THE IMPACT OF SUKUK STRUCTURES ON SUKUK RATINGS AND YIELDS

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ABSTRACT

Sukuk has been developed into a global asset class, supporting development with the participation of a wide range of issuers and investors irrespective of demographic continents. Sukuk structuring is not only related to regulations imposed by the regulators but also has high consideration on rating and yield performance. This study aims to examine the effect of the Sukuk structures on Sukuk rating and yield in Bursa Malaysia (Malaysian Stock Exchange) listed companies during the term of 2008–2013. This study uses the ordinal logit regression model (OLRM) to investigate the effect of Sukuk structures on the rating, and the ordinary least-square (OLS) to investigate the effect of Sukuk structures on the yield. The result demonstrates two opposite directions after controlling for firm characteristics. While Sukuk rating is negatively related to Sukuk structures, Sukuk yield shows a positive direction with Sukuk structures. This study evidently shows that the selection of Sukuk structure is among the important factors for Sukuk yield performance, in addition to fulfilling the regulatory requirements on Sukuk structuring. The selection of the best structure can achieve the issuance and investment objectives. This study was limited to the study of the relationship between Sukuk structure on Sukuk ratings and yield using the aggregate data of Malaysian public listed companies that issued Sukuk during the period of 2008 to 2013. The study provides new insights into the issue of how the Sukuk structure influences the Sukuk rating and yield. The findings of this study contribute to the existing literature on the determinants of Sukuk ratings and yields.

Keywords: Sukuk structures, Sukuk rating, Sukuk yield, Islamic finance.

1. INTRODUCTION

The Islamic finance industry, particularly the Sukuk market, is relatively new in that it really only began to forge ahead during the mid-1980s. However, it has seen a dramatic decline in issues valued between 2007 and 2008 from USD46.65 billion to USD15.8 billion (Rating Agency Malaysia [RAM], 2009). The decline in Sukuk issuance by more than 50% by the end of 2008 is

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due to the credit crunch, which forced investors to step aside from the fixed income market (Khudari & Saad, 2019). The decline in Sukuk issuance is also due to the debates over Shariah principles' compliance with some Sukuk structures and the rising cost of borrowing (Hijazi et al., 2009). Nonetheless, the impact of the world financial crisis on the Sukuk market was not as great as what happened to conventional bonds (Ahmad & Radzi, 2011).

Despite the volatilities and difficulties faced by the Islamic finance industry years ago including the decline in oil prices in the industry's core countries, Islamic finance remains concentrated primarily in some oil-exporting countries: The Gulf Cooperation Council (GCC) countries, along with Malaysia and Indonesia where over of 80% of the USD 551 billion outstanding Sukuk belong to the markets of these countries (International Islamic Financial Market [IIFM], 2020). The S&P Global Ratings (2016) reported that the decline in oil prices led to a significant reduction in the economic growth of the primary markets except for Malaysia. Based on the International Islamic Financial Market Report (2020), global Sukuk issuance posted solid growth in the year 2019 with 18.32% compared to 2018, an amount of USD 145.70 billion, with Malaysia continuing to be the largest Sukuk issuer by 43.16% of total issuances, followed by Saudi Arabia and Indonesia, accounting for 19.54% and 13.33% respectively. In 2019, there has been considerable diversity in types of Sukuk structures and extensive innovations in Sukuk structuring. Based on 2019 data, Sukuk murabahah and wakalah dominate the overall Sukuk market issuance (IIFM, 2020). The selected Sukuk structure demonstrates the different profiles of each Sukuk instrument with its purpose to serve the value and risk that the certificates may carry (Majid et al., 2011). The Sukuk wakalah structure provides flexibility in the structuring and solutions for the issue of shortage in underlying assets.

Figure 1: Total Global Sukuk Issuances (Jan 2001 - Dec 2019)
(in USD Millions)
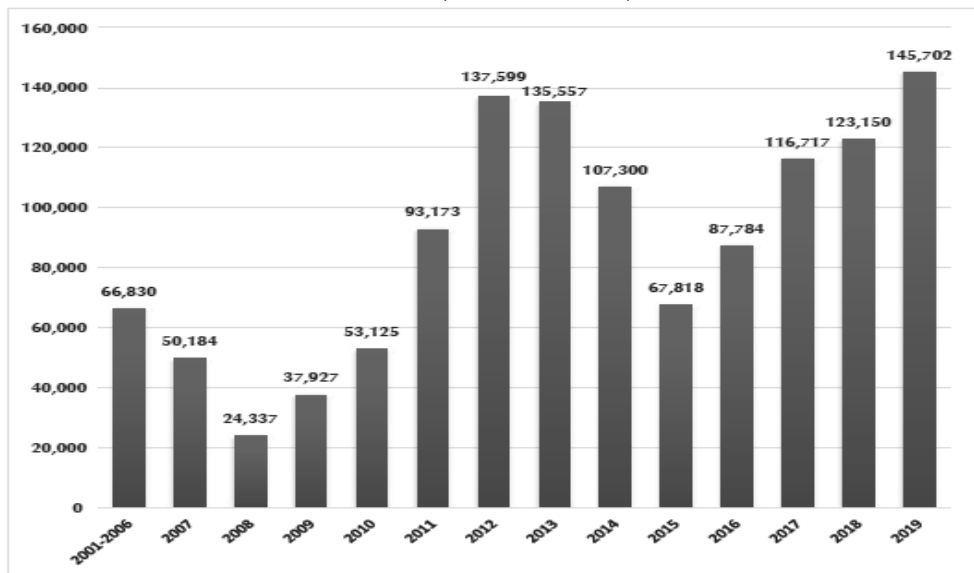
Source: IIFM Sukuk Database (2020, p. 28)

