

## FACTORS INFLUENCING ISLAMIC BOND RATINGS BASED ON MALAYSIAN FINANCIAL MARKET

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**Abstract.** The main objective of this study is to examine the determinants of Islamic bond ratings in Malaysian financial market. The scope of the study covers 6 years period which is from 2010 to 2015. This study employs bond ratings as dependent variable while the independent variables are board size, financial leverage, and return on assets (ROA). The main findings reveals that in second estimated model of AAA-rated bond relative to A-rated bond, only financial leverage is found to be statistically significant predictors of Islamic bond ratings. However, the study finds board size and ROA are insignificant predictors of Islamic bond ratings in Malaysian financial market.

### Introduction

Islamic bond ratings is defined as the likelihood of an investor to receive the promised principal and interest payments from the issuer. All Islamic bond rating of publicly traded firms being rated by Malaysian rating agencies like Rating Agency Malaysia (RAM) and Malaysian Rating Corporation Berhad (MARC) and both rating agencies ratings are equivalent to Standard & Poor's rating (Elhaj, Muhamed, & Ramli, 2015). Despite of having high attention from international countries and institutional investors, Malaysia also has high amount of Islamic bond default cases in the past few years (Mohd Noor & Shahimi, 2013).

Elhaj et al. (2015) investigate the influence of corporate governance, financial ratios, and Islamic bond structure on bond ratings. The findings showed that board size has a positive significant influence to bond ratings, financial leverage has a negative relationship with financial measures and bond ratings, and Islamic bond ijarah is positively related to bond structure and bond rating relationship. Ab Hamid, Zakaria and Ab Aziz (2014) stated that Islamic bond rating is significant to the firms performance. Arundina, Omar, and Kartiwi (2015) studied on the predictive of Islamic bond ratings by applying the multinomial logistic and neural networks inferences and showed that share price, Islamic bond structure, industrial sectors and guarantees status is significant to Islamic bond rating.

Shaheen and Javid (2014) have studied on the effect of credit ratings on firm performance and stock return. Board size is identified as one of the corporate governance that is used in their study. The final result indicates that board size is positively and statistically significant with the credit rating. Altwijry (2015) has studied on the role of corporate governance and ownership in unconventional bond ratings. The result showed that board size has a negative significant relationship with the bond ratings.

Liang, Liu, Lin and Yeh (2006) had conducted the research on shipping industry bonds in order to identify the objective and bond ratings approach for the investors and shipping industry in Taiwan. As the result, leverage ratio has the high ability to judge bond ratings. Chikolwa (2008) found that listed property trust bond rating command significant higher bond ratings.

Arundina & Omar (2009), tried to provide empirical foundation for investors and innovate a new model on determining the rating in their studies. The result in this study showed that ROA was found not significant to the Islamic bond ratings. Ali et al. (2015) had investigated the determinants of Malaysian bond ratings. The first model result indicates that ROA is significant and firm with higher ROA will have higher relatively on moving towards AAA-rating (higher rated bonds). From the previous study can be concluded that board size, financial leverage, and ROA influence the bond rating in literature. However, in the context of Malaysian financial market the empirical evidence is still limited. Therefore, this study is motivated in order to fill the gap by providing factors influencing Islamic bond ratings based on the Malaysian stock market.

### Literature Review on Islamic Bond Ratings

Elhaj et al. (2015) investigated the influence of corporate governance, financial ratios, and Islamic bond structure on Islamic

bond ratings using the ordered logit egression model for the year 2008 until 2012. As for independent variables, corporate governance (board size, chairman duality, board independent), financial variables (financial leverage, profitability, and issue size) and Islamic bond structure are used to identify whether it will influence the Islamic bond ratings. The findings showed that board size has a positive significant influence to Islamic bond ratings, financial leverage has a negative relationship with financial measures and Islamic bond ratings and Islamic bond Ijarah is positively related to Islamic bond structure and Islamic bond rating relationship.

