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# Daily Traders' and Institutional Investors' Wealth Effect upon *Sukuk* and Conventional Bond Announcements: A Case Study of Malaysian Firms Using Event-Study Methodology and Wavelet Analysis*

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***Abstract:*** The last decade has witnessed a rapid expansion of Islamic financial instruments with a notable proliferation of Islamic investment certificates called *sukuk.* In spite of the expansion, research to appraise their growth implications remains limited. This paper investigated the structural differences within *sukuk* and coventional bonds and their implications on investor return reactions. It also looked at the investors' different decision-making time horizon dimensions in response to the respective debt security's announcement. Our sample consisted of 158 conventional bonds and 129 *sukuk* issuers between 2000 and 2013. Event-study methodology and wavelet analysis were used resulting in three major findings. Firstly, market investors perceived *sukuk* and conventional bonds as different financial instruments. Variations in investor reactions persisted when each sub-category of *sukuk* and conventional bond were examined separately. Lastly, firm value and shareholder wealth were affected in different ways upon the issuance announcement of a specific *sukuk* or conventional bond. Specifically, the equity-like features within convertible bonds and partnership-based *sukuk* negated institutional investors' wealth, but were due to different 'dilution' arguments. *Sukuk* created unique wealth effects for corporate issuers, day traders and institutional investors in comparison with conventional bonds.

**Key words:** Conventional bonds, signaling theory, *sukuk*, wavelet analysis
**JEL classification:** C22, C58, E44, G11, G12

## 1. Introduction

Malaysia has been recognised as being at the forefront of Islamic finance internationally. Within Islamic finance, the development of Islamic private debt securities or *sukuk* is often referred to as the benchmark in this field. Anecdotal evidence indicates the *sukuk*[4] market has shown remarkable progress since its introduction in early 2000[5] in both the public and private sectors. This has led to Malaysia's emergence as one of the world's largest Islamic debt markets up to the year 2013, accounting for 70 per cent of the total global Islamic debt securities that had been issued.[6] The corporate issued Islamic debt market grew at an

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4 Securities Commission guidelines allow the terms *sukuk* and Islamic debt securities to be used interchangeably.
5 Financial Stability and Payment Systems Report 2007, Bank Negara Malaysia.
6 Islamic Finance Information Service, *http://www.islamicfinanceservice.com/Sukuk.html*

annual average growth of 21 per cent between 2001 and 2013.[7] Despite this rising interest in *sukuk*, research to appraise their growth implications remains limited.

The effect of debt on a firm's capital structure and subsequent effect on its issuer's stock price has been extensively analysed for most developed countries in the literature. Much of the attention has been focused on straight debt and common equity. Despite this, shareholders' reactions to convertible debt, which has features of both debt and common equity, still remain a contentious issue. *Sukuk,* on the other hand, is a debt instrument that is being structured using unique, equity-like features. Distinctively, *sukuk* allows its holders to have a share of the ownership and claim returns on specific assets or projects for a specific period of time. In contrast, upon conversion, holders of convertible bonds can claim ownership on a firm proportional to their shareholding for the life of the firm. It is unclear if the markets perceives the two instruments differently.

In view of the above, one undeniable fact about *sukuk* and conventional bonds is their existence in the same Malaysian capital market albeit with separate regulations relating to *shariah* compliance. Cakir and Raei (2007) argue that, apart from the fundamental *shariah* concepts that underlie the different structures of *sukuk*, the execution of the contracts is generally patterned after conventional bonds. However, this assertion remains doubtful as findings of prior empirical research are conflicting and results obtained thus far are mixed and indecisive. For instance, Ashari *et al.* (2009) and Nagano (2010) linked *sukuk* announcements with significantly positive return reactions, whereas, Godlewski *et al.* (2010; 2013) and Alam *et al.* (2013) found significant negative return reactions even though all of the studies employed the same Malaysian dataset and used similar event-study methodology to measure the debt announcement impact on a firm's stock return.

We identified two possible reasons for such contradictory results. Firstly, all *sukuk* structures in the above studies were treated uniformly. This should be of concern to equity market investors since structures specific to *sukuk* or conventional bond have very different properties as far as their cash flow claims and control provisions. Secondly, there are variations in different event-windows used to measure the impact on a firm's stock return. For example, Godlewski *et al.* (2010; 2013) and Alam *et al.* (2013) used a shorter event-window while Nagano (2010) used longer days for his event-window. These inconsistencies could have led to difficulties in attributing correctly stock market response to either firms' debt announcement or short-term day traders' and/or institutional investors' wealth effects.

This study appraised sukuk and conventional bond differences using novel perspectives. Firstly, the structural differences within *sukuk* and conventional bonds were examined. We referred to the Securities Commission of Malaysia's guideline to classify *sukuk* into exchange-based and partnership-based contracts, while conventional bonds were classified into straight bonds and convertible bonds. *Sukuk* issued with exchange-based contacts allowed its *sukuk* holders to own part of the underlying assets used to raise the *sukuk* fund. As asset owners, they are entitled to the returns generated from these assets, and in the event that a firm goes bankrupt, the *sukuk* holder can claim the possession of the underlying asset (Usmani 2007).