Figure 2: Global Short Term Sukuk Issuances (2019)
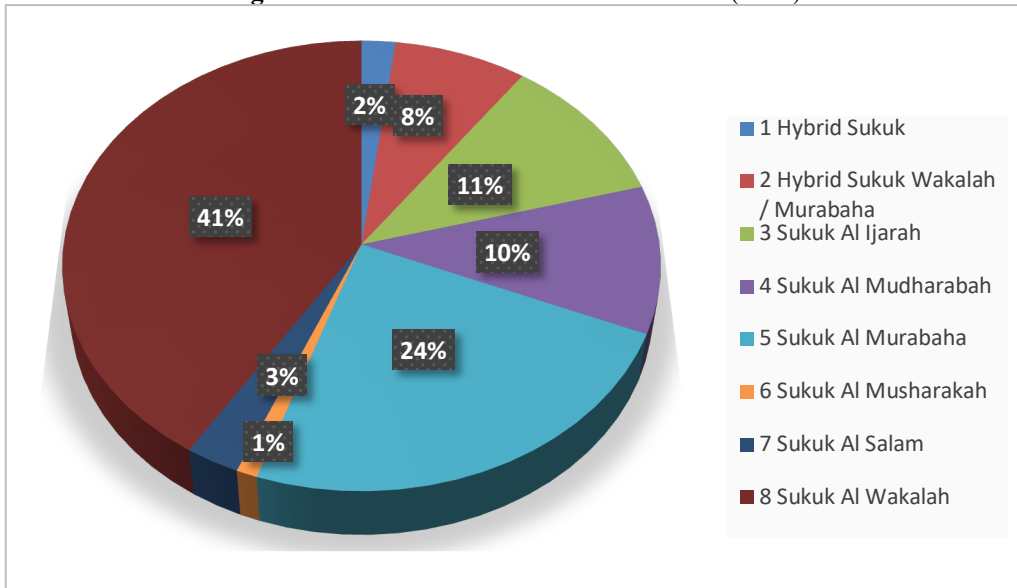

Source: IIFM (2020, p. 42)

This study examines the impact of short term Sukuk structures based on six types of Sukuk (ijarah, musharakah, murabahah, mudharabah, istithmar and bai' bithaman ajil) towards Sukuk credit rating and yield while controlling the characteristics of the firms listed in Bursa Malaysia (Malaysian Stock Exchange) which have issued Sukuk during the period 2008–2013. This paper consists of five sections. The next section reviews the related literature that lead to the development of the study hypothesis, and is followed by the research methodology. Findings and discussion are discussed in the subsequent section. The last section concludes the study.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESIS

2.1. *Sukuk Structures*

Sukuk have been used dominantly until today even though the partnership contracts were also adopted at the same time (Benaicha et. al, 2019). Iqbal and Mirakhor (2011) posited that Sukuk is generally Islamic debt securities structured to resemble conventional debt securities. However, they are free from elements deemed to be forbidden to Shariah—interest, gambling and extreme level of uncertainty—and at the same time incorporate Islamic principles of advocating risk sharing, property rights, and sanctity of contracts. Sukuk can be structured using several types of contracts or their combination. These include sales-based contracts, leased-based contracts, partnership contracts and agency–based contracts.

Figure 3: Sukuk Structures based on the Underlying Shariah Contracts

2.1.1. Sukuk Bai' Bithaman Ajil (BBA)
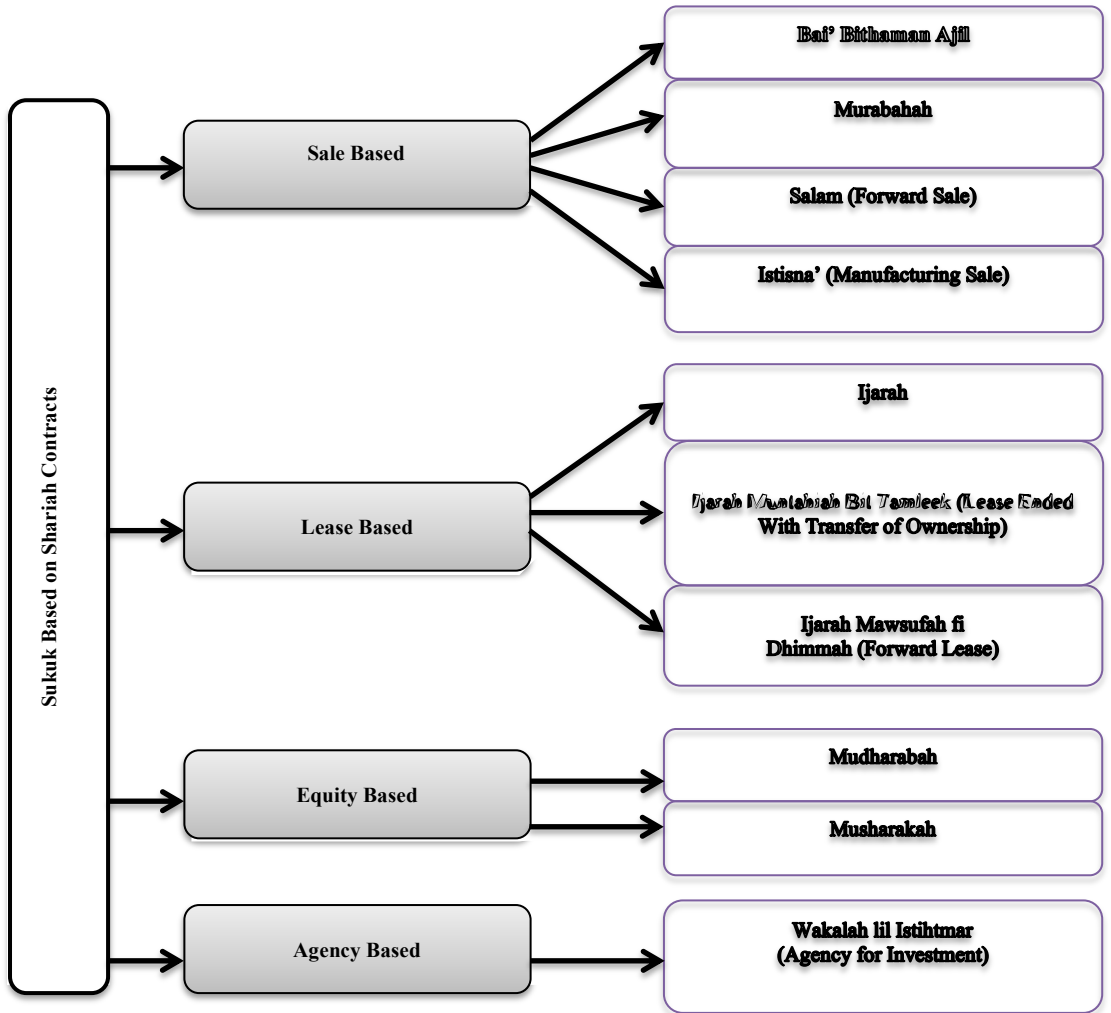
According to the Securities Commission, Malaysia [SC] (2017, p. 70), BBA is defined as the contract of sale and purchase of assets on a deferred and instalment basis with pre-agreed payment period. The BBA Sukuk structure was used since 1996, however, it gained criticism at the global view as it can open the door back to interest. BBA has not become the focus of the Sukuk structure since 2005 (RAM, 2013).

