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Research paper

Deciphering *Sukuk* Rating Methodology During Financial Crisis in Malaysian Capital Market Industry

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Abstract

As *Sukuk* regarded as certificate of investment, rating becomes a vital measurement to mobilize resources. Malaysia recorded to be the largest *Sukuk* market in the world. This paper aims to examine the determinant of *Sukuk* rating methodology that applied in Malaysia and also examines its level of significance. This paper employs ordinal logistic regression model by utilizing financial and non financial ratios such as company growth, firm size, profitability, liquidity, leverage ratio, and *Sukuk* and bond maturity. This study found that leverage ratio to be significant as *Sukuk* determinant rating for Malaysia. Meanwhile, the significance level among *Sukuk* determinant for this country are: growth accounted for 0.118. Firm size 0.067, Profitability account for 0.934 respectively. Liquidity with 0.163 and Leverage ratio 0.037. The study concludes that during financial crisis Malaysia showed robustness and found to be resilient. This implies that Malaysia need to do promptly on risk mitigation particularly market risk as well as internal political stability of the country as investors and issuers of *sukuk* taking into account the performance of these risks.

Keywords: *sukuk, rating methodology, ordinal logistic regression*

1. Introduction

Islamic Capital Market (ICM) refers to the market where the long-term financial instruments are trading in ways that comply with the tenet of Islam. In other words, the ICM represents an assertion of religious law in the capital market transactions where the market should be free from the involvement of prohibited activities by Islam as well as free from the elements such as usury (*riba*), gambling (*maisir*) and ambiguity (*gharar*).

Sukuk is regarded as one of the Islamic financial instruments to achieve good liquidity and it is a vital vehicle for resource mobilization, whether in the public or private sector. In general, *Sukuk* defines as investment products where it represents an equal value of shares in possessing tangible assets, usufructs and services in any investment activity. It is also a commercial paper that provides the investor the ownership of an underlying asset. *Sukuk* investment is relatively stable with low return and low risk with defined guaranty that attract investors. Unlike conventional bonds, *Sukuk* has to undergo documentation and screening process that comply with Islamic principles.

During the financial crisis, bond industry mostly affected amid rating agencies precipitated to resolve by giving unduly high ratings to mortgage-backed securities (MBS) that later turned sour. Furthermore, the global financial crisis in 2007 that rocked major developed countries had spilled over to developing countries including Malaysia had impacted the macro foundation of this country. Meanwhile, Malaysia recorded to be resistant towards this crisis and showed its idiosyncratic efforts to retain the gain during the crisis. The maturity and depth of Malaysian *Sukuk* market has ensured a thriving local secondary market, a goal that still most countries are struggling to achieve. A vibrant *Sukuk* market in Malaysia has attracted a number of foreign issuers who are seeking to diversify funding options. The Malaysia sukuk market has continued to expand impressively in 2011, account for 67% (US $ 37 billion) of global Sukuk issued in 2011 worth US $ 55 billion. Global sukuk outstanding rose to more than USD231.4 billion at the end of-2012 and reached USD245.3 billion at the end of 2013. An important step was the launch of the Malaysia International Islamic Financial Center (MIFC) in 2006, with the aim of promoting Malaysia as the international Islamic financial hub and the centre for *Sukuk* origination globally. Another significant initiative was the liberalization of regulations to allow foreign issuers to raise Islamic bonds in the Malaysian capital market. This has led to several issuances of Islamic bonds by multilateral agencies.

The global financial crisis has given more credibility to Islamic banking and finance. Islamic financial institutions have shown more resilience than their conventional counterparts (interest-based financial institutions) during the global financial crisis. It is interesting to point out the case of countries which have operation in a dual banking system (i.e. both the interest-based and non-interest banking systems). Malaysia, is one such country and it has fared extremely well during the global financial-crisis, whereby the effects of the crisis on the overall economy were neutralized by the good performance of the Islamic financial institutions.

In line with the above phenomenon, as Malaysia remained the largest primary market for *Sukuk* issuances since 2010 until 2015, it is interesting to examine *Sukuk* determinant methodology particularly for Malaysian experience that would benefit other countries. This paper therefore attempts to explore rating methodology adopted by rating agencies of this country.

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1.2. Research Question

a. What are the determinant of *Sukuk* rating adopted by rating agency in Malaysia?
b. What is the significance level of determinant variables towards Sukuk rating in this country?

1.3. Objective of Study

a. To examine the determinant of *Sukuk* rating adopted by rating agency in and Malaysia.
b. To examine the significance level of determinant variables towards Sukuk rating in this country.