On the other hand, partnership-based sukuk holders become part owners of the issuer or, more commonly, of a specific project. If successful, *sukuk* holders share in the profits

[7] Securities Commission, Malaysia and Bondstream based on author's own calculations.

and receive periodic payments depending on a pre-agreed percentage. They must also bear any loss according to their investment proportion on maturity; the issuer can then buy back the partnership *sukuk* but at their market price rather than face value (Usmani 2007). Furthermore, in the event of bankruptcy, *sukuk* holders rank equally with other existing shareholders rather than normal creditors. However, unlike shareholders, they have no voting rights. Unlike equity-like features in the sukuk structures highlighted above, convertible bonds are issued as fixed income securities that can be converted into ordinary shares at the option of the bond holder. By adding a conversion option, a firm allows the bond holders to participate in the upside potential of their stock (Green 1984) and avoid the negative effects of issuing common equity (Stein 1992).

This paper also contributes to the recent controversy concerning the extensive use of purchase undertaking agreements in parnership-based *sukuk*. According to the renowned *shariah* scholar who spoke at the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI), Mohammad Taqi Usmani, current practices of issuing partnership-based *sukuk* with purchase undertaking replicating the structure of conventional bonds (lack of ownership, right to a fixed return, and the guarantee of repayment of principal, etc.) makes most equity-based *sukuk* un-Islamic. However, in Malaysia, purchase undertakings in the parnership-based *sukuk* are treated differently. Here, purchase undertakings are approved by the Securities Commission's (SC) Shariah Advisory Council (SAC) on the premise of wa'ad where a unilateral promise is given by the issuer, to be exercised only upon the occurrence of a dissolution event or the maturity of the partnership-based *sukuk*. Hence, this paper also investigated some of the myths surrounding the question of whether a purchase undertaking really gurantees the principal in partnership-based *sukuk*, akin to other fixed income bonds (i.e., straight bonds). The findings also have a direct implication for the policymakers in preparation for future contract-based governance policies.

This study's initial findings were that based on event-study analyses, equity market investors perceived *sukuk* and conventional bonds as different financial instruments. Variations in investors' reactions persisted when each sub-category of *sukuk* and conventional bonds were examined separately. Based on a unified approach of event study and wavelet analysis, we found that firms' announcement of straight bond destroyed day traders' wealth immediately. In contrast, the announcement of partnership-based *sukuk* contributed to an increase in their wealth almost instantly. Firms' announcements of convertible bond and exchange-based *sukuk* had no wealth impact on day traders. The results indicate that the issuance announcement of straight bonds and exchange-based *sukuk* had no effect on institutional investors' wealth. The announcement of convertible bonds and partnership-based *sukuk* caused a decline in the wealth of institutional investors. One plausible reason for variations in results could be due to the embedded equity-like features within which each financial instrument.

The rest of the paper is organised as follows. Relevant literature and the theoretical framework guiding this study are discussed in Section 2. The sample description and research methodology adopted to achieve the objectives of this study is provided in Section 3. The findings are discussed in Section 4 and Section 5 concludes the paper.

## 2. Literature Review

The central question of this paper focused on the equity market's reaction to the issuers'

financing choice between *sukuk* and conventional bonds together with their respective sub-category offerings. Since there are no established Islamic corporate financing theories to explain the reasons for *sukuk* offers, this study relied on traditional financial models within which the equity market's reactions can be tested. Signaling theory and the asymmetric information model are used commonly in the financial markets and details about them and empirical work done using them is further discussed in this section.

Ross (1977) through his signaling model demonstrates that any change in a firm's financing policy will see a corresponding change in investors' perception of the firm and can be seen as a market signal. The signaling model assumes that corporate financing decisions are designed primarily to communicate managers' confidence in the firm's prospects and or to increase the value of the firm's shares also in the case where management thinks that the firm is undervalued (Barclay and Smith 2005).

Myers and Majluf (1984) and Miller and Rock (1985) on the other hand used the asymmetric information model to defend the opposite position. They claim that the announcement of new external financing for a firm conveys unfavourable information and will have a negative impact on the market's perception. Myers and Majluf (1984) further argue that a negative market reaction to a firm's external financing will create a demand for a discount in order to hedge against the risk that the security is overvalued.

Numerous studies have been carried out to investigate the abnormal return reactions upon sukuk and/or conventional bond announcements but the results obtained thus far are mixed and indecisive. Prior empirical works that used samples from both developed and developing countries, including Malaysia, are discussed below. There were three types of debt financing announcements, as well as their subsequent equity market reactions, considered. The three types of debt announcements included straight bond, convertible bond and sukuk offers. Godlewski *et al.* (2014) examined the return reactions impact upon debt-based *sukuk* and equity-based *sukuk*. However, their study focused only on the issue of *shariah* risk without any reference as to how their structures affected equity market abnormal return reactions. Nevertheless, the gaps in finance literature identified has been the focus of this study.