2.1.2. *Sukuk Murabahah*

The murabahah facility involves the purchase of assets by the financiers and the immediate sale of those assets back to the issuer with a mark-up agreed upon by both parties. The issuer's obligation to settle the purchase price is securitized via the issuance of murabahah notes (Kamaluddin et al., 2012). Sukuk murabahah offers a fixed return like a bond (Aquil, 2005). It cannot be legally traded at the secondary market from the Shariah perspective, as the certificates represent a debt from the buyer of the commodity to the Sukuk holders (Dusuki, 2010).

2.1.3. *Sukuk Ijarah*

Ijarah is defined as 'ownership of the right to the benefit of using an asset in return for consideration' (Accounting and Auditing Organization for Islamic Financial Institutions [AAOIFI], 2010, p. 258). Ijarah Sukuk holders have the right to own the real estate, receive the rent and trade their Sukuk in the secondary markets. Sukuk holders bear all costs of maintenance and damage to the real estate. The rental rates on those Sukuk can be fixed or floating depending on the agreement (Tariq, 2004).

2.1.4. *Sukuk Mudharabah*

Sukuk mudharabah represents common ownership of units of equal value in the mudharabah equity and the holders of mudharabah Sukuk are the suppliers of capital and own shares in the mudharabah equity. Its returns are according to the percentage of ownership share (Dusuki, 2010). Sukuk mudharabah holders have the right to transfer the ownership by selling the deeds in the securities market without a guarantee from the issuer, based on any percentage of the capital (Dusuki, 2010). Profits are shared using a predetermined ratio. In the event of a loss, the financing partner bears the loss, unless this loss was caused by the managing partner's negligence (El-Galfy & Khiyar, 2012).

2.1.5. *Sukuk Musharakah*

Sukuk musharakah means a profit and loss-sharing joint venture, where each partner contributes capital, managerial expertise and effort, in an agreed degree of contribution (Al-Hares et al., 2013). The partners share the risks of loss or profit gain based on their share in capital and efforts. Sukuk musharakah allows Sukuk to be issued without being wholly reliant on the existence of underlying tangible assets to generate a return for the Sukuk holders (Lahsasna & Lin, 2012).

2.1.6. *Sukuk Istithmar*

Sukuk istithmar is defined as undivided ownership of the certificate holders in the assets pursuant to their investment through the agent. Istithmar is an investment Sukuk that is issued to investors who would have proportional claims over the financial right underlying this certificate. The holders will also be proportionately liable for any obligations arising from this certificate. Sukuk istithmar represents common shares in the pool of investment assets encompassing physical assets, non-tangible assets, usufructs, services, receivables, or any combination of these types (Tariq, 2004).

2.2. Sukuk Rating and Sukuk Structure

Credit and default risk reflect the ratings of Sukuk as rating agencies would scrutinize the creditworthiness of the Sukuk issuer (Zakaria et al., 2012). Therefore, Sukuk issuer reputation in the debt market is vital as one of the important rating factors. Any default payment would definitely tarnish the issuer credit image. Different types and structures of Sukuk could also be sensitive to default and credit risk which finally lead to severe rating punishment. Zakaria et al. (2013) examined the effect of Sukuk rating as an additional risk in explaining the earning response coefficient based on a sample of 255 firms listed on the Bursa Malaysia. They found that Sukuk rating is strongly correlated to default risk measures. Arundina and Omar (2010) have used the Ordered Logistic Regression and Multinomial Logistic Regression to create a model of Sukuk rating. The result shows that 80% of all valid cases are correctly classified into their original rating classes. However, this study did not take into account the different Sukuk structures in their tests. In their recent studies (Arundina et al., 2015; Arundina et al., 2016), they expanded the previous study on Sukuk rating prediction by adding Sukuk structure variables in the study. They found that Sukuk structures are significantly important to determine Sukuk rating.

Sukuk structure is assumed to influence Sukuk rating and thus may affect the product structuring decision and investment by the issuers and investors. Therefore, this study hypothesizes that;

H1: Sukuk structure has a significant relationship with Sukuk rating

2.3. Sukuk Structure and Sukuk Yield

Sukuk structure could also be linked to its performance. Sukuk provides the investor with fixed rates; therefore, they are exposed to the same risk as fixed-rate bonds due to the fluctuation of interest rates. However, the rise in market interest rates leads to a fall in the value of fixed-income Sukuk. Thus, Sukuk has an indirect relationship with interest-rate fluctuations throughout and they are commonly benchmarked with the London Interbank Offered Rate (LIBOR) as a part of their financing (Vogel & Hayes, 1998). The performances of Sukuk issuer may be affected by the types of Sukuk structure. Different Sukuk structures could reflect the different degrees of issuer financial performance.

As Sukuk are issued based on various contracts of the transaction, there are differences in what they legally represent. Generally, Sukuk are representations of ownership claims in either a pool of assets or rights to receivables or participations. Adesina-Uthman (2011) constructed yield and credit curves based on Shariah compliance allowable profit rate to help Sukuk lenders and borrowers in their investment decisions. Their study made a comparative analysis of the Malaysian Government Sukuk with three different credit classes of corporate Sukuk; two high investment grades and one low grade. The results showed that the high-grade corporate Sukuk performed better than the government Sukuk while the low-grade Sukuk gave a high yield. Saad and Mohamed (2012) examined the relationship between Sukuk yield and its features using a multivariate regression model. The results revealed that there is a statistically significant relationship between the different Sukuk types and Sukuk yield. They found that most of the listed issuers for the period of 2005–2010 were issued Sukuk BBA (68%). BBA at the highest rank generates a high yield compared to Murabahah.

As Sukuk comes in different structures depending on its purpose, it would carry a different degree of risk as well as potential return and influence the decision on Sukuk structuring. Thus, this study hypothesizes that,

H2: Sukuk structure has a significant relationship with Sukuk yield

3.   DATA COLLECTION AND RESEARCH METHODOLOGY

3.1.   *Data and Sample Selection*

The population of this study are the public listed companies in Malaysia that issued Sukuk during the period of 2008 to 2013. The data period was selected post-financial crisis 2007/2008, as the crisis also impacted the Sukuk market issuance (Ahmad & Radzi, 2011). The study focuses on the short term Sukuk for data collection and analysis. The data was compiled from several main sources including Securities Commission, Bursa Malaysia, annual reports, BNM Bond Info Hub, Rating Agency Malaysia (RAM) and Malaysian Agency of Rating Corporation (MARC).

