

***Sukuk* Securities and Conventional Bonds: Evidence of Significant Differences**

Mohamed Ariff^{1*}, Meysam Safari^{2#} and Shamsheer Mohamed³

¹Department of Finance, University Drive, Bond University, Gold Coast, Qld 4229, Australia

²Graduate School of Management, Universiti Putra Malaysia, 43400 Serdang, Selangor, Malaysia

³The Global University of Islamic Finance (INCEIF University), Lorong Universiti A, 59100 Kuala Lumpur, Malaysia

ABSTRACT

Sukuk securities have similar features with conventional bonds. The financial press has, however, inappropriately referred to *sukuk* as Islamic bonds. This paper investigates *sukuk* securities empirically by first examining the yields to maturities of *sukuk* securities and conventional bonds of various issuers and maturities. Tests of differences in performance of the two classes of securities and Granger causality tests substantiate that these securities are different. This paper identifies some significant differences between the yield curves of *sukuk* securities and those of conventional bonds of the same issuers for the same term and rating. Results show significant differences between the average yields of *sukuk* and those of conventional bonds with the same quality and term issued by the same issuers from 2005 to 2012. Granger causality tests confirm that the yields of bonds do not Granger-cause the yields of *sukuk*, verifying no causality between the two. There is strong empirical evidence that the two types of debt instruments are not the same. This prompts re-examination of investment advisory and valuation methodology currently applied in the *sukuk* industry of 11 capital markets.

Keywords: *Sukuk*, Bond, Yield Curve, Yield-To-Maturity, Islamic Finance, Islamic Bond, Fixed Income Securities, Securitization, Debt Capital Market, and Malaysia

ARTICLE INFO

Article history:

Received: 4 June 2012

Accepted: 15 March 2013

E-mail addresses:

mariff@bond.edu.au (Mohamed Ariff),
meysam.safari@gmail.com (Meysam Safari),
shamsheermohd57@gmail.com (Shamsheer Mohamed),

* Corresponding author

Author's current affiliation

Graduate School of Business, SEGi University, 47810,
Kota Damansara, Selangor, Malaysia

INTRODUCTION

The aim of this paper is to report quite strong evidence on a current topic of intense interest in the Bursa Malaysia. Should the new debt instrument *sukuk* be considered as equivalent to the conventional bonds so that the *sukuk* certificates are properly described

as Islamic bonds? The financial press has dubbed *sukuk* as Islamic bonds, and we take this policy issue to be empirically verified. To do that, we collected relevant data series of *sukuk* and conventional bonds issued by the (i) same issuers, (ii) for the same terms, and (iii) with similar ratings and traded in Kuala Lumpur from 2005 to 2011. The research design is simple in that if these types of debt instruments are the same, matched samples of *sukuk* and bonds (with controls for quality ratings, term and issuer) must behave in the same manner. Should the actual behaviour of the two types be the same, then both may be termed as “bonds”, one being Islamic and the other being conventional as is the current industry practice: see also Godlewski, Turk-Ariss, & Weill (2011) on differences in the two securities. Our paper provides empirical verification for the distinctive difference between *sukuk* issues and bonds.

A close study of the origin, approval and contract conditions of issue of a *sukuk* show that *sukuk* issues and bonds are markedly different. The first key difference is that the yield to investors from a *sukuk* issue is based on profit shares, and is certainly not fixed and pre-determined, which is a requirement under Shari’ah law. The second difference is that part of the assets of the issuer is transferred to, or at least allow for legal claims from the date of issue, by a special purpose company, which is owned jointly

by the investors.¹ These critical differences, one would have thought, ought to have made the conventional bond, based on pre-agreed interest and issued without collaterals as notes, behave differently from that of a *sukuk*. This public issue debate has not examined this problem to date. This paper attempts to address this gap in the literature.

Sukuk securities are funding instruments traded in about 12 markets across the world as traded instruments and in about 20 markets as private issues. The market has grown to about US\$ 840 billion since this type of funding instruments was first issued in the 1990s (Ariff, Safari, & Shamsher, 2012). Some fundamental differences between the two financial instruments are evident, and call into question if the *sukuk* could be described by the financial press and scholars as Islamic bonds. These differences lie mainly in the very underlying nature or purpose of funding as well as the way these types of securities are structured. Both *sukuk* (if listed and traded) and conventional bond securities are traded in secondary markets with the same trading mechanism, so in a dual financial system context as in Malaysia, *sukuk* securities are priced in the market,

¹There are some six variations in this new funding instrument, and these are structured differently from the conventional bonds. Essential features of this type of funding are: profit-shared rewards instead of interest; asset backing with assets owned by the lenders; funds to be used for specific purposes with some purposes forbidden. For more details see Ariff, Iqbal and Shamsher (2012), Jobst *et. al.*(2008), Rohmatunnisa (2008), Sole (2008), Tariq (2004), Tariq and Dar (2007) and Wilson (2008).

presumably by experts in the market, in ways similar to the conventional bills and bonds.

This paper reports our findings from analysing the yields of seemingly look-alike securities from both types. This objective is set for this paper in order to determine whether securities issued by the same issuer i.e. with the same risk class, for the same period of time i.e. for the same duration or maturity, as ethical Islamic *sukuk* certificates and conventional bonds traded in the same market in Malaysia provide similar yields to maturity. In case the yields are the same for identical securities from both types, one may conclude that the existing valuation model for conventional bonds may be applicable also for such Islamic products i.e. *skuk*, and that the two instruments are the same.