*2.1 Equity Market Reaction with Bond Announcements*

A study by Ammann *et al.* (2006)found a significant negative abnormal return following the issuance of debt in the Swiss and German markets. Their studies were conducted overr the period between January 1996 and May 2003 using an event window of -20 to +20 days, pre- and post-debt announcement. They found that the announcements of convertible bonds and exchangeable bonds were associated with significantly negative abnormal returns within this period. On the other hand, Martel and Padron (2006) found the opposite and showed that those firms registered positive abnormal returns after issuing debt securities. Their sample consists of firms listed on the Spanish stock market between the years 1989 and 1998 and used an event window of -30 to 180 days. Overall, they showed that the market reacted positively and significantly with the announcement of straight bond offers. In addition, they also showed that the market's response to the debt issue had been positive and significant for firms paying out a low dividend but positive and insignificant for firms paying out a high dividend.

In Malaysia, besides Chin and Nur (2012), no studies focusing on the impact of bond

announcements on firms' share prices had been undertaken. They used a sample of 100 firms (issuers) after excluding non-publically listed firms between the years 2000 and 2007. In line with other international studies, they used an event-study method to draw the inference about the impact of bond issuance on the issuing firms' equity market behaviour. Their investigation window was -60 to +60 days in which, the pre-event investigation window covered -60 to -1 days and the post-event investigation window covered +1 to +60 days. They referred to the KLSE (now Bursa) market index to measure the overall market returns in the respective periods. They found that bond issuers in Malaysia enjoy a significant positive cumulative average abnormal return 10 days after the issuance date and 21 days surrounding the event day. This implies that increasing the leverage of Malaysian firms positively impacted their stock prices. They also posit that favourable information content and signals could be attributed to the use of the funds raised for productive purposes, leading to growth. This is consistent with the signalling model's hypothesis. Overall, they conclude that the equity market reacted positively with the bond issuance announcement in Malaysia. Literature focusing on the impact of the firm's stock price as a result of convertible bond announcement is examined below.

*2.2 Equity Market Reaction with Convertible Bond Announcements*

Prior studies have documented a negative long-run abnormal post-issuance equity return performance for convertible bond issuers (Lee and Loughran 1998; Abhyankar and Dunning 1999; Chen *et al.* 2005). For instance, Abhyankar and Dunning (1999) studied the announcement of 237 convertible debt instruments, of which129 were convertible bonds and 108 were convertible preference share offers, in the United Kingdom's stock market between 1982 and 1996. They used an event window of -160 to -60 days for their analysis and showed negative wealth effects. A -1.21 per cent fall in abnormal returns was observed following the issuance of convertible bonds. Ammann *et al.* (2006) also showed a significant negative (on average -1.5% share price) market response to convertible bond issuance in the United States of America's market. Similar findings by Suchard and Singh (2006), using the Australian market, also showed that among the issuers of non-equity securities, convertible debt drew the most negative reaction, followed by convertible preference shares. In contrast, straight debt and preference share abnormal returns are generally insignificantly different from zero.

However, in later studies, Fenech (2008) showed an opposite picture with significant positive abnormal returns (average of +0.9%) upon the issuance of convertible debt also using the Australian market They explain that the differences in outcomes when contrasted with the study of Suchard and Singh (2006) could be due to the improvements in the institutional environment over the years. In the Japanese market, Kang *et al.* (1995) showed that stock price reactions are positive and significant with the issuance of convertible bonds. They attribute this to the differences in regulatory environments and corporate governance in Japan compared to other countries. Using Dutch market data, De Roon and Veld (1998) also reported positive, but insignificant stock price reactions upon the issuance of convertible offers. In addition, the cross-country differences in market reactions with convertible bond offers could be attributed to the different market structures in each country thus causing their respective reactions in investors.

In view of the mixed and inconclusive results obtained, this study aimed to provide additional empirical evidence concerning the effects of convertible bond announcements and its impact on investors in the equity market. No prior empirical studies had examined this relationship in the context of Malaysian equity markets. Uniquely, convertible offers in Malaysia are issued with an irredeemable feature or 'forced' conversion structure. With this irredeemable feature, bonds are eventually converted to equity, unlike typical convertible debts, where conversion is optional. These were the other compelling reasons for conducting this study in the Malaysian context.

*2.3 Equity Market Reaction with Sukuk Announcements*

This study found only four comparative studies available ( Ashhari *et al.* 2009; Nagano, 2010; Godlewski et al. 2010, 2013; Alam *et al.* 2013) that investigated the abnormal return effects resulting from both *sukuk* and conventional bond issuance announcements. Nevertheless, results obtained thus far were mixed and indecisive notwithstanding the fact that their data was mainly sourced from the Malaysian capital market and was analysed using event-study methodology.

Ashhari *et al.* (2009) were the first to investigate the issuing firm's stock return after *sukuk* and conventional bond announcement offers in Malaysia. Their sample consisted of all issuance of debt securities announcements in the Malaysian market between the years 2001 and 2006. Event study methodology was used to analyse stock returns upon specific debt announcement in the defined event windows of -1 to +7 days and estimations windows of -30 and +30 days. They revealed that the issuance of *sukuk* triggered significant positive abnormal returns on day -1 (0.5885%) and on day 1 (0.9384%). In contrast, none of the days surrounding conventional bond announcements had any significant effect on issuers' stock returns. They concluded that conventional bond announcements did not surprise the market.