Besides that, Arundina, Omar, and Kartiwi (2015) studied on the predictive of Islamic bond ratings using multinomial logistic and neural networks inferences. This study provides evidence to the investors to estimate ratings by using information from past researchers and approaches from several rating agencies. Size, financial ratios, guarantee status, subordinate, Islamic bond structure and industrial sector are used as independent variables that will influence the Islamic bond rating (in AAA, AA, A, and BBB categories). As for the results, both models showed that share price, Islamic bond structure, industrial sectors and guarantees status is significant to Islamic bond rating.

Shaheen and Javid (2014) have studied on the effect of credit ratings on firm performance and stock return. Board size is identified as one of the corporate governance that is used in their study. For this study, 63 financial and nonfinancial firms are selected as samples. As for the study period, the range is from 2007 until 2011. In order to gain result for this study, the authors used two estimation techniques which are Ordered Probit approach and Generalised Method of Moments (GMM) technique. The final result indicates that board size is positively and statistically significant with the credit rating. Furthermore, Liang et al. (2006) had conducted the research on shipping industry bonds in order to identify the objective and bond ratings approach for the investors and shipping industry in Taiwan. Data envelopment analysis (DEA) is used to investigate the corporate bond ratings of Taiwan's shipping industry. As the result, debt ratio has the high ability to judge bond ratings as bonds that have relatively high ratings have high level of overall efficiency and ability to pay debt while lower rating bonds have high amount of debt ratio and must reduce the amount of debt to get a better ratings.

Arundina & Omar (2009) provide empirical foundation for investors and innovate a new model on determining the rating in their studies. ROA is one of the theoretical variables identified to create a rating probability model by using the multinomial logit model. The result of logit model in their study showed that ROA was found not significant to the Islamic bond ratings. However, Ali et al. (2015) had investigated the determinants of Malaysian bond ratings. In this study, the authors tried to provide a new and adequate model that takes into account various risk factors such as ROA to further understands which factors that are best determinants of bond ratings. The first model result indicates that ROA is significant and firm with higher ROA will have higher relatively on moving towards AAA-rating (higher rated bonds).

### Methodology

For this study, 37 publicly traded companies listed in Bursa Malaysia that issue Islamic bond from 2010 until 2015. However, only 21 companies are selected as samples due to the data unavailability. Each of the selected companies have sufficient amount of financial data for 6 years (2010 – 2015) and the bonds are rated by either Rating Agency Malaysia or Malaysia Rating Corporation Berhad. All the data are collected from Bursa Malaysia website, RAM, MARC, Securities Commission, and the selected companies' website on yearly basis. The dependent variable is Islamic bond rating. It is the likelihood of an investor to receive the promised principal and interest payments from the issuer. In this study only AAA, AA, and A rated Islamic bond are identified (Elhaj et al., 2015). Meanwhile, the independent variable, firstly, is board size. It explain the number of directors sitting on the board for that particular year (Elhaj et al., 2015). For the second variable, it is financial leverage which be measured using total debts divided by total assets (Elhaj et al., 2015). For the last independent variable, the study use return on asset. The measurement for return on asset is total income divided by total assets (Majid Kabajeh et al., 2012).

The multinomial logistic regression model in the base line logit model for the three bonds rating categories (AAA, AA, A) can be written in general form. Refer to Equation 1 below shows the formula uses to calculate the multinomial logistic regression model.

$$\log \frac{p(\text{group } j)}{p(\text{group } 1)} = \alpha_{i0} + \beta_{i1}X_1 + \beta_{i2}X_2 + \beta_{i3}X_3 + \dots + \beta_{in}X_n * (Dp) \quad (1)$$

Where,

$\alpha_{i0}$  = constant term,  $\beta$  = respective coefficient on predictor X,  $X_1$ - $X_n$  = predictor (independent) variables and  $Dp$  = dummy/binary variables.

## Findings and Analysis

**Descriptive Analysis.** The purpose of applying the descriptive statistical analysis is to understand the characteristic of the data in the present study. Table 1 reported the descriptive statistic of all variable in this study.

