Risk Analysis: Sharia Bond vs Conventional Bonds

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"Risk Analysis: Sharia Bond vs Conventional Bonds"

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Abstract

This paper presents an empirical research of conventional and sharia bonds in Indonesian Stock Exchange .Model are formulated from Altman Model which is modified and adapted to the conditions that exist in conventional /sharia bond.The result of the research is expected to be a second opinion for investors interested in investing in bonds. The result suggest that Investors who want to invest in sharia bonds does not have to worry .Because the results of this study indicate that in general , sharia bond rating, continuity risk, operating risk, solvency risk is not significantly different compare to conventional bonds.

Keywords: Conventional Bond, Sharia Bond,Rating,Liquidity risk,Continuity Risk, Operating Risk, Solvency Risk.

I. Rationale of the research:

In the capital market ,there are many investment instruments but the most popular ones are stocks and bonds. Both instrument is attractive in providing returns to investor. But behind the return , those instrument also have a considerable investment risk. For this reason an investor should make an assessment fundamentals before investing.

Fundamental analysis of securities (stocks and bonds) is an analysis that is quite difficult for an investor. Because this analysis starts from the analysis of economic, market, industry and company analysis on which we will choose to invest. Moreover, the data will be used for analysis are often not available, even if it is available the cost is quite expensive to acquire. If cheaper then the data is often questionable. Even if the data are sufficiently reliable data, an investor needs more capability to process data so that it is ready for use.

One example of the data needed investors, especially bond investors is the data about company rating that reflects the obligor risk. About this rating, there are some problems faced by investors. First, sometimes the publication of data is too late. While investment decisions should be done immediately , ratings data has not been published. The second problem, often once a rating that has been published by the rating agencies need to be adjusted again because there is a fairly significant change about the obligor, industry, domestic and global economy that is not accounted for previously. While the third problem concerns this rating is independency of institution that asses the obligor.

Therefore, investors need to predict the rating of the bonds using other alternative (second opinion) by using other variables that influence rating. In this way, it will be able to assist investors in rating the bonds.This rating is one of the necessary for investors , the simplest and most widely used to determine whether bonds are worth buying or not. On the basis of the above problems then this research will take title**"Risk Analysis: Sharia Bond Vs ConventionalBonds".**

II.Problem formulation:

Based on the description above, the problem formulation can be prepared as follows:

1). What is the profile of financial ratio : working capital / total assets (liquidity risk), retained earnings / total assets (continuity risk), operating profit / total assets (operating risk) and debt / equity (solvency risk) and ratings of Sharia and Conventional Bonds registered in Pefindo (Company Rating Agency of Indonesia)as of December 2009?. Which one is better (significantly different or not) for each variable seen from the mean and its variance.

2). Is there any influence (individually or simultaneous) ratio of working capital / total assets, retained earnings / total assets, operating profit / total assets and debt / equity to Sharia bond ratings (sukuk) as well as conventional which is listed in Pefindo as of December 2009

III.Scope of the research:

a) This study only use five variables, namely: working capital / total assets , retained earnings / total assets , operating profit / total assets and debt / equity and ratings of Sharia and Conventional Bonds registered in Pefindo (Company Rating Agency of Indonesia)as of December 2009.

b). Analysis used is multiple regression .

c) . Independence sample test (different test of mean and variance).

IV.Objective of the research:

The objective of this study:

1). Describe the profile of financial ratio : working capital / total assets (liquidity risk), retained earnings / total assets (continuity risk), operating profit / total assets (operating or business risk) and debt / equity (solvency risk) and ratings of Sharia and Conventional Bonds registered in Pefindo (Indonesian rating firm)as of December 2009?. Which one is better (significantly different or not) for each variable seen from the mean and its variance.