The data collection process started on 30th December 2012. There were 294 Islamic and conventional bond issuers available on the Malaysian Securities Commission website for the period of 2008 to 2013. The first sampling criteria eliminated the conventional bond issuers, leaving 123 Sukuk issuing companies. The next sampling criteria was to eliminate the non-listed companies. Out of the 123 companies, only 30 companies were listed under Bursa Malaysia. Five more companies were eliminated due to rating requirements. Thus the final sample of Sukuk issuer companies contained 25 companies. Table 1 summarizes the sample selection procedures.

Table 1: Sample Details

Sample Selection	Number of Sample
	2008–2013
Total number of the sample	123
(-) Non-listed firms	(49)
(-) Firms with no annual reports and/or newly listed firms	(44)
(-) Unrated firms	(5)
Final Sample	25

The year of observation for this study began from 2008 to 2013 (six years) for all 25 sample companies. Therefore, the final firm-year sampling observations were 150 (25 companies for six observation years).

3.2.   *Dependent variables*

There are two dependent variables used in this study, (i) Sukuk rating (RATING), and (ii) Sukuk yield (YIELD). Sukuk rating stands in the form of an ordinal variable while Sukuk yield stands as a continuous variable. The rating agencies of issuers' rating used are based on RAM and MARC.

Note that the two rating agencies of Malaysia assign this rating to a firm, not a bond, in the same way as Standard and Poor's assigns this rating to a firm. As defined by S&P, prior to 1998, this issuer rating is based on the firm's most senior publicly traded debt. However, after 1998; this rating is based on the overall quality of the firm's outstanding debt, either public or private (Hovakimian et al., 2009). This rating is available from rating agencies on an annual basis starting from the time that Sukuk is issued in Malaysia. In transforming the S&P rating into conventional numerical scores, AAA takes on the value 1 and D takes on the value 22.4. A higher numerical score corresponds to a lower credit rating or higher credit risk.

Following Han et al. (2013) and Fairchild et al. (2015), the numerical score for each rating for this study is as follows: AAA = 9, P1 = 8, AA = 7, A = 6, BBB = 5, BB = 4, B = 3, C = 2, D = 1. Table 2 shows the Sukuk rating description and score based on RAM and MARC.

Table 2: Descriptions and Numerical Codes of the Rating

Rating	Codes[1]	Description
AAA	9	superior safety
P1[2]	8	very high safety
AA	7	high safety
A	6	adequate safety
BBB	5	moderate safety
BB	4	low safety
B	3	very low safety
C	2	high likelihood of default
D	1	default

The second dependent variable (YIELD) refers to the rate of return anticipated on a Sukuk if it is held until the maturity date which is considered a long-term Sukuk yield expressed as an annual rate. For the dependent variable (YIELD), this study obtained data from BNM Bond Info Hub where there are enough sources for data on Sukuk yield and other Sukuk information.

3.3. Independent Variables and Control Variables

3.3.1. Independent Variables—Sukuk Structure

Sukuk are issued in several different forms and structures, each with salient risk. Thus, the rating agency cannot generalize the approach by using general financial risk alone (Arundina et al., 2015). Since Sukuk comes in different types and structures depending on its purpose, it would carry a different degree of risk as well as potential return and influence the decision on Sukuk structuring. Therefore, it is expected that the Sukuk structure plays a role to determine and affect the Sukuk rating and yield.

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[1] The numerical codes here are the numerical score assigned to quantify the ratings given to all Sukuk issuers in this study to enable the data analysis.

[2] In this study, we are focusing on Islamic Medium Term Notes (IMTNs) with long and/or short term ratings. P1 is the highest rating for short-term rating by RAM while AAA to D are the long-term ratings used by both RAM and MARC.

The Sukuk structure encompasses six different types of Sukuk—ijarah (IJAR), musharakah (MUS), murabahah (MUR), mudarabah (MUD), istithmar (IST) and bai' bithaman ajil (BBA) as issued by listed firms in Bursa Malaysia during the period of 2008–2013. This paper tests the assertion that the Sukuk structure (SS) has a significant relationship with Sukuk rating and yield (Hypothesis 1 and Hypothesis 2 respectively) with the measurement of the Sukuk structure variable in two different ways. Following Arundina et al. (2015), the first way measures the Sukuk structure as a numerical coding variable taking numbers 1–6 for the six different types of Sukuk structure. The second way represents the Sukuk structure as a dummy variable taking the value of one of the structures that the company has issued, otherwise, zero value is given. The rest of the Sukuk structure is treated with the same method.

3.3.2. Control Variables—Firm Characteristics

Prior researches have documented a number of independent variables that affect bond/Sukuk rating and yield (Shaheen & Javid, 2014; Arundina et al., 2015; Grassa, 2016). This study uses a set of control variables that have been employed in previous studies, which are Leverage, Profitability and Firm Size. Table 3 presents a summary of the measurement and abbreviations of the independent variables and the dependent variable of this study.

Table 3: Definition and Measurement of Variables

Research Variables	Abbreviations	Measurement
DEPENDENT VARIABLES		
Sukuk Rating	RATING	Assigned ordinal rating score.
Sukuk Yield	YIELD	The difference between the yield-to-maturity (YTM) of a bond issue and the YTM of the treasury bond with the closest maturity.
INDEPENDENT VARIABLES		
SUKUK STRUCTURE	SS	Coding variable taking numbers 1–6 for the six different types of Sukuk structure.
Ijarah	IJAR	Dummy variable equal to 1 if the Sukuk structure is ijarah, and 0 if otherwise.
Musharakah	MUS	Dummy variable equal to 1 if the Sukuk structure is Musharakah, and 0 if otherwise.
Murabahah	MUR	Dummy variable equal to 1 if the Sukuk structure is Murabahah, and 0 if otherwise.
Mudharabah	MUD	Dummy variable equal to 1 if the Sukuk structure is Mudharabah, and 0 if otherwise.
Istithmar	IST	Dummy variable equal to 1 if the Sukuk structure is istithmar, and 0 if otherwise.
Bai' Bithaman Ajil	BBA	Dummy variable equal to 1 if the Sukuk structure is Bai' Bithaman Ajil, and 0 if otherwise.
FIRM CHARACTERISTICS		
Financial Leverage	LEVERAGE	Total debt divided by total assets.
Profitability	PROFIT	Net income before extraordinary items divided by total assets.
Issuer size	SIZE	Natural log of total assets.