The rest of the paper is organised as follows: The theoretical aspect of pricing is described in Section 2 with references to *sukuk* and conventional bonds. We also adopt Granger causality test to verify if there is causality in either direction for the two types of securities. Since the literature on *sukuk* securities does not cover this issue at all, we choose to cover the relevant literature on conventional bonds and discuss the potential relationship of *sukuk* to conventional instruments. A description of the methodology and the data set to be used is in section 3. The findings are presented in a separate section, Section 4, followed by concluding remarks in the final section of the paper.

FIXED-INCOME THEORY AND SUKUK

Williams (1938) is the source of the valuation model applied to price the conventional bond. This theory suggests a theoretical value to the bondholder of a conventional bond as the present value of the stream of payments – the interest coupons and the redemption or face value - discounted by the market interest rate:

$$P = \frac{M}{(1+r)^N} + \sum_{t=1}^N \frac{C}{(1+r)^t} \quad (1)$$

where P is the market price of a bond, C is the amount of periodic coupon payments pre-fixed at the time of issue; M is the amount of maturity payment (i.e. the face value of a bond certificate); r is the discount rate (i.e. market required yield at the time of pricing) and N is the issue tenure (i.e. number of payments). An important issue here is whether the *sukuk* instrument, which has a fixed rental payment at regular intervals under a lease agreement for an *ijarah sukuk*, should or should not be priced using this equation. This issue is relevant because there is no valuation justification made for its application in this manner, although the market participants appear to do so. One can only examine this valuation issue after ensuring via an empirical test as in this paper as to whether the two types are the same.

Yield-To-Maturity (YTM) is the internal rate of return earned by a bondholder who buys a bond certificate today, at market price, and holds it until maturity, and thereby

being entitled to all coupon payments as well as maturity payment (Ariff, Cheng, & Neoh, 2009; Bodie, Ariff, & Rosa, 2007; Cox, Ingersoll, & Ross, 1985). There are few accepted methods of computing the yields, and the industry has adopted methods which are equivalent to the method specified in Cox *et al.* cited above.

If the *sukuk* funding instruments are the same as the above, then this valuation theory applies squarely also as the valuation theory for the *sukuk* instrument. Applying the above theory and deriving the yield for (i) bonds and (ii) *sukuk* will provide statistics to confirm if the two are priced by the same theorem. If identical, the two are the same; otherwise the behaviour of one is different from the other. Given the complex structuring of the latter with several markedly different features of the *sukuk* from those of the simple conventional bond, it appears that the results may not be the same. By observing the difference in pricing behaviour, this issue can be tested.

Another means of testing the similarity is to apply causality modelling. By testing for causality in either or both directions, the yields of the conventional bonds traded in the same market as the *sukuk* certificates could be compared. This is done using the Granger causality test as being the most appropriate over other tests. The Granger causality (1969) theory is:

$$\begin{cases} X_t = \sum_{j=1}^m a_j \cdot X_{t-j} + \sum_{j=1}^m b_j \cdot Y_{t-j} + \varepsilon_t \\ Y_t = \sum_{j=1}^m c_j \cdot X_{t-j} + \sum_{j=1}^m d_j \cdot Y_{t-j} + \eta_t \end{cases} \quad (2)$$

If a variable Y (say bond yields) is Granger-caused by variable X (the *sukuk*), then causality exists, so the two are similarly behaving because the yields – the essential component of each of the two – are being caused by one type. The conventional bond market developed rapidly as the Malaysian economy expanded after World War II; the conventional bond market has a long history and experience (see Ariff et al. 2009). The *sukuk* market evolved in the late 1990s, and has rapidly grown because of its attraction for users as well as because of the push by the central bank to create this new market as the major funding market of the world. In terms of size, the *sukuk* market value, according to Bond Pricing Agency Malaysia, accounts for 40 per cent of both the *sukuk* and conventional funding markets at the end of 2011. The total value of *sukuk* securities outstanding in 2011 was more than RM 352 billion (US\$ 115 billion). It is reasonable to predict that causality may run from the conventional bond market to the *sukuk* market, given the larger size of the latter. If the causality tests establish causality, then the two markets may be characterised as being similar. Otherwise, the two are different types of funding markets. The test statistic is the F-ratio in the Granger equation.

METHODOLOGY AND TEST MODELS

To investigate the possible existence of a difference(s) between Yield-to-Maturity (YTM) of *sukuk* securities and YTM of conventional bonds with identical terms,

ratings and issuer, the pair-sample t-test is most appropriate: (see: Ott & Longnecker, 2000; Press, Teukolsky, Vetterling, & Flannery, 2007; Rubin, 1973). We compiled pairs of data consisting of Yield-to-Maturity of *sukuk* certificates and those of bonds. The test is the paired sample mean difference t-test using the standard error of the two samples. A parametric paired sample t-test is conducted using monthly yields of pairs of *sukuk* and the conventional securities with the same characteristics i.e. the same issuer, same ratings and maturity: daily yield series are used, and the yield on first traded day of the month is used.