2). Examine and testing if there is any influence (individually or simultaneous) ratio of working capital / total assets, retained earnings / total assets, operating profit / total assets and debt / equity to Sharia bond ratings (sukuk) as well as conventional which is listed in Pefindo as of December 2009

V. Benefits of Research:

- For researchers: the results of this study may add insight into the sharia and conventional bonds especially regarding variables that determine the rating / risk bonds and profile.

-For investors: to assist in the selection of bond investors in particular using alternative other variables in predicting rating (second opinion within the Investment decision).

-For issuers: to assist in determining credit worthiness of the obligor or the decision issuance of bonds (financing decision)

VI.Previous research :

According to Manurung (2004) the risk of a bond can be derived from within the company and outside.Risk from within the company (internal risk) such as mistake in the policy of the company's operations, financing and investment mistaken . While outside the company (external risk) can be either interest, inflation, exchange rate risk and reinvestment risk.

Perfindo (Company Rating Agency of Indonesia) in assessing the obligor rating assessment based on the ability of full payment, the structure set out in the issuance of bonds and the protection of investor claims. Rating process is also performed by analyzing three components, such as the competitive industrial performance, prospects, market share, availability of raw materials, industrial growth,economic policies also financial and non-financial performance of obligors.

The analysis that was quite popular in assessing the ability of obligors to fulfill the obligation to pay interest and loan principal is the Altman Model. Altman uses Discriminant Analysis model as follows:

Z = 1.2 X1 + 1.4 X2 + 3.3 X3 + 0.6 X4 + X5 0.99
X1 = Working Capital / Total Assets
X2 = Retained Earning / Total Assets
X3 = Earnings before Interest and Tax / Total Assets
X4 = Market capitalization / Book Value of Debt.
X5 = Sales / Total Assets

But the model was revised to Emerging Market Credit and has been used by Infovesta within the rating Islamic bonds in 2007, the revised model is as follows:

Z = 6.56 + 3.26 X1 + 6.72 X2 + 1.05 X3 X4
X1 = Working Capital / Total Assets
X2 = Retained Earning / Total Assets
X3 = Earnings before Interest and Tax / Total Assets
X4 = Market capitalization / Book Value of Debt.

Other studies related to the bond rating is Aditya Padmonan research. This study used a sample of corporate bonds in Indonesia manufacturing sector, and see the validity of the ratings of bonds .The result of the research is expected to be a second opinion for investors interested in investing in bonds. In this study , use variables like Altman model but it has been modified and adapted to the conditions that exist in conventional/sharia bond markets .

Based on a study of some literature and consideration of the researcher, this study will test if there is any influence (individually or simultaneous) ratio of working capital / total assets (liquidity risk), retained earnings / total assets (continuity risk), operating profit / total assets (business risk) and debt / equity (solvency risk) to Sharia bond ratings (sukuk) as well as conventional which is listed in Pefindo as of December 2009.

VII. Research method :

The study used descriptive research method to look at existing problems and then make an interpretation of the results .This research using data : bond rating as the dependent variable (which is affected) and the ratio of working capital / total assets, ratio of retained earning / total assets, ratio of operating profit / total assets and Debt / Equity as an independent variable (the influence).

Type of data:
The data used in this study is a secondary data such as
sharia bond rating / conventional (from Pefindo), Financial Statements of obligor in 2007 and 2008 (from ICMD 2009 and www, idx.co.id).

a). Population:
The population of this study are that companies in the non-financial industry which issued bonds (both conventional and sharia corporate bond) and bond ratings announced by Pefindo at 31 December 2009.

b). Sample:
The studied samples taken from the entire population above which complete data are available.

c). Data:
- Corporate Bond Rating (Conventional and Sharia / Sukuk) for 2008 and 2009.
  Then the rating obtained are converted into numbers. The lowest rating assigned to a value of 1 and the highest conversion to the conversion value / highest scale (with the assumption the distance between the rating is the same).
- The data of obligors financial ratios is taken from Indonesia Capital Market Directory-year 2009.
  The ratios are:
- The ratio of working capital / total assets (WC / TA) for 2007 and 2008.
- Ratio of retained earnings / total assets (RETA) in 2007 and 2008.
- The ratio of operating profit / total assets (EBITTA) in 2007 and 2008.
- Ratio of Debt / Equity (DE) in 2007 and 2008.