3.4.   Analysis Technique

Similar to prior studies in bond (and Sukuk) rating (e.g. Arundina et al., 2015; Grassa, 2016), this study uses the ordinal logit regression model (OLRM) to examine the influence of Sukuk structure (measured by six different Sukuk types) while the controlling variables are leverage, profit and firm size on the Sukuk rating. OLRM is an extension of the logistic regression model for any dichotomous dependent variable allowing for more than two ordered response categories. According to Torres-Reyna (2012), when a dependent variable has more than two categories and the values of each category have a meaningful sequential order where a value is indeed 'higher' than the previous one, then the ordinal logit can be used. For the dependent variable of this ordered logit model, this study collapsed the initial nine multiple Sukuk ratings into five final categories of Sukuk rating due to availability. This also reflects the ordinal risk assessments. This study estimates the model in Table 6 using an OLR based on a nine-way rating classification[3], adapted and integrated from RAM and MARC for long term as well as short term rating scales. However, due to the availability of issuers with their respected rating scales, this study ended up with only five rating scales—AAA, P1, AA, A and BB.

The ordinary least-square (OLS) model is used for the second dependent variable (YIELD) following Elyasiani et al. (2010). Having panel data, it was acknowledged that there was a possibility of correlations between unobserved effects and the independent variable. Possible alternatives to look over this issue are to use Fixed Effects Model (FEM) with dummies for years or to use Random Effects Model (REM) or to ignore and use Ordinary Least Square (OLS). Three testing procedures were analysed to determine the best treatment among alternatives. Using Stata, the first analysis was to test the joint significance of the fixed effect intercepts. Null hypothesis is rejected since $F(6,136) = 576.24$. Large F statistic results showed enough evidence to reject the null hypothesis. The next procedure was testing the Lagrangian Multiplier (LM) to examine if any random effect exists. The result of LM showed that $chi2 = 3.95$ with $prob > chi2 = 0.023$, thus the results fail to reject the null hypothesis.

Based on the two tests above, the results are in favour of FEM. To reconfirm, a final procedure of the Hausman test was carried out to test whether FEM or REM suits better. The Hausman results show that FEM is better over REM as evidenced sby $chi2 = 41.12$, where the null hypothesis is rejected. Therefore, this study opts FEM for the panel data unobserved effects' treatment. In order to investigate the relationship of Sukuk structure and control variables on Sukuk rating and yield, the following models are used:

RATING = f (Sukuk structure, control variables)
YIELD = f (Sukuk structure, control variables)

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[3] AAA, P1, AA, A, BBB, BB, B, C and D.

4.   RESULT AND ANALYSIS

4.1.   *Descriptive Statistics*

Table 4 summarizes the descriptive statistics of the sample size of this study for Sukuk structure and firm characteristics that explain Sukuk rating and yield. Table 4 Panel A depicts the descriptive result of continuous dependent variables (YIELD) and firm characteristics. The Ordinal Dependent Variable (RATING) and Category Independent Variables (SS) will be described in Table 4 Panel B. Table 4 Panel A also shows the skewness and kurtosis of the continuous dependent variables.

The results in Table 4 show that the Sukuk yield average (median) is 4.30 (4.05) with a maximum yield of 20.05. This finding is consistent with Butler et al. (2009) who found an average bond yield of 4.39 based on the US data from 1990–2004. Nonetheless, this current study reports the average Sukuk yield based on Malaysian sample firms' observations. Thus, a small average variance is expected. Within the firm characteristics component, the descriptive statistics from Table 4 Panel A indicates that the average (median) total debt to the total asset (leverage) is 0.53 (0.50). The standard deviation of leverage is 0.18 with upper and lower quartile values of 0.89 and 0.2 respectively. The average (median) profit of sample firms is 0.05 (0.05) with a standard deviation of 0.04 while the maximum and minimum values are 0.20 and -0.14 respectively. The average (median) sample firms' total asset (size) is 6.74 (6.50) with a standard deviation of 1.13% with upper and lower quartile values of 9.30 and 4.30 respectively.

Table 4: Summary Statistics on the Variables

Variable	Sign	Mean	Median	Std. Dev	Min	Max	Skewness	Kurtosis
Panel A: Descriptive Statistics of Continuous Dependent Variable (YIELD) and Firm Characteristics								
YIELD	%	4.30	4.05	3.59	0	20.05	-1.48	1.09
Firm Characteristics								
Leverage	%	0.53	0.50	0.18	0.2	0.89	0.23	-1.04
Profit	%	0.05	0.05	0.04	-0.14	0.20	-0.29	2.12
Size	%	6.75	6.50	1.13	4.30	9.30	0.36	0.57

Variable	Rate	Codes	Frequency	%
Panel B: Descriptive Statistics of Ordinal Dependent Variable (RATING) & Category Independent Variables (Sukuk Structure)				
RATING				
superior safety	AAA	9	54	36
very high safety	P1	8	6	4
high safety	AA	7	78	52
adequate safety	A	6	6	4
low safety	BB	4	6	4
Total observation			150	100

Sukuk Structure			
IJAR	1	18	12
MUS	2	60	40
MUR	3	30	20
MUD	4	12	8
IST	5	24	16
BBA	6	6	4
Total observation		150	100

Table 4 Panel B shows the descriptive statistics of Sukuk rating percentage and frequency. The highest percentage was recorded by high safety rating, coded by '7' with 52% followed by 36% of superior safety rating. The remainder ratings shared a similar percentage at 4% —low safety, adequate safety and very high safety rating. The results implied that the Sukuk ratings scored by the sample firms during the study period were very good where the rating score was dominated by 'high safety' and 'superior safety'. Table 4 Panel B also summarizes the Sukuk structure percentage and frequency. 60 Sukuk musharakah were issued by sample firms while only 30 Sukuk murabahah were issued.

