

Determinants of Corporate Bond Rating in Indonesia: Additional Evidence

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Abstract

This study examines the determinants of bond rating of companies in Indonesia. Four variables are examined, namely profitability ratio, liquidity ratio, solvency ratio, and activity ratio. The sample consists of 15 companies over the period of 2011-2014. It uses logistic regression analysis method to test the effect of the independent variables on the dependent variable. Results show that only liquidity ratio has significant influence on bond ratings. Profitability, solvency, and activity ratios are found not to be the significant determinants of the companies' bond ratings.

Keywords: *Bond Rating, Profitability, Activity Ratio, Liquidity Ratio, Solvency Ratio.*

1. Introduction

1.1 Background

Bonds are a proof of debt recognition from publishers and it can be traded. Investors buying bonds should be ready to bear of default risk. An understanding of the quality of bonds becomes important. One of the indicators of bond quality is its rating. Therefore, bond rating plays an important role because the bond ratings provide information about the company's ability to pay off bonds issued.

Bank Indonesia, the Indonesian Central Bank, acknowledged that there are six companies that can become security rating companies. These six companies are Fitch Ratings, Moody's Investor Service, Standard and Poor's, PT. Fitch Ratings Indonesia, PT ICRA Indonesia, and PT. Rating Perneringkat Indonesia. This recognition is based on the Decree of the Governor of BI, No. 13/31/DPNP dated December 22, 2011 regarding Rating Agency and Rating.

Theoretically and empirically, bond rating is influenced by several factors (Cadden, *et al.*, 2008; Ibrahim, *et al.*, 1990; Sun and Zhang, 2017). The credit rating of a bond effect reflects the credit quality of the securities, which is a function of a number of factors, such as the amount of debt burden, profitability, the risk level of the asset and the size of the firm. According to Bodie, *et al.*, (2014), the key ratios used to assess bond security are coverage ratio, leverage ratio, liquidity ratio, profitability ratio, and cash flow to debt ratio. Profitability ratios are ratios that show how well a company can generate profits, both

from existing sales and total assets owned (Gumanti, 2011). Profitability is the best indicator of corporate financial health. The better the profitability of a company is, the better is its bond rating that indicates the risk of default will be reduced.

Liquidity ratio is the level of a company's smoothness in meeting short-term obligations (Gumanti, 2011). Liquidity is usually measured using current ratio. The greater the company's liquidity is, the better it signifies and it is assumed the company is able to pay its obligations that are soon due. Corporate liquidity is an indicator to assess the financial health of a company. The higher the liquidity of a company is, the better the rating of bonds that will be. Solvency ratio is often called leverage ratio or a ratio of the level of adequacy of debt. This is the ratio of debt to total equity which measures the portion of debt in the company compared with existing equity.

According to Gumanti (2011), the higher the debt adequacy ratio is, the higher is the debt burden faced by the company. This implies that when this ratio is high the company's ability to repay its obligations associated with the assets or equity capital of the company becomes difficult. This indicates that there is a relationship of solvency ratio with the bond rating, thus the smaller the solvency ratio of the company is, the better is the bond rating. The activity ratio describes how the company performs its operations either in sales activities, purchases and other activities. According to Gumanti [5], the total asset turnover is an activity ratio that shows how efficient the assets of the company used to

generate sales. It is measured by comparing the total assets with the sales for certain period of time.

The results of a number of studies in Indonesia on the factors that affect the ratings of corporate bonds are still not consistent. For example, Magreta and Nurmawati (2009) and Afiani (2013) show that profitability influences bond ratings, but Almilia and Devi (2007), Pandutama (2012), and Nurmawati and Setiawati (2012) did not find such evidence. As shown in Almilia and Devi (2007), liquidity affects the bond rating, but Nurmawati and Setiawati (2012) did not find significant influence. Solvency affects bond rating in Nurmawati and Setiawati (2012), but Widiyastuti, *et al.*, (2014) report no influence. While Magreta and Nurmawati (2009) and Nurmawati and Setiawati (2012) show that the activity ratio can predict the rating of bonds, Afiani (2013) does not find support.