- The Model :

a). Multiple Regression

$$Yt = bo + b1\ X1_{t-1} + b2\ X2_{t-1} + b3\ X3_{t-1} + b4\ X4_{t-1}$$

Where:
Y = bond rating
X1 = working capital / total assets
X2 = retained earnings / total assets
X3 =operating profit / total assets.
X4 = debt / equity .
bo, b1, b2, b3 and b4 are regression coefficients of each variable above.

b). Independence sample test (different test of mean and variance).

VIII. Result and Discussion.

Before processing the data, collect the data that need to be analyzed from PT Pefindo (www.pefindo.com) and the Indonesia Stock Exchange (www.idx.co.id) as well as from ICMD 2009. The data are : working capital / total assets (WC / TA), retained earnings / total assets (RETA), ratio of operating profit / total assets (EBITTA), debt /equity (DE), and Rating. Data taken from the obligors non-financial industry and has a completeness of data, such as Financial Statements and the ratings have been published.

The research objective 1: Profile / conditions of each variable

Having obtained the necessary data regarding the obligor (either for obligors who issue conventional bonds and sharia bonds / sukuk) then the data are processed using SPSS version 18 (independent sample t-test) to see the profile / condition of each variables and then make comparation (sharia bonds vs. Conventional bonds).

Here are the result of study:

Table 1. Profile data of Rating, Retained Earning to Total assets (RETA), Working Capital to Total Assets (WCTA), EBIT to total assets (EBITTA), Debt to Equity (DE) Non- Financial Industryions for the years 2008 to 2009.

Group Statistics

	Jenis Obligasi	N	Mean	Std. Deviation	Std. Error Mean
RATING	Obligasi Biasa	56	12.9643	3.12738	.41791
	Sukuk	30	14.2000	2.04096	.37263
RETA	Obligasi Biasa	56	.1498	.19606	.02620
	Sukuk	30	.1303	.18556	.03388
WCTA	Obligasi Biasa	56	.1325	.19642	.02625
	Sukuk	30	.0440	.16136	.02946
EBITTA	Obligasi Biasa	56	.1136	.08143	.01088
	Sukuk	30	.0583	.03465	.00633
DE	Obligasi Biasa	56	2.3370	2.66122	.35562
	Sukuk	30	1.9643	1.29770	.23693

Source of data: ICMD 2009, www.idx.co.id, www.pefindo.com (processed data)
Note : from table 1
Obligasi biasa = Conventional bond
Sukuk = Sharia bond