Table 5 below compares high and low rating and yield firms with respect to Sukuk rating and yield. The differences in mean values of the two sub-sets of firms are tested for significance using the t-test. Table 5 also reports the mean values of Sukuk rating and yield with Sukuk structure and firm characteristics variables between high and low Sukuk rating and yield firms. In order to separate the two groups of high and low rating, 'low safety' and 'adequate safety' have been combined as low rating while 'high safety', 'very high safety' and 'superior safety' have been combined and defined as high rating. 12 sample firms are considered as low rating firms while 138 firms are considered as high rating firms. In order to separate the two groups of high and low yield, the 4.30 mean value of Sukuk yield is used to partition the high Sukuk yield from low yield. As such, if the firm's Sukuk yield is 4.30 and above, the firm is considered as a high Sukuk yield firm while if its yield is lower than 4.30, it is considered as a low yield firm.

Table 5 Panel A: Analysis of Mean Differences in Sukuk Rating, Sukuk Structure, and Firm Characteristics

	Mean				
RATING	**N,150**	**SS**	**Leverage**	**Profit**	**Size**
High Rating	138	.000	.000	.007	.307
Low Rating	12	.000	.000	.000	.001
Difference	(t-stat)	-6.099***	-5.982***	2.752***	1.025

Table 5 Panel B: Analysis of Mean Differences in Sukuk Yield, Sukuk Structure, and Firm Characteristics between High and Low Yield Firms

YIELD	**N,150**	**SS**	**Leverage**	**Profit**	**Size**
High Yield	55	.246	.059	.081	.765
Low Yield	95	.272	.066	.036	.758
Difference	(t-stat)	1.164	1.904**	1.757*	3.00

Firm-year observations = 150. See Table 3 for definition and measurement of variables.
*** Significant at $p<0.01$ (2-tailed).
** Significant at $p<0.05$ (2-tailed).
* Significant at $p<0.10$ (2-tailed).

According to Table 5 Panel A, high Sukuk rating dominated almost all Sukuk issuers (92%) from 2008 to 2013. The results show that the differences in mean values are statistically significant for Sukuk structure, leverage and profit. Sukuk structure and leverage show a negative sign to Sukuk rating while profit shows a positive direction. Clearly, profit could reduce the impact of any credit pressure since profit can secure sufficient assets to offset any foreseen liability. The results imply that the Sukuk structure among the sample firms in this study was dominated by musharakah (40%) and murabahah (20%). These two structures promote higher credit risk, as losses would be absorbed by the lenders as well as the creditors. Thus, a different Sukuk structure may have a negative effect on Sukuk rating. Table 5 Panel A further indicates that profit firms enjoy higher ratings while higher leverage firms suffer Sukuk rating. Higher profit would also enable these high-rated Sukuk issuers to meet their debt obligations within the stipulated schedule without any hassle. Leverage on the other hand would reflect credit risk. Higher leverage could expose any firm with greater credit risk, thus, higher leverage would negatively influence Sukuk rating (Ashbaugh-Skaife et al., 2006).

Table 5 Panel B indicates that more than half (95 firm-year observations) of Sukuk issuers during 2008 to 2013 have a low yield (63.3%). The results also show that the differences in mean values are statistically significant for profit and leverage. Out of these significant results, leverage and profit show a positive sign to Sukuk yield. Fama and Miller (1972) found that the higher leverage could lead to higher return as firms are willing to tolerate the risk accompanying the high reliance on debt to further widen the investment prospects. This explains the significance of the positive mean difference of leverage to Sukuk yield in this study.

4.2. Regression Results

In the analysis of determinants of the Sukuk credit ratings and yields in this study, two models are estimated. Model 1 and Model 2 are to test the effect of Sukuk structures (SS) as a numerical coding variable on Sukuk rating (RATING) and Sukuk yield (YIELD) respectively with the controlling effect of firm characteristics LEVERAGE, PROFIT and SIZE.

$$\text{RATING}_{it} = \beta_0 + \beta_1 \text{SS}_{it} + \beta_2 \text{LEVERAGE}_{it} + \beta_3 \text{PROFIT}_{it} + \beta_4 \text{SIZE}_{it} + \varepsilon_{it} \qquad (1)$$
$$\text{YIELD}_{it} = \beta_0 + \beta_1 \text{SS}_{it} + \beta_2 \text{LEVERAGE}_{it} + \beta_3 \text{PROFIT}_{it} + \beta_4 \text{SIZE}_{it} + \varepsilon_{it} \qquad (2)$$

We re-estimate models 1 and 2 by using an alternative measure of Sukuk structure which measures it as a dummy variable to test the effect of SS to RATING and YIELD after controlling the effect of firm characteristics LEVERAGE, PROFIT and SIZE.

$$\begin{aligned} RATING_{it} = {} & \beta_0 + \beta_1 IJAR_{it} + \beta_2 MUS_{it} + \beta_3 MUR_{it} + \beta_4 MUD_{it} + \beta_5 IST_{it} + \beta_6 BBA_{it} \\ & + \beta_7 LEVERAGE_{it} + \beta_8 PROFIT_{it} + \beta_9 SIZE_{it} \\ & + \varepsilon_{it} \qquad\qquad (1a) \end{aligned}$$
$$\begin{aligned} YIELD_{it} = {} & \beta_0 + \beta_1 IJAR_{it} + \beta_2 MUS_{it} + \beta_3 MUR_{it} + \beta_4 MUD_{it} + \beta_5 IST_{it} + \beta_6 BBA_{it} \\ & + \beta_7 LEVERAGE_{it} + \beta_8 PROFIT_{it} + \beta_9 SIZE_{it} \\ & + \varepsilon_{it} \qquad\qquad (2a) \end{aligned}$$

To test the predicted relations between SS and RATING, we estimate an ordered logit model (Arundina et al., 2015; Grassa, 2016). Following Bradley et al. (2007), the ordinary least-square (OLS) model is used for the second dependent variable (YIELD).

The first column of Table 6 reports the model 1 test of whether the Sukuk structure is associated with Sukuk credit ratings. Six types of Sukuk structure were grouped under the Sukuk structure (SS) variable and regressed to ratings after controlling the effect of leverage, profit and size. The results of this Sukuk structure variable show a negative and significant relationship to the rating. The results imply that different types of Sukuk structures gave a significant impact on their rating in a negative direction. The only study that has tested the impact of Sukuk structure on the Sukuk rating in the Malaysian Islamic capital market is Arundina et al. (2015). They found that Sukuk structure has a significant effect on Sukuk rating while this effect is smaller in our study's result. Thus, this result supports *H1* that *'Sukuk structure has a significant relationship with Sukuk rating'*.