Based on the description, it is clear that there are still inconsistencies in the results of testing the factors that affect bond rating. Thus, this study tries to examine whether profitability ratio, liquidity ratio, solvency ratio, and activity ratio determine the rating of corporate bonds.

2. Theoretical Review and Hypotheses

A company credit rating is regarded as important for many reasons. A survey article by Graham and Harvey's (2001) shows finds that credit ratings has been knows as the second most important consideration that shapes the debt policy of the firm. In addition, there is a strong incentive that managers will always try to maintain or improve their ratings. This is done upon the reason that credit ratings play critical role in the capital market (e.g., Listokin and Taibleson 2010; Becker and Milbourn 2011; Kisgen 2006).

Bond rating is important not only for issuer (bond issuer companies) but also for the investors. A good bond rating will benefit the issuer because the firm will be more trusted by investors. Hovakimian, *et al.*, (2009) show that the firm receives greater benefit from maintaining a higher rating. Choudhry (2009) states that bond ratings affect the liquidity in the bond market. Thus, finance manager of the issuer company must know what factors may influence the bond rating.

Kamstra, *et al.*, (2001) assert that there are many factors affecting bond ratings. These

factors are not only financial factors, but also non-financial factors. Financial factors can be the activity ratio, liquidity ratio, solvency ratio, profitability ratio, leverage ratio, or firm growth. The non-financial factors include firm size, bond age, back-up assets, or auditor reputation. Thus, given there are many factor can be associated with bond rating, it is necessary to examine this issue using other setting.

2.1 Profitability Ratios and Bond Rating

Profitability ratios are ratios that show how well a company can generate profits, either from sales or from total assets (Gumanti, 2011:114). Profitability is the best indicator of corporate financial health. The better the profitability of a company is, the better is its bond rating that in turn indicates lowering the risk of default.

The results of Magreta and Nurmawati (2009) and Pakarinti (2012) and Afiani (2013) showed that profitability had an effect on predicting bond rating. Based on the results of the research, the proposed hypothesis is as follows:

H₁: Profitability ratio determines the rating of corporate bonds

2.2 Liquidity Ratios and Bond Rating

Corporate liquidity is the level of a company's smoothness in meeting its short-term obligations (Gumanti, 2011: 114). Liquidity is measured using Current Ratio. The greater the company's liquidity the better it signifies that the company is able to pay its obligations that are soon due. Corporate liquidity is an indicator to assess the financial health of a company. The higher the liquidity of a company is, the better the rating of bonds that will be in the can.

Magreta and Nurmawati (2009) show that liquidity is influential in predicting bond ratings. Based on the results of the research, the proposed hypothesis is as follows:

H₂: Liquidity ratio determines the rating of corporate bonds

2.3 Solvency Ratios and Bond Rating

Solvency ratios are often called leverage ratios or a ratio of the level of adequacy of debt. In this ratio there is the ratio of Debt to Total Equity Ratio to measure the large portion of debt in the company when compared with existing capital. According to Gumanti (2011: 114), the higher the

debt sufficiency ratio, the higher the debt burden faced by the company, so the company's ability to repay its obligations when it is associated with the company's assets or capital becomes difficult. This indicates that there is a relationship between the solvency ratios with the bond rating, the smaller the solvency ratio of the company the better the bond rating.

Nurmayanti and Eka Setiawati (2012) state that the solvency ratio affects bond rating. Based on the results of the research, the proposed hypothesis is as follows:

H₃: Solvency ratio determines the rating of corporate bonds

2.4 Activity Ratios and Bond Rating

The activity ratio describes the activities the company performs in its operations both in sales activities, purchases and other activities. According to Gumanti (2011: 115), the total asset turnover is an activity ratio that shows how efficiently the assets that exist in the company are used to generate the calculated sales by comparing the amount of assets owned by the company with the sales achieved. The greater the ratio of activity is, the less risk of default of bonds so that the bond rating has a tendency to rise.