Nagano (2010) intuitively felt that firms could obtain an increase in value (higher shareholder value) by issuing sukuk compared to conventional debt issuance. A total of 72 *sukuk* and 91 conventional bond announcements were identified during the period between 2001 and 2007 in the Malaysian market. Based on event-study methodology, he defined -20 to +20 days and -250 to -21 days as his event window and estimations window, respectively. He documented that announcements of *sukuk* were linked with significantly positive abnormal returns no matter what the length of the event windows were. In contrast, cumulative returns for normal bond issuers were found to be insignificantly related. In summary, his findings correspond well to those found by Ashhari *et al.* (2009), that there is an increase in shareholder wealth effect upon the *sukuk* issuers' announcements but not in the case of the conventional bond announcements.

Alam *et al.* (2013) based their findings on reactions from six developed Islamic financial markets (Malaysia, Indonesia, Singapore, Pakistan, United Arab Emirates, and Bahrain and Qatar) to *79* sukuk and 87 conventional bond offer announcements over the period 2004 and 2012. They also included the period of the global financial crisis (GFC) in their model. This enabled them to control the effects on equity market reactions before and after the GFC. Following standard event-study methodology, they defined three event windows: one-day [-0,+0]; three-day [-1,+1]; and seven-day [-3,+3]. Their estimations window covered a period of -60 to +60 days. Their cumulative abnormal returns analysis

revealed that a lack of significant stock market reaction to either conventional or *sukuk* announcements was observed in these markets, which led them to conclude that shareholder wealth was not affected by any of the debt announcements.

The only comparative study that linked sukuk announcements with significant negative abnormal returns was documented by Godlewski *et al.* (2010, 2013). In their studies, stock return investigations were based on a total of 170 announcements, of which, 77 were *sukuk* and 93 were conventional bonds announced in the Malaysian market between 2002 and 2009. They defined five different event windows: three symmetric (i.e., one-day [0,0], three-day [−1,+1], five-day [−2,+2]) and two asymmetric (i.e., four-days [-1,+2] and [-2,+1]). Their estimation windows covered the period -100 to -10 days prior to the event date. Their findings revealed that stock market returns were neutral with the announcement of conventional bonds, but observed a significant negative stock return reaction with the announcement of *sukuk.* They explained that the negative reactions were primarily due to investors' perceptions that the *sukuk* issuers were amongst the lower-quality debtor firms and that firms would only consider issuing *sukuk* when they were unable to raise finances through conventional bonds (i.e., adverse selection effect).

Godlewski *et al.* (2014) have recently updated their work. They examined the equity market reaction upon the announcements of different types of *sukuk* (i.e., debt-like or equity-like instruments). They used a sample of 131 *sukuk* announcements taken from eight countries between 2006 and 2013. Using event-study methodology, they defined their event windows into a five-day [-2,2] period. They conducted regression analysis against the cumulative abnormal returns using the binary code of one to represent debt-based *sukuk* (i.e., *murabaha* or *ijara sukuk* structure) and zero, otherwise. They found that positive cumulative abnormal returns were significantly linked to debt-like *sukuk* announcements, while negative reactions were significantly linked to equity-like *sukuk* announcements. They attribute their former findings to lower *shariah* compliance risk, while the latter is due to the same adverse selection effects arguments they argued previously. However, the authors did not show how the structures of each debt-like and equity-like instruments would impact the equity market abnormal return reactions.

This study is an enhancement of the previous comparative study of Ashhari *et al.* (2009), Nagano (2010), Godlewski *et al.* (2010, 2013) and Alam *et al.* (2013) in two distinct ways. Firstly, prior comparative studies treated all *sukuk* structures uniformly except for Godlewski *et al.* (2014), presumably in the interest of building more tractable theory models or due to a previous lack of data. This study treats the equity-like features of *sukuk* in the same vein as those of convertible bonds in the sense that they represent ownership claims and that the returns on both investments are not guaranteed. They are structured differently. According to Bakar (2009) *sukuk* holders for bonds structured via exchange-based contracts or *`uqud mu`awadhat* (i.e., *Murabaha, Istisna* and *Ijara)* represent ownership and return claims related to a specific underlying asset, while in partnership-based contracts or *`uqud al-isytiraq* (i.e., *murabaha* and *musyarakah*) *sukuk*-holders have an ownership and a returns claim on the specific project or service for a specific period of time.

In comparison, convertible bonds are structured with conversion options that when exercised, represent ownership and returns claims on the whole firm without any maturity date similar to common equity shareholders. In this paper, we analysed the implications on

the stock market return reaction to address the distinction in each equity-like instrument in structuring exchange-based *sukuk,* partnership-based *sukuk* and convertible bonds.

Furthermore, the Securities Commission (SC) clearly requires that all *sukuk* contracts structured under exchange-based contracts must adhere to a purchase price ceiling (i.e., maximum funds raised) of 1.51 times the market value of the underlying asset. The same guidelines also stipulate that there is no requirement for partnership-based *sukuk* to be raised with specific reference to a firm's underlying tangible or intangible assets. The risky features of these contracts are thus mitigated by providing a third party guarantee or purchase undertaking either with or without a fee. Hence, our study gives us the opportunity to inform the opinion of stock market investors concerning the differences between exchange-based *sukuk* and partnership-based *sukuk* as classified by the SC.