The paired sample t-statistic is calculated using Equation 3:

$$t = \frac{\bar{Y}_s - \bar{Y}_c}{\sqrt{\frac{\sigma_s^2}{n} + \frac{\sigma_c^2}{n} - \frac{2\sigma_s\sigma_c\rho_{s,c}}{n}}} \quad (3)$$

where,

- t : t-statistics
- Y_s : Mean Yield-to-Maturity of *sukuk* securities
- Y_c : Mean Yield-to-Maturity of conventional bonds
- σ_s : standard deviation of yield of *sukuk*
- σ_c : standard deviation of yield of conventional bond and
- $\rho_{s,c}$: correlation coefficient between yield of *sukuk* and conventional bond

This test was performed on averages and medians of various types of issuers including sovereign (Government of

Malaysia and Central Bank of Malaysia)² quasi-sovereign (Cagamas Bhd)³ and Corporate (Corporate AAA) for various maturities ranging from 3 months to 20 years. YTM data for the first working day of each month for the period of August 2005 to April 2012 were collected from *BondStream* database made available by the Bond Pricing Agency to University Putra Malaysia.⁴ Data for daily prices and market index (Kuala Lumpur Composite Index, KLCI) were obtained from DataStream. The statistical tests were done using EViews software.

FINDINGS

Descriptive Statistics

Descriptive statistics for various *sukuk* securities and conventional bonds are presented in Table 1 (detailed descriptive statistics for each type securities are presented in Tables 1A, 1B and 1C as Appendices). The aggregated statistics suggest that the mean yield of *sukuk* securities for all types of issuers and for all forms of maturities is 3.74 per cent. However, it varies by a minimum of 2.84 for *sukuk* securities issued by BNM with 3 months maturity, as given in Table 1A and the maximum of 5.78 for *sukuk* securities issued by AAA-rated corporate with 20 years maturity, as given

²Bank Negara Malaysia or BNM

³Malaysian National Mortgage Corporation

⁴Product of Bond Pricing Agency of Malaysia.

These yield data series from the market is similar to the YTM that could be computed using the available procedures such as in Cox, Ingersoll and Ross (1985). The market series has been checked and verified to be correct.

in the Table 1C. On the other hand, the mean yield of conventional bonds for all types of issuers and for all forms of maturities is 3.72 per cent. It varies by a minimum of 2.83 for conventional bills issued by BNM with 3 months maturity, as given in Table 1A and the maximum of 5.70 for conventional bonds issued by AAA-rated corporate with 20 years maturity, as given in Table 1C.

At issuer level (Table 1), the highest mean yield of *sukuk* securities for all issue-tenures is found for AAA-rated corporate issued *Sukuk* securities: the mean is 4.37 per cent, while the lowest mean yield is for *sukuk* issued by Bank Negara Malaysia with 2.94 per cent. On the other hand, the highest conventional mean yield for AAA-rated corporate issuers is 4.39 per cent, while the lowest mean yield is for conventional bills and notes issued by Bank Negara Malaysia with 2.92 per cent.

Yield Curves

The results of the analyses are presented in this section. The yields are calculated as the average Yield-to-Maturity of a *sukuk* security issued by a particular issuer for a certain period of time. For instance, yield of BNM’s 3-month *sukuk* securities is the average of yield of this security as recorded by data providers in the period of study (2005-2012). Bond Pricing Agency Malaysia provides aggregate Yield-to-Maturity for securities issued by a particular class of issuer for a specific maturity. Hence, yields are in aggregated form based on observations collected on first day of each month. Yield curve is the relation between the cost of borrowing in a security issued by a firm over maturity period of a debt security for a given issuer for a given rated quality. Therefore, yield curves provide a common measure for comparison of market behaviour of *sukuk* and bond securities as

TABLE 1
Aggregate Descriptive Statistics of *Sukuk* vs. Conventional Bonds

	Mean	Median	Mode	Std. Dev	Range	Min	Max
Government							
Conventional	3.56	3.58	3.45	0.69	3.36	1.82	5.18
<i>Sukuk</i>	3.60	3.64	3.69	0.69	3.36	1.82	5.18
Bank Negara Malaysia							
Conventional	2.92	2.97	1.92	0.56	2.15	1.82	3.97
<i>Sukuk</i>	2.94	2.97	1.88	0.57	2.15	1.82	3.97
Cagamas							
Conventional	4.02	3.94	3.57	0.80	4.20	2.21	6.41
<i>Sukuk</i>	4.05	3.98	3.56	0.81	4.20	2.21	6.41
AAA Corporate							
Conventional	4.39	4.28	3.92	0.90	4.45	2.28	6.73
<i>Sukuk</i>	4.37	4.23	4.38	0.94	4.45	2.24	6.69

Note: For details of these mean figures, see Appendix.

it reflects their respective costs to the firm. In fact, yield is simply the rate of return to investors and cost to the issuer, so it is a common term for what investors get.

The yield curves are fit and presented in two plots. Yield curves for *sukuk* securities and conventional bonds issued by various issuers are plotted as in Figure 1A and Figure 1B. The plots are presented as YTM of (i) conventional against (ii) *sukuk* issues in two graphs. The two issuer types are of increasingly higher risk rating with sovereign being the lowest risk – therefore with the lowest yields – on the one end, and the AAA-corporate issues at the other end. As both instruments are used for financing, both possess similar features such as incremental increase according to lengthening of maturity.