Magreta and Nurmayanti (2009) and Nurmayanti and Setiawati (2012) show that productivity (activity) has an effect on predicting bond rating. Based on the results of the research, the proposed hypothesis is as follows:

H₄: Activity ratio determines the rating of corporate bonds.

3. Research Method

3.1 Population and Sample

The population of this study was companies that issued bonds and the bonds had been rated by the Indonesian bond rating agencies from period 2011-2014 consecutively. The sample must meet the following criteria.

- a. Corporate bonds issued by companies that have a five-year bond age, because in previous studies the age of different bonds has an effect on the bond rating. The shorter the life of the bonds, the less is the risk of the bond which means the bond rating is high (high grade bond).
- b. The financial statements during the period of analysis are accessible.

3.2 Research Method Analysis

Logistic Regression Model was used to test whether the independent variable could determine the dependent variable. The following logistic regression model was used:

$$PRKT_{it} = \text{Log} (P/(1-P)) = \alpha + \beta_1ROA_{it-1} + \beta_2CR_{it-1} + \beta_3DER_{it-1} + \beta_4TATO_{it-1} + e_i$$

where the PRKT_{it} is the company' bond rating in the period *t*, P is the probability of bond rating, take a value of 1 if the bond rating is classified as high investment grade (AAA and AA) and 0 otherwise (grade A to D), ROA_{it-1} profitability of company *I* in period *t-1*, CR_{it-1} is liquidity of company *I* in period *t-1*, DER_{it-1} is solvency of company *I* in period *t-1*, TATO_{it-1} is activity ratio at company *I* in period *t-1*, and *e* is an error term.

4. Results and Discussion

4.1 Results

Based on the sampling criteria, there ware 15 companies selected as samples. Table 1 shows the process of selecting the samples. The total observation was multiplied by 4 in accordance with the observation period in this study i.e., 4 years from 2011 to 2014. The total data being analyzed comprise of 88 firm years.

Table 1. Sample Selection Process

Description	Number of Company
Companies that issue bonds during the period of 2011-2014	46
The issued bonds have at least 5-year life during the period of analysis	(29)
Company financial statements are inaccessible	(2)
Companies satisfying the selection criteria	15

Descriptive statistics provides an overview or description of a data viewed from the central tendency aspects that include the minimum, maximum, average and standard deviation. Descriptive statistical of variables are presented in Table 2.

Table 2. Descriptive statistics of Variables

Variabl e	Min.	Max.	Mean	Stan. Dev.
ROA (%)	-31.27	16.49	2.046	5.703
CR (%)	11.65	304.00	78.596	63.807
DER (%)	-3,853.00	1,461.00	640.048	596.719
TATO (X)	0.06	0.69	0.152	0.139

ROA is the ratio earnings after tax over total assets, CR is the ratio current assets over current liabilities. DER is the ratio of total liability over total equity, and TATO is the ratio of total assets over sales.

The return on total assets (ROA) showed the company's ability to earn profit using all available resources. The lowest profitability ratio of -31.27% was found in PT. Mobile-8 Telecom Tbk. (now renamed as PT. Smartfren Tbk.) in 2010. That is, in 2010 the company suffered a loss of -31.27%. The highest profitability of the companies was 16.49% and was found in PT. Telekomunikasi Indonesia Tbk.

Current ratio (CR) shows the level of a company's ability in meeting its short-term liabilities. The higher the company's liquidity ratio, the higher is the ability of the company in paying off its short-term liabilities, which means the company is getting more liquid. The lowest liquidity ratio of 11.65% was found in PT. Bank Sulut (BPD Sulut). This shows that the company's ability to pay its short-term liabilities was very low compared to other companies and the company was regarded as very risky. The maximum liquidity value of 304.00% was found in Indonesia Eximbank in 2012.

The firm's debt to total equity ratio (DER) shows the level of the company's debt adequacy compared to its equity. The higher the debt adequacy ratio is the higher is the risk faced by the company. If the ratio of a company's debt adequacy is high, then the company's burden in repaying its liabilities becomes heavy. The lowest value of the solvency ratio of -3.853% was found in PT. Mobile-8 Telecom Tbk. in 2011. The negative DER value occurred because the company had debt or liability higher than its total assets, so its equity became negative. The maximum solvency value of 1.461% was found in PT. Bank DKI in 2012.