Secondly, we enhanced our significant abnormal return findings from event-study methodology by including the examination of the true dynamic relationship between return reaction and debt announcement among the multi-horizon nature of investors. In this paper, we intuitively argue that each *sukuk*/conventional bond issuance announcement affects both daily trader's and institutional investor's wealth effects in different ways, owing to different decision-making time horizons among these investors. Hence, to accommodate the multi-scale tendency of stock market reactions, we employed wavelet analysis. Wavelets are localised in both time and scale and can be used to cut (or filter) data up into different frequency components without losing any information. Finance and economics have long recognised the application of wavelet analysis. The application of wavelet analysis in economics was first introduced by Ramsey and Lampart (1998a,b) and has subsequently been used in various empirical studies (Karuppiaha and Los 2005; Masih *et al.* 2010). However, this study is the first to combine the standard event-study methodology with wavelet analysis to provide a multi-timescale dimension of investor reaction on the significant abnormal return series that affects issuer's day traders' and institutional investors' wealth effects in a single integrated approach.

## 3. Data and Methodology

This study used *sukuk* and conventional bond data obtained from the Bondsteam database and then matched them with the issuers' daily stock price data provided by the DataStream database. Bondsteam was used because it provided qualitative information about issuers and the type of contract for their financing deals, for both *sukuk* and conventional bonds.

Bondsteam provided sample populations of 580 firms that issued debt securities between 2001 and 2013. Some firms were excluded from this study (i.e., financial and insurance sectors), as their financial characteristics and use of debt securities were substantially different from other, non-financial firms. Firms that have other major corporate events such as the issue of bonus stocks, declaration of dividends, stock splits, and other major corporate exercises not associated with conventional bond/*sukuk* offers over the event period were also excluded in the sample to avoid any potential confounding effects. The final sample consisted of 287 firms from non-financial, publically listed firms, in which 158 were conventional bond issuers and 129 firms were *sukuk* issuers. Within the group of conventional bond issuers, there were 125 straight bond issuers and thirty-three convertible bond issuers while within the group of *sukuk* issuers; there were ninety-four exchange-based *sukuk* issuers and thirty-four partnership-based *sukuk* issuers.

With the help of DataStream, the daily share prices of each firm, starting from 64 days before the debt offer takes place (pre-announcement effects) and 64 days after the debt offer (post-announcement effects) and their corresponding date of the KLSE (the Bursa) market index were extracted. Data from 64 days before and after the events were gathered and organised for all firms that made debt security offers between the years 2000 and 2013. Daily stock price and market returns were two vital pieces of information to enable daily stock returns and market returns to be calculated as required by the model used in this study.

As shown in Table 1, the number of conventional bonds issuance was higher between 2000 and 2004 relative to sukuk offers. During this period, it can be said that the Malaysian Islamic debt securities market was in its nascent stages. Much attention had been given to the introduction of the market, the players, and the concept as well as the mechanism of sukuk. This phase of building "awareness" by the stakeholders (including potential investors and issuers) had been key to the growth of sukuk, not only in Malaysia, but also in other parts of the world. At that time, with the markets still in their early development stages, product innovation was still in its infancy. Sukuk structures had been limited to exchange-based sukuk premised on the shariah contracts of Bai Bithaman Ajil and Murabaha.

From 2005 onwards, it is evident that *sukuk* issuance was higher than its conventional bond counterparts. The main reason could be due to the issuance of the first SC guidelines in 2004 for *sukuk*. These guidelines were aimed at redefining *sukuk* to include partnership-based contracts on the existing exchange-based contract offers. The SC guidelines had also increased market flexibility and resulted in more diverse and innovative contracts such as *Ijarah, Mudarabah,* and *Musarakah*. Overall, the Malaysian *sukuk* market has since expanded substantially. Thirty-seven offers were made between 2000 and 2003 and ninety-two offers were made between 2004 and 2013, giving an annual average growth of 14.82 per cent between these two periods. In comparison, within these corresponding periods, the annual average growth of conventional bonds was around 0.79 per cent as compared to their earlier period. We also observed that within conventional bonds, the issuance trend was dominated by straight bond offers rather than convertible bonds.

To analyse the stock market reaction to debt securities announcements (differentiated by their debt principles and their respective sub-categories), this study used the event-study methodology by Brown and Warner (1985), which allowed measuring of the impact of a

**Table 1.** New debt security issuance annually based on principles and each-subcategory offers between the years 2000 and 2013

| Year | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conventional bond | 20 | 15 | 21 | 20 | 14 | 9 | 9 | 4 | 4 | 4 | 4 | 8 | 13 | 13 | 158 |
| Convertible bond | 2 | 2 | 2 | 1 | 0 | 2 | 3 | 4 | 2 | 2 | 0 | 2 | 6 | 5 | 33 |
| Straight Bond | 18 | 13 | 19 | 19 | 14 | 7 | 6 | 0 | 2 | 2 | 4 | 6 | 7 | 8 | 125 |
| Sukuk | 2 | 7 | 13 | 15 | 13 | 11 | 7 | 3 | 6 | 3 | 9 | 17 | 11 | 12 | 129 |
| Partnership | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 2 | 3 | 2 | 4 | 8 | 5 | 4 | 34 |
| Exchange | 2 | 7 | 13 | 13 | 11 | 10 | 6 | 1 | 3 | 1 | 5 | 9 | 6 | 8 | 95 |

corporate event on the firm's stock return. We also performed *t*-tests[8] on each event day to see whether there were significant differences on issuer's abnormal returns as a result of these debt security offer announcements. In addition, to recognise the different decision-making time horizons amongst investors (i.e., short-term and long-term investors), this study used the "Haar wavelet"[9] transformation technique to decompose the issuers' daily abnormal returns series into frequency scales. High frequency scale represented the day traders' reaction, whilst the lower frequency scale represented the reaction of the long-term investors. Doing this, provided a more in-depth understanding concerning the implications of announcements in short-term (i.e., day traders') and long-term (i.e., institutional investors') wealth effects.