1.4. Significance of Study

Through credit rating evaluation, in one hand, Sukuk may be seen as reliable credit instruments as other conventional debt. However, on the other hand, although Sukuk are issued together with asset security, Sukuk still faces the probability of default and thus the issuer's creditworthiness is essential. Liabilities that do bear returns, and principal is also fully guaranteed by the Islamic financial institution. Maturities can vary: short-term asset-backed deposits are mainly a substitute for the conventional interbank market; long-term asset backed deposits are mainly designed for corporate customers. Default would be recognized on such term deposits if the Islamic bank cannot pay back either the principal, or the predetermined mark-up, at the maturity of the deposit.

Meanwhile, the overall analytical methodology and criteria applicable in these cases do not materially differ from those for conventional issuers and instrument but some specific adjustments, refinements, and criteria have been developed to more adequately for specificities. In this study, although Malaysia adopting dual monetary system but they experience different performance and identical situation with regard to Sukuk issuance. During global financial crisis, Malaysia shared the effect of market capitalization that impacted the macro economics performance. Malaysia although dominant player in global Sukuk market but also need to evaluate any factor of default that might deteriorate Sukuk performance. The fluctuation of Sukuk rating among Malaysian firms during financial crisis is a sign of urgent risk mitigation to avoid market risk

2. Literature Review

Arundina and Omar (2010) examined Sukuk rating methodology in Malaysia by employing Multinominal Logistic Regression. This study found that the model can be classified by 78.8% of correct case so as to guarantee the most significant variable where as ROA becomes second significant variable. Meanwhile, variables which are found to be not significant are total asset, long term leverage, interest coverage dan current ratio.

Rozi and Sofie (2010), studied on Sukuk rating by employing Ordinal Logistic Regression, found that the determinant factor of sukuk rating are liquidity of the firm, leverage ratio and auditor reputation, where as growth, firm size, profitability, sinking fund, guaranty are found not to be significant as determinant factor.
Widiastuti & Mahfudz (2010) also examined on Sukuk rating methodology by employing Multinominal Logistic Regression. This study found the same result as conducted by Rozi & Sofie (2010) where leverage, liquidity influenced the Sukuk rating whereas size of the firm, profitability and guaranty are found to be not significant variable to influence sukuk rating.

Maurer (2010), conducted similar study by employing the methods of combining of archival and bibliographic research, coupled with the author's previous research on Islamic banking and finance. While the debate over sukuk hinged on whether the structures are shari'a compliant in form only, not in substance, the role of sukuk in neoliberal reform and the privatization of state resources reveal a deeper potential conflict between Islamic standard-setting bodies and global neoliberal projects more broadly.

Zakaria et al (2013), examines the effect of Sukuk (Islamic bond) rating as an additional risk in explaining the earning response coefficient based on a sample of 255 firms listed on the Bursa Malaysia from 2008 to 2011. This study tests whether Sukuk rating affect ERC after controlling the ERC determinants: beta, growth, earnings persistence and size. The study finds that Sukuk rating is strongly correlated to default risk measure. Using reverse regression, the study also confirms that Sukuk rating is significant and negative to ERC. The study thus provides systematic and comprehensive evidence on the effect of Sukuk rating on ERC. Of itself this is an important contribution to the literature but especially so given that the evidence comes from Malaysia—the leaders of Sukuk issuance across the globe.

Meanwhile, Zakaria et al (2012) conducted a research on construct of Sukuk, rating and default in Malaysia. This study aims to provide an understanding on the fundamental idea of Sukuk, its rating and its implication to default risk. The data were taken by way of observation, documents and texts, specifically from Securities Commission Malaysia (SC), Rating Agency Malaysia (RAM) and Malaysian Rating Corporation Berhad (MARC), Standard & Poor subject matter. Despite showing consistent growth of issuance across countries, Sukuk may also promote default risk as Sukuk also needs to undergo a credit rating assessment of its future payment prospects. Even though Sukuk issuance comes together with asset security, however any negative migration of the credit rating assessment would indicate default risk.

Said and Grassa (2013) and Liaqat et al. (2016) analyzed the influence of (i) Economic and Macroeconomic factors, (ii) Global financial Crisis (iii) Financial System (iv) Institutional Environment (v) Legal Origin and (vi) Religion and Society Factors on the Development of the *Sukuk* Market. This study found that Macroeconomic factors such GDP per capita; economic size, trade openness, and percentage of Muslims have a positive influence of the growing of the *Sukuk* market. Interestingly, financial crisis has a significant negative effect on the development of the Sukuk market since the amount of Sukuk issued in those years has declined considerably. Regulatory quality has a significant effect on the development of *Sukuk* market. This implies that countries ranking higher in regulation quality have a larger *Sukuk* market. This is can be interpreted as efficiency and reliability of regulations.