The total assets turnover (TATO) shows

how efficiently the company uses its assets to generate sales. In other words, the higher the ratio is, the lower is the risk of default on a bond because the firm is able to sell goods or services higher than its assets value. The lowest value of activity ratio is 0.06 times was found in Indonesia Eximbank. This shows that the company's ability to use the company's assets to generate sales was very low compared to other companies sampled in this study. The highest value of activity ratio was 0.69 times found in PT. Telekomunikasi Indonesia Tbk.

The data were processed using logistic regression analysis. Logistic regression analysis included feasibility test of logistic regression model, coefficient of determination test, partial correlation test, and hypothesis test. The feasibility test of the logistic regression model was to test whether the logit model matches the data. The statistical test used was the Hosmer-Lemeshow Goodness of Fit test. The test results showed Chi-Square value of 9.953 with a significance level of 0.191. Hosmer and Lemeshow significance value of 0.191 which means this result is above 0.05. This means that logistic binary regression models were appropriate for later analysis, since there was no significant difference between the predicted classification and the observed classification. That is, the model has been hypothesized to be fit with the data.

The coefficient of determination test was used to test the whole model. Test on the coefficient of determination was done by looking at the value of Nagelkerke R² where the value of Log-likelihood of 69.699, Cox & Snell R² value of 0.357, and the value of Nagelkerke R² is 0.503. Nagelkerke R² value of 0.503 means Bond Rating variable can be explained by profitability ratio variable, liquidity ratio, solvency ratio and activity ratio of 50.3%. This result showed that the model was relatively good.

Logistic regression analysis was useful to examine the effect of independent variable on the dummy base dependent variable. The independent variables consisted of profitability ratio, liquidity ratio, solvency ratio, and activity ratio, whilst the dependent variable was the rating of bonds. Table 3 presents the results of logistic regression analysis.

The logistic regression equations that can be compiled from the outputs in Table 3 are as follows.

$$PRKT_{it} = \text{Log} = -3,031 + 0,143 ROA_{it-1} + 0,058$$

$$CR_{it-1} - 0,001 DER_{it-1} + 10,701 TAT_{it-1} + e$$

Partial test of hypothesis in logistic regression was done by Wald test. The test results showed the liquidity ratio had a positive and significant impact on the rating of bonds. That is, if the liquidity ratio variable increases, then the bond rating will increase as well, assuming other variables are fixed value. However, the other three independent variables, i.e., profitability, solvency, and activity ratios did not significantly influence the rating of bonds.

Table 3. Results of Logistics Regression

Variable	B	Analysis		
		Wald	Sig.	Exp (B)
Constant	-3.031	3.120	0.077	0.048
ROA	0.143	1.408	0.235	1.154
CR	0.058	7.814	0.005	1.060
DER	-0.001	0.757	0.384	0.999
TATO	10.701	1.612	0.204	4,4401

Note:

ROA is the ratio earnings after tax over total assets, CR is the ratio current assets over current liabilities. DER is the ratio of total liability over total equity, and TATO is the ratio of total assets over sales.

4.2 Discussion

In this study, Wald test showed that the profitability ratio had a positive but not significant influence as a determinant of bond rating. That is, the ability of companies in obtaining profit did not affect the rating of bonds. This indicates that the company's ability to earn a profit cannot guarantee that the company could be free from the risk of default. Thus, the results of this study do not support the theory that the profitability of a company is a factor used as a consideration in assessing the quality of bonds. The results of this study are in support of those of Almilia and Devi (2007), Pandutama (2012), and Nurmayanti and Setiawati (2012) who report that the profitability is not proven to significantly influence the rating of bonds.

