously on financial distress, both in the category of "financial distress" or "non-financial distress" with Wilk's lambda value obtained for the four variables of 0.237, chi-square 43.212 with a significant number of 0.000 (<0.05), meaning that there are simultaneously significant effects of these variables on financial distress.

Structure Matrix coefficient from variable Receivable Turnover, Debt to Equity, ROA, and Cash Flow Operating to Net Wealth sequentially 0.890, -0.818, -0.421, and 0.818. Structure Matrix shows the importance relatively from each independent variable in distinguishing between financial distress and non-financial distress companies. From the output shows that Debt to Equity has the highest effect to the dependent variable with score 0.890 or 89.0 %, then followed by ROA, Receivable Turnover, Cash Flow to Operating to Net Wealth.

Conclusion

Based on the discussion results, it can be concluded as follows:

1. There are positive effects from Debt to Equity and Receivable Turnover, as well as negative effects from Return to Assets and Cash Flow Operating to Net Wealth to the occurrence of financial distress in the SOEs Construction Sector.
2. This discriminant function can be written as $Z = -2.782 + 0.168 \text{ Debt to Equity} - 0.048 \text{ ROA} - 0.012 \text{ Cash Flow Operating to Net Wealth} + 0.295 \text{ Receivable Turnover}$. From the calculation, the cut-off is 2.95. So, if the Z score > 2.95, then it is classified into financial distress group, and if the Z score < 2.95 then it is classified into non-financial distress group.
3. Based on the results of research on the discriminant function and financial statements in 2015-2017, the financial condition of SOEs Construction Sector in general is still relatively good. However, increasing Debt to Equity and Receivable Turnover which can increase the potential for experiencing financial distress.

Suggestion

For further research, it is necessary to expand the research time span to include financial ratios in 2008 and the previous years, bearing in mind that the conditions of SOEs Construction Sector also experience financial distress in previous few years. In addition, this research only applies 21 financial ratios as independent variables. Therefore, future research needs to increase the number of financial ratios.

From the managerial aspect, the SOEs Construction Sector stakeholders, especially shareholders and creditors need to be careful with a significant increase in debt, given that debt to equity has a positive effect on financial distress. This means that the greater the Debt to Equity, it will increase the potential for financial distress. The large financing needs to complete infrastructure projects must take into account the profitability of the project and the company's cash flow. Beside Debt to Equity, SOEs Construction Sector stakeholders also should concern with Receivable Turnover, which also positive effect. Hence, management should manage its receivable more prudent.

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