Risk is the existence of uncertainty about future outcome. Risks in economics & finance are classified based on business risks & financial risks. Business risks are uncertainties due to the nature of firm's business, such as loss in wealth, sharp fall in demand for the product or raising costs. Financial risks refer to the uncertainties associated with returns from an investment. These uncertainties would translate into volatility or fluctuation of returns from an investment, i.e. profits may increase or decrease (ISRA, 2012). In fact, an asset that does not come with "guaranteed" fixed returns has some amount of uncertainty. In some cases, even a "guaranteed" instrument has risks if the issuer's credibility is questionable thus, Sukuk market is exposed to default risk.

Rating on sukuk reflects the (credit) worthiness and stability of sukuk issuers. This makes it necessary for any Sukuk issuers to be annually rated by the respective rating agencies, thussukuk investors are adequately informed of the issuer's status and performance. In addition, changes in sukuk rating further reflect the riskiness to investors. In that respect,sukuk with higher rating is unlikely to default and vice versa (Hafizi, et.al. 2011).

The analytical framework for rating sukuk is broadly similar to that used in rating conventional Bonds, as the rating agencies do not assess shariah compliance status, since shariah compliance is satisfied before rating is done. Thus the ratings specifically assess the likelihood of full and timely payment of obligations to holders of the instrument issued under the various debt-based Islamic financing contracts. Moreover, the criteria for rating companies includes: structure issues (e.g. repayment schedule and debt types), business risk analysis, financial risk analysis, management, ownership, etc. (RAM, 2010).

In Malaysia, all debt securities including sukuk issues are required to be accompanied by credit rating at all times. This is to assess the ability of the issuer to meet its contractual obligations and whether it may renege from paying the investors principal and the profit. Thus, a credit rating is a mechanism through which an independent third party, i.e. the credit rating agency (CRA), makes an assessment on the likelihood of a corporate issuer's default on its debt repayments. It focuses on a specific debt instrument and not the overall creditworthiness or financial standing of the corporate issuer. A rating will take into consideration various enhancement tools like guarantees, sinking funds, letters of credit or any other mechanism devised to reduce the default risk of specific issues. Thus, a corporate may be assigned different rating categories for different debt issues across time (RAM Ratings, 2010). However, rating is not a recommendation to purchase, sell or hold a security's market price or its suitability for a particular investment, nor does it involve any audit by the rating agency (RAM Ratings, 2010). (Hafizi, et.al. 2011) asserts that Malaysia is one of the first few countries in the world to require the recognition of CRAs for the purpose of rating a bond or sukuk issue. This is in recognition of their vital role in evaluating the probability of default of sukuk issue, and the importance investors place on ratings for their investment decisions.

Bandyopadhyay (2006) study on corporate ratings in India reveals that corporate degrading increasesthe probability of default (PD). Furthermore, the PD jumps sharply as soon as therating move from investment to non-investment grades (i.e., from BBB rating to BB). He also observes that rating stability declines as corporate default risks increases. Thus, he suggests the need to develop a corporate default predictor modelmainly for non-investment grades that would better capture the firm's characteristics and could give an early warning signal of corporate distress. Hafizi, et.al. (2011) stress that this issue is very relevant and significant not only for conventional corporate bond, but also for sukuk. The issue of sukuk default is very crucial since it affects the welfare of its stakeholders. Identification of default risk in sukuk is importantfor supervision and risk management purposes.

Aziz (2010) analyzed corporate Sukuk in GCC and reveals a series of high profile sukuk defaults in the GCCs, such as Investment Dar, Saad Group and Dubai World's Nakheel Sukuk in 2009, and he concludes that have lost credibility as feasible and viable Islamic long-term project financing instrument.

Hafizi, et.al. (2011) uses descriptive research method to examine cases sukuk defaults in Malaysia and its implication on the Malaysian capital market, and their study reveals that despite the wide variance in ratings, the default rate for Malaysian sukuk in 2009 was relatively low at 0.46 per cent (SC, 2010). For the period of 1997 – 2010, there are altogether 24 cases of sukuk default, and among them include Johor Corporation, Ingress Sukuk Berhad, Tracoma Holdings Berhad and Nam Fatt Corporation Berhad. Of all cases, they were mainly structured based on murabahah and BBA contracts i.e. 12cases structured based on murabahah, 11cases involved BBA structured, and only one case based on IjarahSukuk. They concludes that even though sukuk default may not pose significant threat to the capital market, however, it does have an impact on the overall reputation of Malaysia as the international hub for Islamic finance, where investors and other countries worldwide monitor the development of this particular capital market, the sukuk issuance.