The results of this study contradict the research conducted by Pakarinti (2012) and Afiani (2013) that show that profitability significantly influences the rating of bonds. The causes of this difference could be due to different sample and different observation periods. The samples in Pakarinti (2012) are all publicly listed companies listed on the Indonesian Stock Exchange from

2005 to 2009. Meanwhile, Afiani (2013) uses a sample of Sharia Commercial Bank and Sharia Business Unit for the period of 2008-2010 using multiple linear regression analysis. The difference in the criteria of the company studied and the time period of the research could be the cause of the discovery of differences in research results.

Current ratio was done found to have significant effect on bond ratings. That is, current ratio was the determinant of the rating of bond. This means that the higher the liquidity of the company is the better is the ratings of its bonds. This result is in accordance with the opinion of Bodie, *et al.*, (2014) who assert that the liquidity ratio is an important ratio used to assess the security of bonds, in which the ratio of liquidity is the ratio to calculate the ability of companies to pay bills with liquid assets. Greater current ratio indicates that the company is able to pay its obligations that are due soon including the obligation to repay the bonds and coupon to the investors. The results of this study are inconsistent with Almilia and Devi (2007) and Afiani (2013) that show that current ratio negatively affects the bond rating.

This study showed that the solvency ratio measured using debt to total equity ratio (DER) was not a determinant of corporate bond rating. That is, the level of debt over the equity did not affect the rating of corporate bonds. This indicates that the portion of the debt in the company cannot guarantee the riskiness of its corporate bonds. The results of this study are consistent with Widiyastuti, *et al.*, (2014). The results of this study are not in accordance with the opinion of Bodie, *et al.*, (2014) that assert that the solvency ratio (leverage ratio) is the ratio used to assess the security of bonds. An excessively high solvency ratio indicates excessive of debt, and indicates the possibility that the company will not be able to create enough profit to pay its bond obligations.

The results of this study are not in line with Nurmayanti and Setiawati (2012) who state that the solvency of the company affects the bond rating. This difference could be caused by the difference of sample used. In their research, Nurmayanti and Setiawati (2012) use all companies listed on the Stock Exchange except the banking sector, finance and insurance sector from 2007-2008. The period of this study is 2011-2014 where the condition of the Indonesian capital market was relatively stable. While in the year 2007-2008, the capital markets of the world were slumped so that the performance of companies are

heavily affected. Therefore, differences in market performance may be the cause of unsupported hypotheses.

Test results showed that total assets turnover (TATO) did not have significant effect on corporate bond rating. This implies that the level of TATO does not affect the rating of bonds so it cannot be used as a determinant of bond rating. The results of this study support the Afiani (2013) who shows that level of TATO is not influential on the bond rating.

The findings of this study differ from Magreta and Nurmayanti (2009) and Nurmayanti and Setiawati (2012) which indicate that the activity ratio has a significant positive effect in predicting the bond rating. In their study, Magreta and Nurmayanti (2009) examine all companies listed on the Stock Exchange except the banking sector and other financial institutions over the period of 2004-2007, while Nurmayanti and Setiawati (2012) examine the public company rated by PT. PEFINDO except those in the banking, finance and insurance sectors from the period 2007-2008. The differences in the sectors studied and the time period of the study could be the causes of the difference in outcomes from the research.

5. Conclusion

This study examines the determinants of bond ratings of companies issuing bond in Indonesia in the years of 2009-2014. The results using logistic regression analysis are not fully in accordance with the initial prediction. Out of the four independent variables being studied, only one variable is found to affect the rating of the bond. This is the current ratio of which it has positive effect. This means the better the company's liquidity ratio is, the higher is the rating of its bonds. While the other three ratios, namely profitability ratio, activity ratio, and solvency ratio, are not found as variables that determine the rating of the company's bonds.

This study has two limitations. First, the number of companies meeting the criteria for selecting samples is relatively small. This occurs because of the ethical sample selection requirements, which are continuously rated during 2011 to 2014 and have a minimum of 5-year bond life. The results can be different if the number of companies sampled is larger, for instance by loosening the requirements of sample criteria. Second, the research is also limited to the financial statements of each of the most frequently

researched companies in the Indonesian context. The results of the research will be different if the scope of research variables is reproduced or previously tested using correlation to know at a glance the linkage of a number of financial variables with bond rating.