As Fig.1(A) suggests, the yields of Government Islamic Issues (GII) are higher than those of conventional bonds issued by the same issuer, the Malaysian Government Securities or MGS. The difference between *sukuk* yield and conventional bond yield is larger as maturities increase from 2 years to 15 years. The maximum difference between yields of *sukuk* securities and conventional bonds for this category is for securities with 3-year maturities. The difference is 7.31 basis points. On average, there is a 3.41 basis point difference between yields of *sukuk* securities and conventional bonds. The total outstanding value of *sukuk* securities issued by Malaysian government as at end of 2011 was RM112 billion. Multiplying yield difference and market size indicates that the Malaysian government needs to

pay an extra RM 3.8 billion for its *sukuk* securities per year compared to conventional issues of same term and quality. This means that *sukuk* investors earn RM 3.8 billion higher returns compared to investors in the conventional bond market.

Fig.1(A) also shows the yield curve of the BNM, Bank Negara Malaysia, the central bank, which issues *sukuk* securities as well as conventional securities. These securities are only issued with maturities for up to two years. The graph shows that the yield of the former is higher than that of conventional yields for all maturities. Moreover, the difference between these yields increases as the maturity of the pair of securities increases. The maximum difference between yield of *sukuk* securities and conventional ones issued by BNM is 4.28 basis points for securities with 2 years' maturity. On average, there is a 2.19 basis point difference between yields of *sukuk* securities and conventional bonds. The total outstanding value of *sukuk* securities issued by BNM in 2011 was RM 31.8 billion. Multiplying yield difference and market size indicates that BNM needs to pay RM696 million more for its *sukuk* securities per year.

Fig.1(B) shows the yield curves of securities issued by quasi-government bodies i.e. Cagamas Berhad. The yields of *sukuk* securities issued by Cagamas Berhad are higher (see the graph) than the yield of Cagamas conventional bonds. This difference increases as the tenure of the securities grows beyond 5 years. The maximum difference between yields issued by Cagamas occurs at 20 years' maturities:

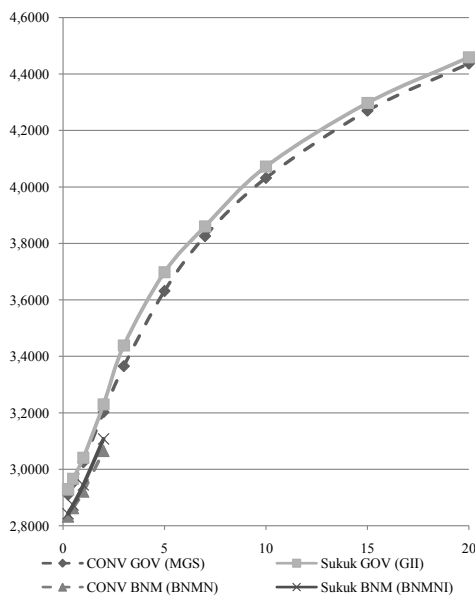
it is 5.52 basis points. On average, there is a 2.75 basis point difference between yields of *sukuk* securities and conventional bonds. The total outstanding value of *sukuk* securities issued by Cagamas Berhad in 2011 was RM10.76 billion. Multiplying yield difference and market size indicates that Cagamas needs to pay an excess RM296 million for its *sukuk* securities per year.

Fig.1(B) also shows the yield curves of securities issued by AAA-rated corporate issuers. Yields of *sukuk* securities are *less* than yields of conventional bonds for maturities less than 10 years: it is *more* for periods beyond 10 years. The maximum difference between yields of *sukuk* securities and conventional bonds issued by corporate issuers with maturities of less than 10 years is for those with 2 years' maturity with

-8.01 basis points. However, the maximum amount for securities with maturities longer than 10 years is +8.48 basis points for securities with 20 years' maturity. Long-dated *sukuk* securities are perceived by the market as being more risky, thereby attracting higher yields. Long-dated *sukuk* are more risky, given the risk of greater uncertainty beyond 10 years.

On average, there is a -2.17 basis point difference between yields of *sukuk* securities and conventional bonds. The total outstanding value of *sukuk* securities issued by Malaysian AAA Corporate issuers in 2011 was RM 47.14 billion. Multiplying yield difference and market size indicates that the AAA corporate issuers would save RM 1,024 million on their *sukuk* securities per year.

A) Yield Curve of Government Issued Securities



B) Yield Curve of Quasi-Government and Corporate Securities

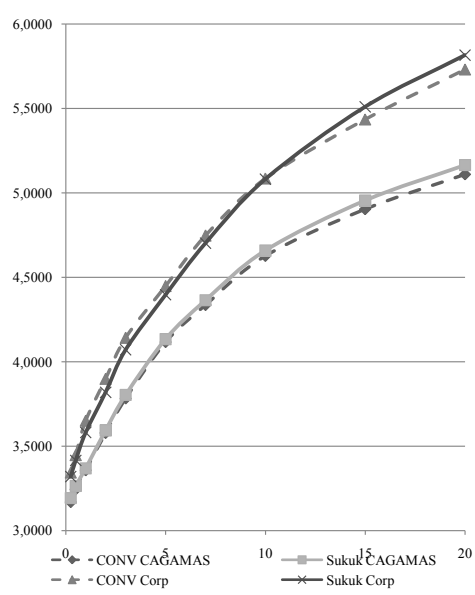


Fig.1: Yield Curve for *Sukuk* Securities vs. Conventional Bonds

Comparison of Yields of Sukuk Securities and Conventional Bonds

The results of the paired sample t-test on the equality of means are summarised in Table 2 (panels A, B and C). Out of the 34 tested pairs (10 pairs each for Government, Cagamas and Corporate, and 4 pairs for Bank Negara) of mean yields of *sukuk* and conventional bonds, 31 cases (i.e. 91 per cent of all pairs) showed significant differences in their yields to maturities. In 27 cases, the null hypotheses were rejected at 0.01 significance levels. Thus, one can conclude that the Yield-to-Maturity of *sukuk* securities differ from conventional bond counterparts, where the issuer and the issue tenure the same.