From Table 1 above shows for each variable as follows:
- Rating (reflecting general risk performance): Sharia Bonds (Sukuk) for companies that have researched get average rating 14.2 (between rating A^+ to AA -in Pefindo) and was higher / better than the bond rating of conventional at their value of 12.9643 (approximately ranked rating of A ˉto A). It means that Sharia bonds have a stronger level of capability in fulfilling its financial obligations than conventional. It also reflects, a better structure in the issuance of bonds and the protection of investors claim this is possible because of Islamic bonds are investigated in this study is an ijara Islamic bond is where the reward / fee predetermined making it safer for investor.When we look at standard deviation: Conventional Bonds rating is more varied with each other (SD = 3.12738) compared with the Sukuk which has a standard deviation (SD = 2.04096). This means more variable rating conventional bonds are studied in comparison with sharia bonds. So in general rating sharia/Islamic bonds better (more secure) than regular bonds because of Islamic bonds is not considered a "long-term debt" but "long-term securities" (Heru Sudarsono; 2007). Is this difference significant enough or not?testing will be done by using independent sample test after an explanation of the profile of variables of each obligor.
- RETA (Retained Earning to Total Assets): This ratio reflects how the continuity of obligors in the future (risk of continuity). For this ratio ,conventional bonds has an average value of Retained Earnings to Total Assets is 14.98% and this is just a little better than the sharia bonds (sukuk) which has an average value of 13.03%. The higher this ratio on conventional bonds show lower continuity risk compare to sharia bonds.Retained Earning of the obligor sharia lower due to the principle of profit sharing / reward which make sharia bond attactive to investors. But the variation between one bonds with other bonds of this RETA on conventional bonds are more varied (19.606%) as compared to Islamic bonds (18.556%). This illustrates the firms in conventional bond, have dividend payout more diverse than firms in sharia bond. In paying dividend,dividend policy of firms of sharia bond is not too different from one another because it uses the principle of profit sharing.
- WCTA (Working Capital to Total Assets): This ratio reflects liquidity risk of the firm. If we compared between these two samples, then the liquidity in the bonds of conventional have an average value of this ratio 13.25% and the conditions are more liquid than sharia bonds. Sharia bonds/ The sukuk, which only reached 4.40%. In conventional bonds, high liquidity conditions should be maintained by obligor, in order to be able to pay interest that has been agreed upon previously, in contrast with Islamic bonds where interest payments / rewards based on profit (profit sharing) . Meanwhile variation between conventional bonds so the bonds are more variable (19.64%) to one another than sukuk bonds (standard deviation = 16.13%).
- EBITTA (Earning Before Interest and Tax to Total Assets): This ratio reflects how the condition of the profits derived from operations compared to the total assets owned by the company (corporate operating risk conditions). The higher this ratio means the better companies use their asset to generate operating income. For this ratio the conventional bonds have better conditions (11.36%) compared with sukuk bonds (5.83%) means that the risk of operating on conventional bonds lower. But also more variable on conventional bonds compared with sukuk bonds.
- DE (Debt to Equity): This ratio reflects the solvency conditions of the firm. The higher this ratio, the more is not better safety conditions of the bond. This study show that higher Debt to Equity on conventional bonds (2.33 X) compared with Sukuk bonds Debt to Equity (1.96 X) and its variations are also more varied one bonds with other bonds on conventional bonds than sukuk bonds. In general, more at risk (solvency risk) of conventional compared to sharia bonds.

From the discussion above by doing a comparison, then the next the question is whether there is a significant difference of each variable / conditions between conventional bonds compare to sharia bonds. For that analysis and discussion continued as follows.

Table 2.
Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
RATING	Equal variances assumed	2.159	.145	-1.950	84	.054	-1.23571	.63359	-2.49568	.02425
	Equal variances not assumed			-2.207	80.599	.030	-1.23571	.55991	-2.34985	-.12158
RETA	Equal variances assumed	.173	.679	.447	84	.656	.01949	.04355	-.06712	.10610
	Equal variances not assumed			.455	62.309	.651	.01949	.04283	-.06611	.10509
WCTA	Equal variances assumed	2.997	.087	2.114	84	.038	.08850	.04187	.00523	.17177
	Equal variances not assumed			2.243	70.040	.028	.08850	.03946	.00981	.16719
EBITTA	Equal variances assumed	11.103	.001	3.540	84	.001	.05524	.01560	.02421	.08627
	Equal variances not assumed			4.389	80.928	.000	.05524	.01259	.03019	.08028
DE	Equal variances assumed	2.687	.105	.721	84	.473	.37263	.51685	-.65519	1.40045
	Equal variances not assumed			.872	83.472	.386	.37263	.42732	-.47721	1.22248

Source of data: ICMD 2009, www.idx.co.id, www.pefindo.com (processed data)

Rating:

First, performed testing whether there is an **equal variance** in the data of conventional bonds and sharia/sukuk. Testing the assumption of equality of variance using F test .