3. Research Methodology

3.1 Type of Research

This research is classified as a descriptive quantitative with the aim to examine the influence of Sukuk determinant in Malaysia and to explore the comparative significant level among Sukuk rating determinant. The independent variables of this study are growth, firm size, profitability, liquidity, leverage ratio and maturity. Meanwhile, for dependent variables of this study are Sukuk rating that with category as follow:

1 for Sukuk with rating of AAA
2 for Sukuk with rating of AA
3 for Sukuk with rating of A
4 for Sukuk with rating of BBB

3.2. Population, Sample and Sampling Technique

The population of this study is the issuer of Sukuk over the period of 2007-2009 or during global financial crisis that rated by S&P and Moodys and listed in Kuala Lumpur Stock Exchange. There are five firms of each country selected as a sample. As for sampling technique undertaken by way of purposive random sampling with the following criteria:

a. The issuer of sovereign Sukuk over the period of 2007-2009 or during global financial crisis and listed both in KLSE.
b. Sukuk has been rated by S&P or Moodys.
c. The firms have recorded financial statement as of 31 December during this period.
d. The period of financial statement should be compliant with Sukuk maturity and able to represent the firm the performance of the firm

3.3. Data Testing Technique

This study generates data by combining time series and cross section or pooled data whilst collecting other related data from financial statements and other secondary sources. This study also employs Ordinal Logistic Regression as data testing technique or PLUM since dependent variable possesses more than two categorical and continue variables or in the form of ordinal (rating). Rating in the dependent variables are AAA, AA, A and BBB where AAA is the highest rating compared to AA and AA is higher than A and A is higher than BBB. These four categories can be expressed in a mathematic form as follows:

$$\text{Logit } P(BBB) = \text{Log } \frac{p(BBB)}{1 - P(BBB)} \quad \textbf{(1)}$$

Or can be rewritten as follow:

$$\text{Log } \frac{p(BBB)}{1 - P(BBB)} = \alpha_i 0 + \beta_{i1} X_1 + \beta_{i2} X_2 + \beta_{i3} X_3 + \beta_{i4} X_4 + \beta_{i5} X_5 + D_{maturity} + e$$

$$\text{Logit } (P(BBB) + P(AA)) = \text{Log } \frac{p(BBB)+P(AA)}{1 - P(BBB)-P(AA)} \quad (2)$$

Or can be rewritten as follow,

$$\text{Log}\ \frac{p(BBB)+P(AA)}{1-P(BBB)-P(AA)} = \alpha_i 0+\beta_{i1}\ X_1 + \beta_{i2} X_2 + \beta_{i3} X_3 + \beta_{i4} X_4 + \beta_{i5} X_5 + D_{maturity} + e$$

$$\text{Logit}\,(P(BBB) + P(AA) + P(A)) = \text{Log}\ \frac{p(BBB)+P(AA)+P(A)}{1-P(BBB)-P(AA)-P(A)}$$

…….(3)

Or can be rewritten as follow,

$$\text{Log}\ \frac{p(BBB)+P(AA)+P(A)}{1-P(BBB)-P(AA)-P(A)} = \alpha_i 0+\beta_{i1}\ X_1 + \beta_{i2} X_2 + \beta_{i3} X_3 + \beta_{i4} X_4 + \beta_{i5} X_5 + D_{maturity} + e$$

Where:

Y = Predicted Sukuk rating
P(BBB) = Probability of BBB rating compared to AAA
P(A) = Probability of rating A compared to AAA
P(AA) = Probability of rating AA compared to AAA
α_{i0} = *Constant term*
β = Coefficient of every predicted X
X_1 - X_5 = Prediction for independent variable
X_1 = Growth
X_2 = Firm size
X_3 = Profitability *(ROA)*
X_4 = Liquidity *(Current ratio)*
X_5 = *Leverage ratio (Debt to Equity Ratio)*

Maturity sukuk = 1 if Sukuk maturity less than five years
0 if Sukuk maturity more than five years
Dp = *dummy* / binary variable
e = *error*

3.4. Significance Test

In order to evaluate a model, significant test can be done to know the function of influence among the variables such as Model Fitting Information, Goodness of Fit, Pseudo R-Square and Parallel Lines.

3.4.1. Model Fitting Information

The aim of this test to know how effective of the variable used in the model by way of testing the overall fitting information of logit model with overall correlation test. The result of Chi-Square Model Fitting Information depends on the decrease value of -2LogLikehood for model that does not contain independent variable or intercept and for model with independent variable only.