Table 2A presents the statistics pertaining to mean yield of *sukuk* and conventional

bond. As t-statistics suggest, the mean yield of *sukuk* securities and conventional bonds are significantly different for all forms of securities issued by the Government or BNM. The difference between the means of these two forms of securities are positive, indicating that *sukuk* securities tend to yield more than conventional bonds issued by the Government of Malaysia or Bank Negara Malaysia *ceteris paribus*. Thus, the market associates higher risks to *sukuk* structures rather than conventional structures. Godlewski, Turk-Ariss & Weill (2011) suggested that the adverse selection can cause this phenomenon. Firms with lower profit expectations tend to issue profit-loss-sharing based *sukuk*, while firms with higher profit expectations issue interest-based conventional bonds.

TABLE 2A
Paired Samples t-Test Results: Government and BNM

Tenure	<i>Sukuk</i>	Conv	Δ (<i>Sukuk</i> -Conv)	t-Stat
Government				
3M	2.9283	2.9100	0.0183	2.882***
6M	2.9664	2.9518	0.0145	2.539**
1Y	3.0405	3.0245	0.0160	2.494**
2Y	3.2299	3.2019	0.0279	3.529***
3Y	3.4386	3.3655	0.0731	6.093***
5Y	3.6978	3.6313	0.0665	6.900***
7Y	3.8604	3.8256	0.0348	4.762***
10Y	4.0723	4.0319	0.0404	5.096***
15Y	4.2973	4.2699	0.0274	3.946***
20Y	4.4591	4.4366	0.0225	3.039***
BNM				
3M	2.8421	2.8320	0.0102	3.065***
6M	2.8734	2.8620	0.0115	2.858***
1Y	2.9439	2.9208	0.0231	4.476***
2Y	3.1074	3.0646	0.0428	5.353***

** , ***: significant at 0.05 and 0.01 significance levels, respectively

Table 2B provides the mean yields of *sukuk* securities and conventional bonds for securities issued by Cagamas Bhd. As the paired sample t-statistics shows, these differences are significant except for securities with 1 or 2 years' maturity. The difference between means of *sukuk* securities and conventional bonds is a positive figure, indicating that *Sukuk* securities tend to yield more than conventional bonds issued by Cagamas Berhad *ceteris paribus*. Therefore,

one may assume that the market assigns higher risks for *sukuk* securities than for the conventional bonds.

Finally, Table 2C presents the statistics for *sukuk* securities and conventional bonds issued by AAA-rated corporate issuers. For AAA-rated corporate-issued securities, the mean yields of *sukuk* securities and conventional bonds are significantly different for all cases except for 10-year maturity securities. The differences are

TABLE 2B
Paired Samples t-Test Results: Government Agencies

Tenure	<i>Sukuk</i>	Conv	Δ (<i>Sukuk</i> -Conv)	t-Stat
3M	3.1926	3.1691	0.0235	2.624**
6M	3.2642	3.2444	0.0197	2.599**
1Y	3.3684	3.3568	0.0117	1.421
2Y	3.5935	3.5782	0.0153	1.648
3Y	3.8034	3.7822	0.0212	1.872*
5Y	4.1336	4.1162	0.0174	1.842*
7Y	4.3640	4.3355	0.0286	3.125***
10Y	4.6586	4.6268	0.0318	3.278***
15Y	4.9543	4.9036	0.0506	3.960***
20Y	5.1647	5.1095	0.0552	3.734***

*, **, ***: significant at 0.10, 0.05 and 0.01 significance levels, respectively

TABLE 2C
Paired Samples t-Test Results: Corporate Issues

Tenure	<i>Sukuk</i>	Conv	Δ (<i>Sukuk</i> -Conv)	t-Stat
3M	3.3200	3.3436	-0.0236	-4.821***
6M	3.4155	3.4469	-0.0314	-6.181***
1Y	3.5809	3.6509	-0.0700	-6.866***
2Y	3.8188	3.8990	-0.0801	-6.423***
3Y	4.0710	4.1416	-0.0705	-5.624***
5Y	4.3965	4.4484	-0.0519	-5.081***
7Y	4.7019	4.7470	-0.0451	-6.416***
10Y	5.0812	5.0849	-0.0038	-0.321
15Y	5.5092	5.4347	0.0745	2.814***
20Y	5.8152	5.7304	0.0848	2.957***

***: significant at 0.01 significance level.

negative numbers for securities with 7 years maturity or less, while for securities with 10 years maturity or more, the difference is positive. In other words, the mean of yield of *sukuk* securities issued by AAA-rated corporate issuers is lower than its conventional bonds for issues with 7 years' or less maturity. For securities with long-term maturities of 10 years and more, the mean of yield of *sukuk* securities is more than that of the conventional bonds *ceteris paribus*. This finding is not consistent with the findings on other issuers such as the Cagamas. This might be due to the different market perception on the funding purpose of the corporation in Malaysia.