Hypothesis:
The hypothesis **for testing the variance:**

Ho = Both population rating variance is similar/identical (population rating variance of conventional bonds and sharia is the same).
Ha = Both population rating variance is not similar/identical (population rating variance of conventional bonds and sharia is different).

Decision making:
Basis for decision making
Basis for decision making (test of variance using one-tailed test)
- If the probability> 0.05 so Ho received.
- If the probability of <0.05 and then Ho is rejected.

Decision:
We can see in table 2 that F-stat of rating for Equal variances (with assumption both population rating variance is the same)is 2.159 with probability 0.145. Because its probability 0.145 > 0.05 so Ho accepted. It means that the population rating variance of conventional bonds and Sukuk are the same.

The next step is to perform analysis using t-test to determine whether **the average/mean** rating of conventional bonds differ quite significantly compared to the population average rating sharia bonds.

Hypothesis:
The hypothesis **for testing mean/average**:
Ho = Both population rating mean is similar / identical (population rating mean of conventional bonds and sharia bonds is the same).
Ha = Both population rating mean is not similar / identical (population rating mean of conventional bonds and sharia is not the same or different).

Decision:
We can see in table 2 that t-stat of Rating (with Equal Variance is assumed) is -1.950 with probability 0.054.For two-tailed test, the probability becomes 0.054 / 2 = 0.027. Since 0.027> 0.025 so Ho accepted , it can be concluded that there was no significant difference regarding the population average/mean rating of conventional bonds compared to Sukuk bonds.In short, the average/mean rating of conventional bonds compared to sharia bonds are the same. Based on the testing of variances and the average (mean) of the rating, it can be inferred statistically that rating of conventional bonds which is researched were not significantly different when compared with an average rating of sharia bonds and also its variants.Because most of bonds here in this study that is an ijara Islamic bonds that the rewards are fixed which is not much different from conventional bonds.

By the same way of thinking to see whether there is a difference in the average value of each variable, then for the other variable can be summarized as follows:

- RETA .

  RETA-variance (continuity risk) between sharia bonds compared to conventional bonds do not differ significantly. It means that continuity risk between the obligors on conventional bond compared to inter-obligor on a group of sharia bonds has level of variation which did not differ statistically.

  There was also no difference significantly in the average/mean of RETA for both bond.

- WCTA .

  WCTA- variance (liquidity risk) between conventional bonds compared to sharia bonds is the same.

  There are significant differences on average for both bonds.

- EBITTA.

  EBITTA- variance (operating risk) both populations is different and statistically average EBITTA both populations are also different.

- Debt to Equity (DE) =
  - Variant DE (solvency risk) for both populations are equal.
  - Similarly, the average/mean is the same or did not differ statistically.

The research objective 2: Analysis of Influence of Variable WCTA, RETA, DE and EBITTA to Rating for both bonds.

The next step is to examine the influence of each variable to the Rating. For this purpose we used the t-test and F-test of multiple regression. Here below are the result obtained by multivariate regression.

Conventional Bonds

Table 3: T-test (the influence on an individual basis)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	10.569	.803		13.164	.000		
	WCTA	.738	1.937	.046	.381	.705	.952	1.050
	RETA	6.032	2.700	.378	2.234	.030	.492	2.032
	EBITTA	8.221	6.341	.214	1.296	.201	.517	1.934
	DE	.197	.148	.168	1.327	.191	.884	1.131

Dependent Variable: RATING

Source of data: ICMD 2009, www.idx.co.id, www.pefindo.com (processed data)

From the table above which is the output of the regression results of the four independent variables (WCTA, RETA, EBITTA and DE), at $\alpha = 5\%$ only Retained Earnings to Total Assets (RETA) significant while others do not. During the period 2008-2009 the conventional bond rating is only affected by high RETA.The higher the RETA, the higher the continuity obligor or the smaller the discontinuity risk. So in the eyes of investors, the better the obligor and the expected bond rating increase. While the other variables in this study like

WCTA, EBITTA and DE did not affect the rating significantly because of the correlation between these variables (multicollinierity). This can be detected from the more distant Tolerance and VIF from 1.