The firm characteristic control variables (leverage, profit and size) in Model 1 show that leverage has a significant and negative effect on Sukuk rating while profit and size are positive to Sukuk rating; nevertheless, it gives a non-significant effect. Similar supporting findings were reported by Arundina et al. (2015). All of these prior studies tested and controlled the effect of leverage on credit rating and they consistently found that leverage is negative and significant to credit rating. The results of profit as a control variable in Model 1 showed a non-significant and positive effect on Sukuk rating. Higher profit firms are favoured by credit rating as it reflects the firm's ability in debt obligation. However, due to the limited sample size, the result of profit positive effect to rating in this study is insignificant. Similar non-significant and positive findings were also reported by Grassa (2016). The final control variable, size, also showed a non-significant and positive effect on Sukuk rating in Model 1. A greater firm size which is measured by total assets is favoured by rating agencies as assets are able to generate more income to the firm and add to the firm's value. Grassa (2016) and Bradley et al. (2007) also found a positive direction effect on credit rating.

Table 6: Regression of the Effect of Sukuk Structure on Sukuk Rating and Yield

Variables	Model 1	Model 2
	Ordered Logit Regression	OLS Regression
	Dependent Variable = RATING	Dependent Variable = YIELD
	Estimated Coefficient	
Sukuk Structure (SS)	-.497***	1.226***
	(-3.48)	(6.05)
Firm characteristics		
LEVERAGE	-.371**	4.172**
	(-2.72)	(2.55)
PROFIT	2.741	1.818
	(.81)	(.50)
SIZE	.255	-.732***
	(1.57)	(-3.05)
Years Fixed Effect	Included	Included
Pseudo R^2	0.170	
Adjusted R^2		0.270
Firm-Year Observation	150	150

Note: *, **, *** implies 10%, 5%, 1% significant level.

Model 2 in the second column of Table 6 highlights the roles of Sukuk structure to Sukuk yield. An independent variable of Sukuk structure based on six different types of Sukuk was regressed to Sukuk yield after controlling the effect of leverage, profit and size. The results of this regression

on the Sukuk structure to yield show a positive and significant relationship. The results imply that different types of Sukuk structures bring a significant impact on their return in a positive direction. The descriptive results indicated in Table 4 panel B shows that Sukuk musharakah comprised 40% of the sample.

Based on Tariq (2004), the Sukuk structure is facing different types of risks such as market risk, operation risk and Shari'ah compliance risk. Therefore, the rate of return risk for Sukuk is similar to fixed-rate conventional bond's risk. Thus, when the market interest rate rises, the Sukuk value drops. The findings of this study based on Model 2 in Table 6 report that Sukuk structure has a significant and positive effect on Sukuk yield. Thus, this result supports *H2* that *'Sukuk structure has a significant relationship with Sukuk yield'*.

The firm characteristic control variables (leverage, profit and size) in Model 2 show that leverage and size are positively/negatively significant to Sukuk yield respectively while profit is positive to Sukuk yield; nevertheless, it gives a non-significant effect. The positive and significant effect of leverage on Sukuk yield could be explained by the results of Uluyol et al. (2014). They posited that there is a strong threshold effect between financial leverage and firm value. The theory suggests that leverage could positively impact firms' returns as firms engage in profitable projects via leverage funding.

This current study mean leverage is 53% as indicated in Table 4 descriptive results. This study also finds that leverage is significant and positive to Sukuk yield. These results are supported by the justification of Uluyol et al. (2014) that at the leverage level of 53.97%, leverage is significant and positive to firm value. The second control variable, profit, was found as non-significant to yield. As Sukuk yield, in general, reflects the coupon rate of Sukuk over its price, profit was disregarded. A similar non-significant finding was also reported by Bradley et al. (2007) in their regression model that examines the corporate governance on bond yield spread. Profit appears as part of the control variables with a non-significant effect to yield. The final control variable, size, shows a significant and negative result to Sukuk yield in Model 2. Anderson et al. (2004), and Bhojraj and Sengupta (2003) found similar results when they used size as the control variable in examining its effect on the cost of debt, bond rating and yield.

Table 7 below show the results when the Sukuk structure variable was measured as common binary variables for each of the Sukuk types, IJAR, MUS, MUR, MUD, IST and BBA. The first column of Table 7 reports Model 1a, where we test whether the Sukuk structure is associated with Sukuk credit ratings. The results of Model 1a in Table 7 show that only IJAR, MUS, MUR, and IST are positive and significant to Sukuk rating. None of the control variables showed a significant effect on rating in Model 1a. Comparing these current results to the results of Model 1 in Table 6, the former measurement of the Sukuk structure gave a better and stable result. When each of the different Sukuk structures was coded 1–6 as defined in Table 3, no omitted and covariate pattern problem occurred based on the results showed in Model 1, Table 6. The omitted variable and covariate pattern reported in Model 1a results could also affect the change of Sukuk structure direction to the rating from negative to positive as formerly reported by the results in Model 1 (in Table 6). Arundina et al. (2015) have results that support this theory. They found that the results of the Sukuk structure variable have changed from significant to insignificant on rating with different directions of some Sukuk types such as the BBA structure.

Table 7: Additional Results for Sukuk Rating/Yield and Sukuk Structure

Variables	Model 1a	Model 2a
	Ordered Logit Regression	OLS Regression
	Dependent Variable = RATING	Dependent Variable = YIELD
	Estimated Coefficient	
Sukuk Structure		
IJAR	47.064***	.082
	(43.50)	(.12)
MUS	47.640***	.559
	(50.37)	(1.02)
MUR	47.387***	.419
	(45.44)	(.65)
MUD[4]		
IST	46.819***	1.197*
	(44.99)	(1.86)
BBA[5]		16.668***
		(21.08)
Firm characteristics		
LEVERAGE	-.169	1.035
	(-.13)	(1.01)
PROFIT	3.034	1.031
	(.93)	(.54)
SIZE	.054	-.166
	(.32)	(-1.26)
Years Fixed Effect	Included	Included
Pseudo R^2	0.176	
Adjusted R^2		0.201
Firm-Year Observation	150	150

Note: *, **, *** implies 10%, 5%, 1% significant level.