Granger Causality Test of Yields of Sukuk and Conventional Bonds

The previous section showed that the mean yield of *sukuk* is statistically different from yield of conventional bond counterparts. Since each pair of securities is issued by the same issuer for the same period of time, it is expected that the correlation between yields of these securities may be high. This may be a reason for a hypothetical argument that they have some causal relationship. One may wish to test if changes in yield of one type of security may cause change in the other series. In other words, one may want to test for Granger causality (Granger, 1969) between yields of *sukuk* securities and those of conventional bonds. This test is to identify if the more established conventional bond market is in fact determining the yields of *sukuk*. If *sukuk* is a different market, then there should be no such causality relation.

In order to test the causal relationship between yields of *sukuk* and conventional counterparts, two Granger causality tests were conducted on each pair of securities. First, it is tested that change in yield of *sukuk* can cause change in yield of conventional bonds. Second, it is tested that change in yield of conventional bonds can cause change in yield of *sukuk*. In other words, the test is to see if the yields of conventional bonds Granger-cause yields of *sukuk*. Results of pair-wise Granger causality test on each pair is presented in Table 3.

The first test conducted was to check for availability of Granger causal relation between *sukuk* and conventional bonds. The null hypothesis tested was "yield of *sukuk* security does not Granger-cause the yield of conventional bond counterparts." As the figures in Table 3 suggest, out of 34 pairs of securities tested, in only 9 pairs was the null hypothesis rejected at 0.05 significance level. In other words, yields of *sukuk* securities Granger-cause yields of conventional bonds in only 9 out of 34 pairs (or 26 per cent). This indicates that one may not generally conclude that yields of *sukuk* securities Granger-cause the yield of conventional bond counterparts. Results show that yield of *sukuk* issued by Government (6 months and 3 years), Cagamas (2 years, 3 years and 5 years) and AAA-rated corporate (1 year, 5, years, 7 years and 10 years) Granger-cause their conventional bonds counterpart. Results do not show a concrete pattern in terms of issuer or maturity of the security for having a Granger causal effect.

The second test conducted was to check for the presence of a Granger causal relation between conventional bonds and *sukuk*. The null hypothesis tested was “yield of conventional bonds does not Granger-cause the yield of *sukuk* security counterparts.” Out of the 34 pairs of securities tested, in 14 pairs the null hypothesis was rejected at 0.05 significance levels. This indicates that one may not generally conclude that yield of conventional bonds Granger-cause the yield of *sukuk* security counterparts. These results show that yields of conventional bonds issued by Government for 1-year, 3-year and 20-year terms, Cagamas for 3-year, 5-year, 7-year and 10-year terms and AAA-rated corporate for 1-year, 2-year, 3-year, 5-year, 7-year, 10-year and 15-year terms Granger-cause their *sukuk* counterpart. Results do not show a definite pattern in terms of issuer or maturity of the security for having a Granger causal effect.

Finally, as in Table 3, bi-directional Granger causality (see Enders, 1995; Hossain, 2005) between yields of *sukuk* and conventional bonds is observable in 7 out of 34 pairs or 20 per cent. In other words, in 7 pairs of securities, both null hypotheses are significantly rejected, or, yields of *sukuk* Granger-cause yields of conventional bonds and the other way around. This may signal that both variables are Granger-caused by a third variable yet to be explored. Results show that yields of *sukuk* and conventional bonds have bi-directional Granger causal relation in securities issued by Government for a 3-year term, Cagamas for 3-year and 5-year terms and AAA-rated corporate for 5-year, 7-year and 10-year terms.

In summary, it is reasonable to conclude that with a few exceptions, there is no causal relationship between *sukuk* and conventional bonds. This is the second evidence apart from the yield differences tested earlier to affirm that the two types of debt instruments are *not the same*. This conclusion has important implication for market operation, valuation practices, risk estimation and regulatory rule setting. These are challenges to be addressed in future research.

CONCLUSION: ARE *SUKUK* ISSUES ISLAMIC BONDS?

Critically important evidence is presented in this paper to provide how the market perceives and rewards investors. If investors in the two types of bond are treated equally for the same risk, same term and same issuer, *sukuk* securities and conventional bonds can be said to be the same; thus, the description of *sukuk* as Islamic bonds is justified. As aggregate results indicate, with few exceptions, the market associates significantly higher risks to *sukuk* securities than to conventional bonds, hence the observed higher returns. Besides the previously mentioned reasons that were highlighted by other studies, there are some other factors that may cause such differences.

It may be that the special-purpose company taking over part of the assets makes the issuing firm more risky. Or perhaps the reward to investors coming from profit shares or rent-like payments (not interest) makes *sukuk* more risky. Consequently, the results appear to refute, or at least challenge, the applicability of