Table 1: Descriptive Statistical Analysis

	Bond Rating	ROA	Financial Leverage	Board Size
Mean	2.183908	-3.612715	0.601564	9.758621
Median	2.000000	-3.367337	0.571488	9.000000
Maximum	3.000000	-1.629406	0.939860	16.000000
Minimum	1.000000	-8.060552	0.337223	5.000000
Std. Dev.	0.856286	1.213808	0.168406	2.458802
Skewness	-0.360097	-1.499154	0.367073	0.507243
Kurtosis	1.473065	6.015184	2.011052	2.280313
Jarque-Bera	10.33202	65.54431	5.499081	5.608344
Probability	0.005707	0.000000	0.063957	0.060557
Observations	87	87	87	87

The first variable which is dependent variable is Islamic bond rating. The mean and median for bond rating are 2.18 and 2.00. Then the maximum and minimum numbers for bond rating are 3.00 and 1.00 respectively. The standard deviation for bond rating is 0.8563. Based on the result for Skewness and Kurtosis, the data is not normally distributed due to the probability of Jarque-Bera for bond rating is equal to 0.0057. The second variable is an independent variable which is ROA. The mean and median for ROA is -3.61 and -3.37. Then the maximum and minimum numbers for ROA are -1.63 and -8.06 respectively. The standard deviation for ROA is 1.21. Based on the result for Skewness and Kurtosis, the data in the present study is not normally distributed. It can be seen when the probability of Jarque-Bera is equal to zero and the data is not normally distributed. The third variable is an independent variable which is financial leverage (FL). The mean and median for FL is 0.6016 and 0.5715. Then the maximum and minimum numbers for FL are 0.9399 and 0.3372 respectively. The standard deviation for FL is 0.1684. Based on the result for Skewness and Kurtosis, the data is not normally distributed due to the probability of Jarque-Bera is equal to 0.0639. The fourth variable is an independent variable which is board size (BS). The mean and median for BS is 9.76 and 9.00. Then the maximum and minimum numbers for FL are 16.00 and 5.00 respectively. The standard deviation for FL is 2.46. Based on the result for Skewness and Kurtosis, the data is not normally distributed due to the probability of Jarque-Bera for is equal to 0.0606.

**Correlation Analysis.** The Table 2 shows the correlation between dependent variable and independent variables. Based on second column, bond rating has weak negative linear correlation with financial leverage which at 28.40% while bond rating have positive weak linear correlation with ROA and board size which both at 13.50% and 17.80%. No high significant correlation among variables recorded in this study. As for third column, financial leverage have weak negative linear correlation with bond rating and ROA which at 28.40% and 36.80% while has weak positive linear correlation with board size which at 8.60%. No high significant correlation among variables recorded in this study. As for fourth column, ROA has weak negative linear correlation with financial leverage which at 36.80% while have weak positive linear correlation with bond rating and board size which at 13.50%, and 11.80% respectively. No high significant correlation among variables recorded in this study. As for fifth column, board size have weak positive linear correlation with bond rating, financial leverage and ROA which at 17.80%, 8.60%, and 11.80% respectively. No high significant correlation among variables recorded in this study.

Table 2: Correlation Analysis

		Rating	Leverage	ROA	Board
Rating	Pearson Correlation	1	-.284**	.135	.178
	Sig. (2-tailed)		.007	.213	.096
	N	89	89	87	89
Leverage	Pearson Correlation	-.284**	1	-.368**	.086
	Sig. (2-tailed)	.007		.000	.421
	N	89	89	87	89
ROA	Pearson Correlation	.135	-.368**	1	.118
	Sig. (2-tailed)	.213	.000		.278
	N	87	87	87	87
Board	Pearson Correlation	.178	.086	.118	1
	Sig. (2-tailed)	.096	.421	.278	
	N	89	89	87	89

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Multinomial Logistic Regression Analysis.** Table 3 shows the other option to get an overall measure of the model. The result shows that the model used in this study is statistically significant ( $\rho = 0.029$ ) in predicting the Islamic bond ratings in Malaysian financial market.