*3.1 Event-study Methodology*

The choice of this methodology was based on the fact that the effects of an event would be immediately reflected in the security price given market efficiency. These effects were examined by calculating the differences between the actual returns of a security around the event period and normal returns that would have been observed had the event not occurred during that period. This difference is called abnormal returns. Following Barber and Lyon (1997), the test for the significant abnormal returns on a daily basis throughout the event period was calculated using t-statistics.

As per Ashari *et al.* (2009), Nagano (2010), Godlewski *et al.* (2013; 2014) and Alam *et al.* (2013), the event-day was defined as -2 to +2 day but in contrast, a larger estimation window of -64 to +64 days was used. A shorter event-window anticipated the possibility that the dissemination of firm-specific information may extend over more than one day. A corporation may release information one day and the financial press may report this information the following day; it is sometimes unclear on which day the information reaches the market because it generally is not known whether market participants have the information during market trading hours on the day the information is released by the corporation. Conversely, the use of a larger estimation window to 64 days enabled the identification of reversal in market behaviour, if any, subsequent to the debt issuance.

For each private debt securities issuer, the daily share price for the defined event window period of -64 to +64 days as well as their corresponding periods were collected from the Kuala Lumpur Composite Index (KLCI) data. The benchmark used to calculate the abnormal returns for this study was based on the market-adjusted returns model. There were two reasons for the selection of this model. Firstly, this was a simple, straight-forward and widely used model (Brown 1999; Barnes and Ma 2001; Agrawal *et al.* 2006; Soongswang 2007). Secondly, many studies have shown that results obtained from a market-adjusted model and other models such as the market model and market-adjusted returns model do not exhibit many differences (Kang *et al.* 1995; Barnes and Ma 2001; Traylos *et al.* 2001; Gao and Tse 2003; Altman *et al.* 2004; Charitou *et al.* 2005; Agrawal *et al.* 2006; Soongswang 2007). Brown and Warner (1980; 1985) also confirmed that event studies based on both the market model and the market-adjusted returns models are powerful in detecting abnormal returns.

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[8] E-view statistical software was used

[9] S-Plus software was used for the analysis as per Masih *et al.* (2010)

Following Mackinlay (1997), the abnormal return observations have to be aggregated in order to draw overall inference for the event. An average firm-unique return, in this case the average abnormal return (AAR) will then be estimated for each day, 64 days before and 64 days after, surrounding the issuance of debt securities by dividing the number of firms.

*3.2 Wavelet Analysis*

To further attempt to explain the true dynamics of return reactions among investors owing to their different decision-making time horizons, wavelet analysis was conducted. Wavelet analysis takes care of different time scales or investment horizons or holding periods in decision-making by decomposing the daily AAR obtained from the earlier event-study into orthogonal components with different timescales. Hence, with time scale dimension, the impact of debt securities announcements owing to the multi-horizon nature of investors in the market could be addressed.

This study applied discrete wavelet transformation (DWT) on the AAR series based on each day for the sample period of -64 to +64 days. The daily AAR series from the time domain was broken into different frequency scale crystals *(j)* to represent the stock reactions influence by multi-scale tendency for each day. The transformed return series *R(t)* is represented as a linear combination of wavelet functions as follows:

$$R(t) \approx \sum_k s_{j,k}\,\phi_{j,k}(t) + \sum_k d_{j,k}\,\psi_{j,k}(t) + \sum_k d_{j-1,k}\,\psi_{j-1,k}(t) + \ldots \sum_k d_{1,k}\,\psi_{1,k}(t) \quad (1)$$

where

*j* is the number of scale crystals (intervals or frequencies)
k is the number of coefficients in the specified component
$\phi_{j,k}$ **(t)** and $\psi_{j,k}$ *(t)* are the father and mother orthogonal wavelet pair that are given respectively by

$$\phi_{j,k}(t) = 2^{-j/2}\phi\left(\frac{t-2^j k}{2^j}\right) \text{ for } j = 1 \text{ to } J \quad (2)$$

$$\phi_{j,k}(t) = 2^{-j/2}\psi\left(\frac{t-2^j k}{2^j}\right) \text{ for } j = 1 \text{ to } J \quad (3)$$

Father wavelets represent the low-frequency (smooth) parts of the series, whereas mother wavelets represent the high-frequency (detailed) parts of the series.

$$s_{j,k} \approx \int \phi_{i,k}(t) f(t) dt \quad (4)$$

$$d_{j,k} \approx \int \psi_{i,k}(t) f(t) dt \quad (5)$$

$s_{j,k}$ are called the "smooth" coefficients that represent the underlying smooth behaviour of the series, while $d_{j,k}$ are called the "detail" coefficients that represent the scale deviations from the smooth process. These coefficients are measures of the contribution of the corresponding wavelet function to the total series.