TABLE 3
 Pair-wise Granger Causality Tests with Lags = 2

Issuer	Maturity	<i>Sukuk</i> security does not Granger-cause conventional bond		Conventional bond does not Granger-cause <i>Sukuk</i> security	
		F-Statistic	Prob	F-Statistic	Prob
Government	3M	1.324	0.2722	0.4743	0.6242
	6M	3.376**	0.0395	0.4704	0.6266
	1Y	1.492	0.2315	3.446**	0.0371
	2Y	2.666*	0.0761	2.383*	0.0993
	3Y	4.040**	0.0216	3.221**	0.0456
	5Y	1.333	0.2698	0.4734	0.6247
	7Y	0.5173	0.5982	0.0238	0.9765
	10Y	0.4388	0.6465	0.6029	0.5499
	15Y	0.0587	0.943	1.4308	0.2456
	20Y	0.6290	0.5359	3.097**	0.0511
BNM	3M	1.1887	0.3119	0.021	0.9789
	6M	1.0310	0.3631	0.0672	0.935
	1Y	0.7308	0.4859	0.4226	0.6573
	2Y	3.0436*	0.0559	1.820	0.1717
Cagamas	3M	1.6454	0.1999	0.4852	0.6175
	6M	2.6787*	0.0753	0.4056	0.668
	1Y	2.5042*	0.0886	0.6739	0.5128
	2Y	7.9141***	0.0008	3.066*	0.0525
	3Y	9.6807***	0.0002	5.198***	0.0077
	5Y	4.7749**	0.0112	3.562**	0.0333
	7Y	1.9031	0.1563	3.570**	0.0331
	10Y	0.5511	0.5786	3.1692**	0.0478
	15Y	0.0262	0.9741	2.771*	0.0691
	20Y	0.3919	0.6771	1.9766	0.1458
Corporate	3M	0.7150	0.4925	0.2803	0.7563
	6M	0.6945	0.5025	0.9558	0.3892
	1Y	3.393**	0.0389	4.480**	0.0146
	2Y	2.2634	0.1111	3.257**	0.0441
	3Y	2.3571	0.1018	4.2991**	0.0171
	5Y	3.2842**	0.043	6.2905***	0.003
	7Y	3.3870**	0.0391	8.177***	0.0006
	10Y	3.455**	0.0367	6.902***	0.0018
	15Y	0.109	0.8965	5.222***	0.0076
	20Y	1.3967	0.2538	0.676	0.5113

Note: *, **, ***: significant at 0.10, 0.05, and 0.01 significance levels, respectively.

the conventional model in pricing *sukuk* securities. Evidence does not appear to support the market description that the *sukuk* are Islamic bonds. Therefore, we suggest that the finance press differentiate between the *sukuk* securities and bonds, as it is shown that they are empirically different. This is beyond the contractual differences that exist among these two types of financing instruments. Once this is recognised, there would be need for fresh valuation models based on cash flow identification and risk measurement factors. That work should begin once a common ground is found that the *sukuk* certificates are to be treated as a different class of debt instrument. Our findings verify by way of several tests why *sukuk* behaves differently from bonds.

ACKNOWLEDGMENTS

Ariff wishes to thank University Putra Malaysia, UPM and Maybank for funding his research visits to UPM, under which this research was supervised. Safari gratefully acknowledges the Khazanah Foundation, Malaysia, for funding this research as part of his PhD in UPM over 2009-2012. Shamsher acknowledges that this research was done while he was at UPM. The authors gratefully acknowledge the help of anonymous reviewers for their feedback in two rounds, which improved the paper. The authors are solely responsible for any errors in the paper

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APPENDIX

TABLE 1A

Descriptive Statistics of *Sukuk* vs. Conventional Bonds: Government & BNM

	N Valid	Mean	Median	Mode	Std. Dev	Range	Min	Max
Government Issued Securities (MGS vs. GII)								
CONV(3M)	77	2.91	2.93	1.88	0.571	1.84	1.82	3.66
CONV(6M)	77	2.952	2.95	1.92	0.579	1.98	1.85	3.83
CONV(1Y)	77	3.025	3.02	2.86	0.576	2.06	1.92	3.98
CONV(2Y)	77	3.202	3.2	3.2	0.484	2.1	2.2	4.3
CONV(3Y)	77	3.365	3.33	3.2	0.398	2.13	2.37	4.5
CONV(5Y)	77	3.631	3.61	3.34	0.309	1.8	2.78	4.58
CONV(7Y)	77	3.826	3.81	3.91	0.310	1.84	2.91	4.75
CONV(10Y)	77	4.032	4.03	4.19	0.371	1.93	3.09	5.02
CONV(15Y)	77	4.27	4.26	4.01	0.391	1.77	3.35	5.12
CONV(20Y)	77	4.437	4.5	4.15	0.385	1.58	3.6	5.18
<i>Sukuk</i> (3M)	77	2.9283	2.93	1.88	0.592	1.96	1.82	3.78
<i>Sukuk</i> (6M)	77	2.9664	2.95	1.92	0.597	2.04	1.85	3.89
<i>Sukuk</i> (1Y)	77	3.0405	2.99	2.86	0.582	2.11	1.97	4.08
<i>Sukuk</i> (2Y)	77	3.2299	3.19	3.04	0.475	2	2.3	4.3
<i>Sukuk</i> (3Y)	77	3.4386	3.39	3.44	0.360	1.84	2.63	4.47
<i>Sukuk</i> (5Y)	77	3.6978	3.66	3.69	0.305	1.8	2.85	4.65
<i>Sukuk</i> (7Y)	77	3.8604	3.83	3.71	0.309	1.79	3	4.79
<i>Sukuk</i> (10Y)	77	4.0723	4.07	3.88	0.346	1.81	3.17	4.98
<i>Sukuk</i> (15Y)	77	4.2973	4.28	4.35	0.373	1.67	3.45	5.12
<i>Sukuk</i> (20Y)	77	4.4591	4.5	4.68	0.374	1.5	3.68	5.18
Bank Negara Malaysia Issued securities (MGS vs. GII)								
CONV(3M)	61	2.8320	2.9	1.88	0.598	1.9	1.82	3.72
CONV(6M)	61	2.8620	2.92	1.92	0.594	1.91	1.85	3.76
CONV(1Y)	61	2.9208	2.96	2.86	0.572	1.9	1.92	3.82
CONV(2Y)	57	3.0646	3.09	3.2	0.447	1.77	2.2	3.97
<i>Sukuk</i> (3M)	61	2.8421	2.9	1.88	0.609	1.92	1.82	3.74
<i>Sukuk</i> (6M)	61	2.8734	2.92	1.92	0.607	1.95	1.85	3.8
<i>Sukuk</i> (1Y)	61	2.9439	2.96	2.86	0.577	1.93	1.97	3.9
<i>Sukuk</i> (2Y)	57	3.1074	3.09	3.13	0.448	1.77	2.3	4.07