On the other hand, Model 2a in Table 7 shows that only IST and BBA have a significant explanation to Sukuk yield while the MUD result was omitted. None of the control variables showed a significant effect to yield in Model 2a. The results imply that different Sukuk structure has a different effect on Sukuk yield. The overall results of adjusted R^2 in Model 2a show that 20.1% of the independent variables' variation explains Sukuk yield. The adjusted R^2 indicated by Model 2 is, therefore, better (27%).

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[4] Sukuk Mudarabah reported a missing standard error with a coefficient of 46.147 in Model 1a, thus the z statistics also reported a missing value.

[5] Sukuk BBA showed omitted results for Model 1a. This could be due to the least frequency (only 4%) reported for BBA issued by sample firms during the study period.

5.   CONCLUSION AND IMPLICATIONS

This study aims to examine the effect of the Sukuk structure on Sukuk rating and yield using the data of 25 Malaysian public listed issuers from 2008 to 2013. The result shows that Sukuk structures among the sample firms in this study were dominated by musharakah. Sukuk istithmar and ijarah are in the medium level of Sukuk issuance while mudharabah and BBA are less frequently applied by the sample firms in this study. The results are relevant to the current trends of Sukuk issuance in Malaysia and globally. Rating agencies may find these two structures promote higher credit risk, as losses would be absorbed by the lenders as well as the creditors. The results indicate that the Sukuk structure has (i) an effect on the Sukuk rating, but in the negative direction, and (ii) an effect on the Sukuk yield in a positive direction. Sukuk istithmar and BBA have significant results on yield.

This study's findings are expected to have practical implications. The results of this study could be useful for the issuers to anticipate better Sukuk structures to be issued with the lowest risk, and best returns and ratings. In addition, the results of this study explain to policymakers the extent of coordination on Sukuk structures in terms of Sukuk issuance, and propose the regulators have more stringent regulations to manage the capital market. In addition, the issuers are proposed to choose the best structure that can increase the yield as well as fulfil the regulatory requirements. Since the study was conducted in Malaysia, further study is suggested to include a larger sample in the global Sukuk market.

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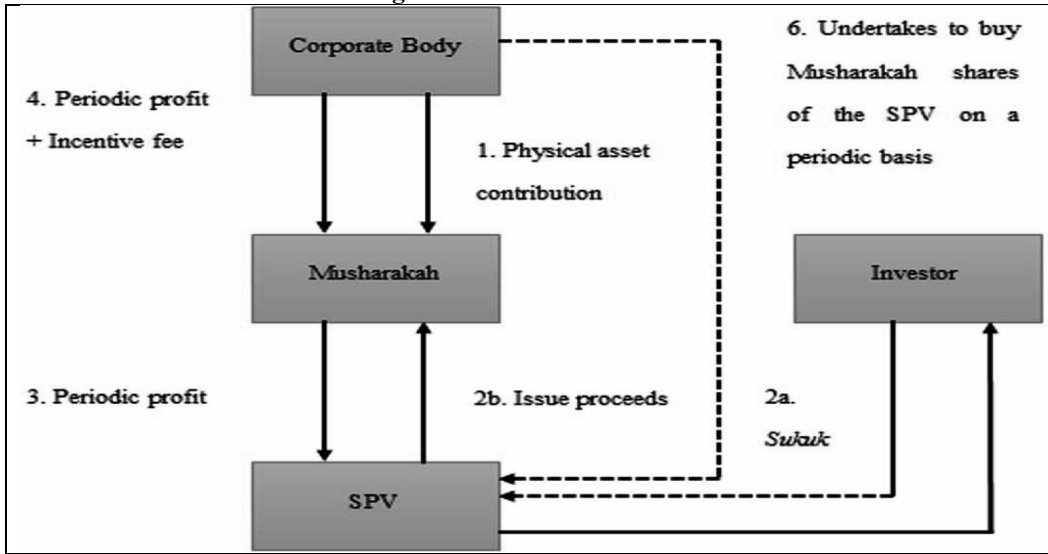
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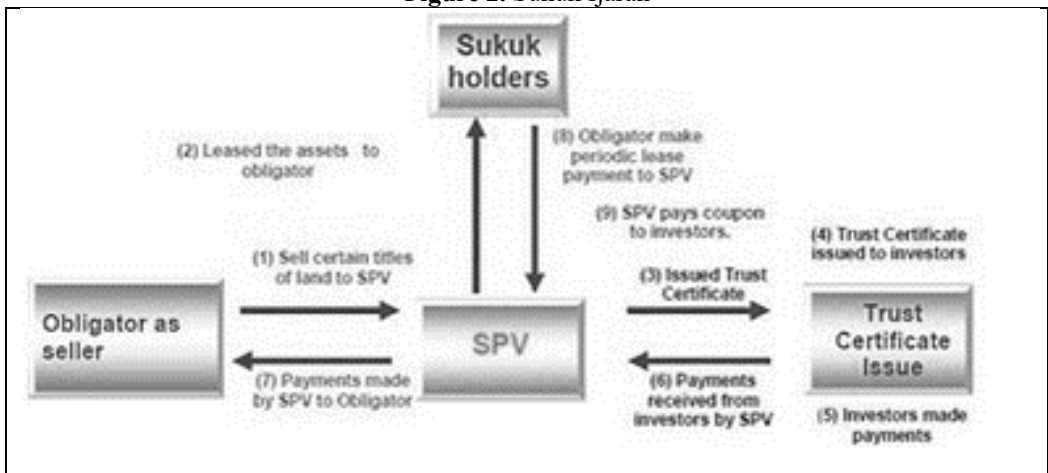
APPENDICES

Figure 1: Sukuk Musharakah

Corporate Body

4. Periodic profit + Incentive fee

1. Physical asset contribution

6. Undertakes to buy Musharakah shares of the SPV on a periodic basis

Musharakah

Investor

3. Periodic profit

2b. Issue proceeds

2a. *Sukuk*

SPV

Source: MIFC (2013)

Figure 2. Sukuk Ijarah

Sukuk holders

(2) Leased the assets to obligator

(1) Sell certain titles of land to SPV

(8) Obligator make periodic lease payment to SPV

(9) SPV pays coupon to investors.

(4) Trust Certificate issued to investors

(3) Issued Trust Certificate

Obligator as seller

(7) Payments made by SPV to Obligator

SPV

(6) Payments received from investors by SPV

Trust Certificate Issue

(5) Investors made payments

Source: MIFC (2013)