References

- Afiani, D. (2013). Pengaruh likuiditas, produktivitas, profitabilitas, dan leverage terhadap peringkat sukuk (Studi empiris pada bank umum syariah dan unit usaha syariah periode 2008-2010). *Accounting Analysis Journal*, 2 (1), 111-115.
- Almilia, L.S., & Devi, V. (2007). Faktor-faktor yang mempengaruhi prediksi peringkat obligasi pada perusahaan manufaktur yang terdaftar di Bursa Efek Jakarta. *Proceeding Seminar Nasional Manajemen SMART Universitas Kristen Maranatha Bandung*. (3 November 2007).
- Becker, B., & Milbourn, T. (2011). How did increased competition affect credit ratings?, *Journal of Financial Economics*, 101, 493-514.
- Bodie, Z., Kane, A., & Marcus, A.J. (2014). *Investments*. New York: McGraw-Hill Education.
- Cadden, D.T., Driscoll, V., & Thompson, D.M. (2008). Using neural networks vs. multiple discriminant analysis to forecast bond rating changes, in Kenneth D. Lawrence, Michael D. Geurts (Editor) *Advances in Business and Management Forecasting (Advances in Business and Management Forecasting, Volume 5)*. Emerald Group Publishing Limited, pp. 3-18
- Graham, J., & Harvey, C. (2001). The theory and practice of corporate finance: evidence from the field. *Journal of Financial Economics*, 61(1), 1-28.
- Gumanti, T. A. (2011). *Manajemen Investasi Konsep, Teori dan Aplikasi*. Jakarta: Mitra Wacana Media.
- Hovakimian, A., Kayhan, A., & Titman, S. (2009). Credit rating targets. *Working Paper*, Baruch College.
- Ibrahim, M.E., Metawae, S.A., & Aly, I.M. (1990). Statistical decomposition analysis of

- financial statements and prediction of bond rating changes. *Managerial Finance*, 16(1), 7-15, <https://doi.org/10.1108/eb013634>
- Kamstra, M., Kennedy, P., & Suan, T.K. (2001). Combining bond rating forecasts using logit. *The Financial Review*. 36(2), 75-96.
- Kisgen, D. (2006). Credit ratings and capital structure. *Journal of Finance* 61 (3), 1035–1072.
- Listokin., Y., and Taibleson, B. (2010). If you misrate, then you lose: improving credit rating accuracy through incentive compensation. *Yale Journal on Regulation*, 27(1): 91-113.
- Magreta, & Nurmayanti, P. (2009). Faktor-faktor yang mempengaruhi prediksi peringkat obligasi ditinjau dari faktor akuntansi dan non akuntansi. *Jurnal Bisnis dan Akuntansi*, 11 (3), 143-154.
- Nurmayanti, P., & Setiawati, S. (2012). Bond rating dan pengaruhnya terhadap laporan keuangan. *Pekbis Jurnal*, 4 (2), 95-106.
- Pakarinti, A. (2012). Analisis pengaruh kepemilikan manerial, kepemilikan institusional, kualitas auditor, profitabilitas, likuiditas, dan leverage terhadap peringkat obligasi pada perusahaan go public yang terdaftar di Bursa Efek Indonesia. *Theis*. Semarang: Fakultas Ekonomi dan bisnis UNDIP.
- Pandutama, A. (2012). Faktor-faktor yang mempengaruhi prediksi peringkat obligasi pada perusahaan manufaktur di BEI. *Jurnal Ilmiah Mahasiswa Akuntansi*, 1 (4), 82-87.
- Sun, L., & Zhang, J.H. (2017). Goodwill impairment loss and bond credit rating, *International Journal of Accounting & Information Management*, 25(1), 2-20, <https://doi.org/10.1108/IJAIM-02-2016-0014>
- Widiyastuti, T., Djumahir, & Kusnyah, N. (2014). Faktor-faktor yang berpengaruh terhadap peringkat obligasi (Studi pada perusahaan manufaktur yang terdaftar di BEI). *Jurnal Aplikasi Manajemen*, 12 (2), 269-278.