TABLE 1B
Descriptive Statistics of *Sukuk* vs. Conventional Bonds: Government Agencies (Cagamas Berhad Securities)

	N Valid	Mean	Median	Mode	Std. Dev	Range	Min	Max
CONV(3M)	81	3.1686	3.19	3.53	0.4784	1.93	2.21	4.14
CONV(6M)	81	3.2417	3.22	3.56	0.4629	1.87	2.34	4.21
CONV(1Y)	81	3.3516	3.33	3.73	0.4489	1.83	2.5	4.33
CONV(2Y)	81	3.5669	3.5	3.36	0.3837	1.65	2.95	4.6
CONV(3Y)	81	3.7662	3.67	3.68	0.3399	1.59	3.23	4.82
CONV(5Y)	81	4.0932	3.98	3.91	0.3538	1.4	3.51	4.91
CONV(7Y)	81	4.3105	4.21	4.13	0.3764	1.46	3.72	5.18
CONV(10Y)	81	4.5963	4.48	4.32	0.4512	1.87	3.8	5.67
CONV(15Y)	81	4.8758	4.8	4.8	0.4707	2.16	3.89	6.05
CONV(20Y)	81	5.0851	4.99	4.84	0.5152	2.39	4.02	6.41
<i>Sukuk</i> (3M)	81	3.1910	3.19	3.53	0.4994	1.93	2.21	4.14
<i>Sukuk</i> (6M)	81	3.2605	3.23	3.56	0.4799	1.87	2.34	4.21
<i>Sukuk</i> (1Y)	81	3.3627	3.33	3.73	0.4639	1.83	2.5	4.33
<i>Sukuk</i> (2Y)	81	3.5815	3.5	3.33	0.3810	1.57	2.95	4.52
<i>Sukuk</i> (3Y)	81	3.7863	3.68	3.68	0.3303	1.45	3.23	4.68
<i>Sukuk</i> (5Y)	81	4.1098	4	3.94	0.3495	1.38	3.53	4.91
<i>Sukuk</i> (7Y)	81	4.3377	4.22	4.13	0.3785	1.45	3.73	5.18
<i>Sukuk</i> (10Y)	81	4.6265	4.52	4.52	0.4518	1.85	3.82	5.67
<i>Sukuk</i> (15Y)	81	4.9240	4.9	4.58	0.4742	2.11	3.94	6.05
<i>Sukuk</i> (20Y)	81	5.1375	5.08	5.08	0.5132	2.37	4.04	6.41

TABLE 1C
Descriptive Statistics of *Sukuk* vs. Conventional Bonds: AAA-Rated Corporate Issued Securities

	N Valid	Mean	Median	Mode	Std. Dev	Range	Min	Max
CONV(3M)	81	3.3414	3.35	3.29	0.4860	2.17	2.28	4.45
CONV(6M)	81	3.4420	3.43	3.43	0.4409	1.9	2.6	4.5
CONV(1Y)	81	3.6404	3.57	3.53	0.3966	1.59	3.1	4.69
CONV(2Y)	81	3.8831	3.74	3.74	0.3697	1.61	3.32	4.93
CONV(3Y)	81	4.1200	4.01	3.92	0.3621	1.61	3.62	5.23
CONV(5Y)	81	4.4233	4.38	4.51	0.3692	1.57	3.87	5.44
CONV(7Y)	81	4.7169	4.63	4.57	0.3919	1.7	4.03	5.73
CONV(10Y)	81	5.0493	4.99	4.93	0.4339	1.85	4.21	6.06
CONV(15Y)	81	5.3993	5.4	5.8	0.4516	1.98	4.41	6.39
CONV(20Y)	81	5.6975	5.68	5.7	0.4881	2.12	4.61	6.73
<i>Sukuk</i> (3M)	81	3.3169	3.31	3.25	0.4877	2.17	2.24	4.41
<i>Sukuk</i> (6M)	81	3.4101	3.39	3.39	0.4331	1.9	2.56	4.46
<i>Sukuk</i> (1Y)	81	3.5719	3.49	3.49	0.3815	1.61	3.04	4.65
<i>Sukuk</i> (2Y)	81	3.8049	3.7	3.7	0.3360	1.56	3.3	4.86
<i>Sukuk</i> (3Y)	81	4.0510	3.98	3.98	0.3160	1.54	3.58	5.12
<i>Sukuk</i> (5Y)	81	4.3720	4.34	4.2	0.3330	1.57	3.83	5.4
<i>Sukuk</i> (7Y)	81	4.6721	4.62	4.21	0.3752	1.7	3.99	5.69
<i>Sukuk</i> (10Y)	81	5.0437	5.05	4.89	0.4353	1.84	4.18	6.02
<i>Sukuk</i> (15Y)	81	5.4681	5.53	5.8	0.5359	2.15	4.38	6.53
<i>Sukuk</i> (20Y)	81	5.7762	5.9	5.66	0.5292	2.11	4.58	6.69