3.4.2. Goodness-of-Fit

The function of Goodness of Fit as simultaneous parameter testing to know the fitness of model. Goodness of Fit test would determine whether our model is fit with data or not. The expected result of this test is the value of Chi-Square is small to produce insignificant probability (p>0.05). Good model is the model that is unable to reject null hypothesis and fit with empirical data.

3.4.3. Pseudo R-Square

Pseudo R-Square test has the function to know the power of relationship between dependent and independent variable and as interpretation towards ratio value of tendency by looking one of the value of Cox and Snell, Nagelkarke or Mc Fadden.

3.4.4. Parallel Lines[c]

Parallel Lines test has the function of assessing the assumption that all categories having the same parameter or not. The desired value of this test is not significant which is p>0.05. Inappropriate model can be caused by wrong choosing link function or mistake in rating category. In this case, to resolve this issue can be done by re modeling with other link function.

4. Finding and Analysis

The following table denotes that there are 6 Malaysian firms having AAA rating, 3 for AA rating and 6 of them are A rating. The independent variables of this study are growth, firm size, profitability, Liquidity, Leverage ratio and maturity (dummy variable).

Table 4.1

Case Processing Summary			
		N	Marginal Percentage
R_Sukuk	1	6	40.0%
	2	3	20.0%
	3	6	40.0%
Valid		15	100.0%
Missing		0	
Total		15	

4.1. The Output of Ordinal Logit Regression

In order to derive parameter estimates of the model, the equation was constructed by utilizing information in Table 4.2 as follows:

$$LogitP(AAA) = -47.582 - 0.534 growth - 2.913 \ln frimsize + 0.28 profitability - 1.709 liquidity - 0.376 Leverage + 0 maturity$$

$$LogitP(AA) = -45.454 - 0.534 growth - 2.913 \ln frimsize + 0.28 profitability - 1.709 liquidity - 0.376 Leverage + 0 maturity$$

Table 4.2

Parameter Estimates								
							95% Confidence Interval	
		Estimate	Std. Error	Wald	df	Sig.	Lower Bound	Upper Bound
Threshold	[R_Sukuk = 1]	-47,58	24.41	3.8	1	0.05	-95,4	0.254
	[R_Sukuk = 2]	-45,45	23.92	3.6	1	0.06	-92,3	1.42
Location	Growth	0.534	0.341	2.4	1	0.12	-0,14	1.202
	Ln_Firm_Size	2,913	1.593	3.3	1	0.07	6,04	0.209
	Profitabilty	0.028	0.333	0	1	0.93	-0,63	0.68
	Liquidity	-1,709	1.224	2	1	0.16	-4,11	0.69
	Leverage_Ratio	-0,376	0.18	4.3	1	0.04	-0,73	-0,022
	Maturity	0[a]			0			

The above table shows that only Leverage ratio found to be significant indicated by the value of 0.037. Meanwhile Table 4.3 shows that only intercept variable that has -2 Log Likelihood value which

is 31.648 whereas if other variable included in this model, its value will decrease to 15.715

Table 4.3

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	31.648			
Final	15.715	15.933	5	0.007
.				

As for Table 4.5 confirms that Goodness of Fit test not relevant with the model and in fact it is not significant. Meanwhile Table 4.6 the model has significant value of R-Square and implies that 74.5% of independent variable can explain dependent variable as indicated by Nagelkerke value which is .745.

Table 4.5

Goodness-of-Fit			
	Chi-Square	df	Sig.
Pearson	18.754	73	0.744
Deviance	13.715	73	0.867

Table 4.6

Pseudo R-Square	
Cox and Snell	0.634
Nagelkerke	0.745
McFadden	0.503

4.2. Test of Parallel Lines[b]

The following table indicates that the model is fit and no need to remodeling again as shown by the significance level 0.778 which is higher than p>0.05. In other words, the model is fit and does not need to do re-modelling again.

5. Conclusion

Based on the output of ordinal logit regression, Malaysia found to have one variable that is leverage ratio to be significant as Sukuk determinant rating which account for .037. Meanwhile, the significance level among Sukuk determinant variables are: growth 0.118. Firm size account for 0.067 and profitability account for 0.934 respectively. Liquidity recorded to have 0.163 and leverage ratio 0.037.

In other words, the study concludes that during financial crisis, Malaysia showed robustness and found to be resilient although risk mitigation has to be taken into account. This implies that Malaysia as recorded to be the largest *sukuk* global market share, the industry in this country still expose to risk especially market risk and internal political risk as investors and issuers of *sukuk* demanding more stabilized macro economy that drive investment to more conducive and outstanding performance.

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