After the decomposition process, the return series is broken into *j* crystals, and the crystals $d_j$ are recomposed into a time domain. The entire return series is replicated in multi-resolution decomposition as follows:

$$\hat{R}^J = D_1 + \ldots\ldots + D_j + S_j \quad (6)$$

where $Dj$ is the recomposed series in the time domain from the crystal $d_j$ and $S_j$ is the composition of the residue. The reconstituted return series $\hat{R}^J$ contains the separate components of the original series at each frequency $j$. $D_j$ represents the contribution of frequency $j$ to the original series.[10]

## 4. Findings and Discussion

Based on the results of descriptive analyses shown in Tables 2 and 3, the mean debt securities ratio (DEBT) for conventional bond offers is 0.177 and ranged from 0[11] to 1.174, while the *sukuk* ratio averaged 0.175 and ranged from 0 to 0.631. Conventional bond offers had a ratio for maximum percentiles higher than its *sukuk* counterparts, implying that the issued amounts of debt exceeded the underlying asset's book value. We conjecture that (among the possible reasons for lower debt ratio among *sukuk* offers) this is due to restrictions imposed by the SC that the debt issuance amount is limited to the value of its underlying assets, whereas there is no similar restriction on conventional bonds. Nevertheless, the debt to asset ratio is similar under both issuance principles. Within conventional bond sub-categories, we found straight bond and convertible bond asset to debt ratios averaged 0.173 and 0.201, respectively. While, within *sukuk* sub-categories, we found partnership-based *sukuk* offers and exchanged-based *sukuk* offers have an average debt to asset ratios almost similar to each other, 0.170 and 0.175, respectively.

A comparison between conventional bonds and *sukuk* revealed similar average ratios across most of the firms' specific characteristics (i.e., tangibility, profitability, size, etc.) except for growth opportunity variables. The findings of this study were contrary to the adverse selection argument of Godlewski *et al.* (2010; 2013) that *sukuk* issuers are among those of lower-quality debtor firms. Instead, we found that the average growth among conventional bond and *sukuk* issuers varied substantially (3.81% and 11.75%, respectively). Variations also persisted on the minimum (negative) growth percentage rate among the two debt principles of -96.75 per cent for conventional bond issuers and -69.19 per cent for *sukuk* issuers. Simply put, firms with higher growth opportunities (measured by sales growth) may prefer *sukuk* financing compared to its conventional counterparts. In addition, the sub-category offers according to the issuer's debt preferences with reference to firm's average growth percentage rate was ranked. Firms with the least growth percentage were found to prefer convertible bonds (2.178%), straight bonds (4.083%), exchange-based sukuk (11.43%) and partnership-based *sukuk* (14.13%). Overall, the higher average growth opportunities percentage report clearly suggests that *sukuk* issuers do indeed fulfill the recommended "utilisation of proceeds" clause of the SC guidelines requiring all funds raised to be channeled into *shariah*-compliant purposes (i.e., to finance firms' business development).

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[10] Wavelet filter has unit energy. This property ensures that the coefficients from the wavelet transform will have the same energy as the data. Therefore, no information is excluded thorough the wavelet transform and also no extra information is added in the process.

[11] Minimum value of 0 indicates that there were no prior debt securities outstanding in the firm's balance sheet prior to any new issuance being made.

**Table 2.** Summary statistics for the conventional bond offers and breakdown by sub-categories.

| | Conventional Bonds | | | | Convertible Bonds | | | | Straight Bonds | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Std | Min | Max | Mean | Std | Min | Max | Mean | Std | Min | Max |
| Debt | 0.177 | 0.158 | 0 | 1.174 | 0.201 | 0.182 | 0 | 0.823 | 0.173 | 0.154 | 0 | 1.174 |
| Tangibility | 0.588 | 0.204 | 0.017 | 0.994 | 0.659 | 0.202 | 0.072 | 0.994 | 0.576 | 0.202 | 0.018 | 0.991 |
| Profit | 0.084 | 0.563 | -2.181 | 16.148 | 0.080 | 0.103 | -0.155 | 0.669 | 0.084 | 0.607 | -2.181 | 16.148 |
| Size | 13.456 | 1.555 | 5.935 | 18.454 | 14.104 | 1.150 | 11.892 | 16.287 | 13.346 | 1.588 | 5.935 | 18.454 |
| Growth | 0.004 | 0.305 | -0.968 | 1.169 | 0.022 | 0.315 | -0.840 | 0.987 | 0.041 | 0.303 | -0.968 | 1.169 |
| Observation | 158 | | | | 33 | | | | 125 | | | |