Table 3: Model Fitting Information

Model	Model Fitting Criteria		Likelihood Ratio Tests	
	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	180.969			
Final	166.881	14.087	6	.029

Based on Table 4, the values of three Pseudo R-Squared are Cox and Snell, Nagelkerke and McFadden are 14.90%, 17.00% and 7.70% respectively. Thus, it can be concluded that the model has explained on average less than half of the variations observe in the dependent variable.

Table 4: Pseudo R-Square

Cox and Snell	.149
Nagelkerke	.170
McFadden	.077

Table 5 shows the test result for the effect of individual independent variables in the final model. It shows that the -2 Log Likelihood is significant ( $\rho = 0.016$ ) with financial leverage only.

Table 5: Likelihood Ratio Tests

Effect	Model Fitting Criteria		Likelihood Ratio Tests	
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	167.750	.869	2	.648
Leverage	175.096	8.215	2	.016
ROA	167.506	.625	2	.732
Board	171.632	4.750	2	.093

Based on Table 6, in the first estimated model of AA-rated bond relative to A-rated bond, none of the variables are statistically significant predictors to Islamic bond rating. As for second estimated model of AAA-rated Islamic bond relative to A-rated Islamic bond, only financial leverage is found to be statistically significant predictors. The Wald statistic for FL is 7.14 with the associated p-value of 0.008. Each increased in a firm's FL, the multinomial log-odds of preferring AAA to A-rated Islamic bond would decrease by 5.10 units (holdings other variables constant).

Table 6: Parameter Estimates

Ratinga	B	Std. Error	Wald	Df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)		
							Upper Bound	Lower Bound	
AA	Intercept	.523	1.803	.084	1	.772			
	Leverage	-2.006	1.875	1.145	1	.285	.135	.003	5.301
	ROA	-.201	.278	.522	1	.470	.818	.474	1.411
AAA	Board	-.018	.134	.017	1	.896	.983	.756	1.278
	Intercept	1.400	1.571	.794	1	.373			
	Leverage	-5.088	1.904	7.139	1	.008	.006	.000	.258
	ROA	-.057	.263	.047	1	.829	.945	.564	1.582
	Board	.199	.115	2.975	1	.085	1.220	.973	1.530

a. The reference category is: A.

### Discussions and Conclusion

Based on the findings, the financial leverage is consistent with previous studies such as Elhaj et al. (2015) and Liang et al. (2006). According to Elhaj et al. (2015), their final result is financial leverage has a negative relationship with Islamic bond ratings. This means that financial leverage and Islamic bond rating has negative relationship means that when financial leverage is increased the Islamic bond rating will downgrade and vice versa. According to Liang et al. (2006), their result indicates that debt ratio has the high ability to judge bond ratings as bonds that have relatively high ratings have high level of overall efficiency and ability to pay debt while lower rating bonds have high amount of debt ratio and must reduce the amount of debt to get a better ratings.

The findings also found ROA is insignificant with the Islamic bond rating and the result also is consistent with previous study such as Arundina & Omar (2009) where in their study, the result of Logit model showed that ROA was found not significant to the Islamic bond ratings. This means that ROA does not have any relationship with Islamic bond ratings. The present study also found that board size is insignificant with the Islamic bond rating. This study is inconsistent with other studies because the results are different. According to Shaheen and Javid (2014), they had found that board size is positively and statistically significant with the credit rating. Besides, Altwijry (2015) also found that board size has a negative significant relationship with the bond ratings.

For the conclusion, the findings show that in second estimated model of AAA-rated bond relative to A-rated bond, only financial leverage is found to be statistically significant predictors of Islamic bond ratings. In other hand, the study finds board size and ROA are insignificant predictors of Islamic bond ratings in Malaysian financial market. Future researcher is suggested to use larger scope of study and increase the number years of study. Furthermore, future researcher are recommended to include other new similar variables such as return of equity ratio, time interest earned ratio, and long-term debt ratio.

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