Table 4: F-Test (effects simultaneously)

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ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	151.137	4	37.784	4.982	.002[a]
	Residual	386.791	51	7.584		
	Total	537.929	55			

a. Predictors: (Constant), DE, WCTA, EBITTA, RETA
b. Dependent Variable: RATING
Source of data : ICMD 2009 , www.idx.co.id , www.pefindo.com (processed data)

Based on the ANOVA table above, because the significance level is 0.002 <0.05 it can be concluded that taken simultaneously these four independent variables that is WCTA (reflecting the liquidity risk of the bond), EBITTA (operating risk), RETA (continuity risk) and DE (solvency risk) influence bond rating significantly. But from table 3 , individually/partially only RETA significant.Situations like this also shows that there is multicollinearity between variable in the regression model.

Sharia bonds (Sukuk).

Table 5: Test-t (the influence on an individual basis)

2

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	15.092	.890		16.965	.000		
	WCTA	-4.862	2.486	-.384	-1.956	.062	.810	1.235
	RETA	3.862	2.694	.351	1.434	.164	.521	1.918
	EBITTA	-8.047	14.548	-.137	-.553	.585	.513	1.950
	DE	-.362	.315	-.230	-1.151	.261	.781	1.281

a. Dependent Variable: RATING
Source of data: ICMD 2009, www.idx.co.id, www.pefindo.com (processed data)

Based on table 5 above for sharia bonds, all variables (WCTA, RETA, EBITTA and DE) does not influence sharia bond rating .

Table 6: T-test (effects simultaneously)

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.348	4	6.587	1.744	.172[a]
	Residual	94.452	25	3.778		
	Total	120.800	29			

a. Predictors: (Constant), DE, EBITTA, WCTA, RETA
b. Dependent Variable: RATING

Based on Table 6 above, simultaneously testing influenceof independent variable on the variable rating. WCTA, EBITTA, RETA and DE simultaneously does not affect the bond rating sukuk.

IX.Conclusion and Suggestions:

Based on the discussion above by making a comparison between conventional bonds and sharia bonds ,**the conclusion as follows**:

1.a). Average/mean and Variant of rating sharia bonds are not significantly different compared to conventional bond.

b). Retained earnings to total assets (RETA), which reflects the risk of continuity, found that there was no difference statistically for both variants and average (mean) of both populations.

c).Working capital to total assets (WCTA) which reflect the liquidity risks, obtained results that there is a significant difference for both. Conventional bonds have a liquidity risk better than sharia bonds. While their variants is similar.

d). The statistical average of Earning Before Interest and Tax (EBITTA) which describes the operating risk of obligor , for both types of bonds under this study show that there were differences significant, conventional bonds is better than sharia bonds.And statistically, variants in both populations are different.

e). Debt to Equity (DE) which reflects the risk of insolvency, this research shows that mean/average and variance for both bonds does not have a significant difference.

2.The four variables studied (WCTA, RETA, EBITTA and DE) and its influence individually to conventional bond rating is only RETA (continuity risk) significant and simultaneously all variable significant. But not for sharia, individually and simultaneously do not influence their rating.

Suggestions:

1.To investors:

- Investors who want to invest in sharia bonds does not have to worry.Because the results of this study indicate that in general , sharia bond rating,continuity risk, operating risk, solvency risk is not significantly different compare to conventional bonds.
- To investors who want to invest in conventional bond besides considering rating , also important pay attention to RETA variable of obligor.

2.To the issuer of bonds:

- Issuer of sharia bonds are advised to continue to make innovations, new innovations for each issuance of bonds will reduce the risk of bonds and outperformed the conventional bonds.

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