**Table 3.** Summary statistics for *sukuk* offers and breakdown by sub-categories

| | *Sukuk* | | | | Partnership *Sukuk* | | | | Exchange *Sukuk* | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Std | Min | Max | Mean | Std | Min | Max | Mean | Std | Min | Max |
| Debt | 0.175 | 0.129 | 0 | 0.631 | 0.170 | 0.157 | 0 | 0.631 | 0.175 | 0.125 | 0 | 0.613 |
| Tangibility | 0.555 | 0.193 | 0.048 | 0.965 | 0.513 | 0.162 | 0.244 | 0.892 | 0.561 | 0.196 | 0.048 | 0.965 |
| Profit | 0.086 | 0.077 | -0.598 | 0.436 | 0.082 | 0.053 | -0.166 | 0.186 | 0.087 | 0.080 | -0.598 | 0.436 |
| Size | 13.959 | 1.4732 | 11.538 | 18.186 | 15.078 | 1.192 | 12.375 | 17.670 | 13.807 | 1.443 | 11.538 | 18.186 |
| Growth | 0.118 | 0.247 | -0.692 | 1.012 | 0.141 | 0.251 | -0.464 | 1.012 | 0.114 | 0.247 | -0.692 | 0.882 |
| Observation | 129 | | | | 34 | | | | 94 | | | |

*Note:* Debt is total debt securities to total assets. Tangibility is fixed assets to total asset. Profit is earnings before interest and tax to total assets. Size is the logarithm to total asset. Growth is measured by the annual growth rate in sales. All variables are winsorised at the 1% and 99% level.

*4.1 Event-study Analysis to Address Research Question 1*

Event-study methodology was used to detect significant AAR for *sukuk* and conventional bond offers, respectively. The analysis focused on significant abnormal returns for the pre-issue period (-64 to -2 days), the issue period, day t = (-1 to +1 day), and the post-issue period (+2 to +64 days). Significant abnormal returns were found for all of our observation groups as early as two to three months prior to the debt securities issuance. For example, the first market reaction for *sukuk* offers were detected on day t = -52, whilst conventional bond offers were detected on day t = -42. Generally, pre-event market behaviour indicates information leakage and insider trading activities pertaining to an event. However, both, information leakage and insider trading activities may not be applicable in the case of debt securities offers in Malaysia. These early reactions merely indicate that the market anticipated a firm's intention to issue future debt securities since all offers must obtain mandatory approval from the SC, at least two months prior to their actual issuance date. Hence, the pre-event period market behaviour is most likely due to the reaction towards the announcement of intention to issue debt securities whilst the emphasis of this paper is on post-issuance behaviour. For the sake of brevity, a pre-announcement AAR reaction table has not been included in this paper.

Findings concerning a greater negative return reaction upon conventional bond offers, specifically, straight-bond offers matched the theoretical predictions of Myers and Majluf (1984), as reported in Table 4 and Table 5, respectively. They argue that managers have more information than outside investors due to asymmetric information. They explain that negative market reactions to a firm's external financing announcements may reveal negative information that the firm's present share price could be overvalued. Descriptive statistics performed earlier showed conventional bond issuers are among those categorised with lower future growth opportunities, and perhaps the issuance of bond cause firms to be perceived as being incapable of refinancing their existing loan using their internally generated funds. The findings of this study are contrary to the findings of Chin and Nur (2012). The reason for opposite results could be attributed to the fast development of the *sukuk* market, which was not highlighted by the authors.

The mixed equity market reactions observed upon the issuance announcement of *sukuk* as reported in Table 4 and in particular exchange-based *sukuk* as reported in Table 5 could indicate that equity market investors provide mixed signals for its issuance. As pointed out by Kabir (2003) by issuing debt securities, a firm receives additional external funds but at the same time, increases its leverage and imposed external discipline by *sukuk* holders. The fact that a firm needs new financing further indicates a shortage of internal funds, which the market may consider as bad news. On the other hand, the higher leverage is a signal that the firm is confident about its ability to meet higher repayment obligations and thereby, generate higher cash flows. This is also in line with the results of the descriptive statistics conducted showing that issuers with higher growth opportunities favour *sukuk* or exchange-based *sukuk* offers. However, our findings concerning *sukuk* reactions contradicted findings made earlier by Ashhari *et al.* (2009), Nagano (2010), Godlewski *et al.* (2010; 2013)and Alam *et al.* (2013). The findings of this study support the argument that equity-market investors perceive that exchange-based and partnership-based *sukuk* are different.

In the case of immediate positive and subsequent reversal to negative return reactions as observed upon issuance announcement of convertible bonds as reported in Table 5 and

**Table 4.** Daily AAR surrounding the issue of conventional bonds and *sukuk*

| | Conventional Bonds (158 Observations) | | *Sukuk* (129 Observations) | |
|---|---|---|---|---|
| Day | AAR | *t*-test | AAR | *t*-test |
| 3 | 0.6719 | 0.7704 | 0.5759 | 1.9136 |
| 5 | 0.7718 | 1.7692 | 0.3365 | 1.7955 |
| 8 | -0.7897 | -2.1335 | -0.0614 | -0.1889 |
| 22 | 0.3556 | 0.4919 | -0.6096 | -2.9517 |
| 29 | -0.6841 | -2.2874 | 0.0965 | 0.3631 |
| 33 | -0.9593 | -2.3130 | -0.0862 | -0.2201 |
| 37 | -0.5690 | -1.9129 | -0.1417 | -0.6438 |
| 42 | -0.7251 | -2.2490 | -0.0351 | -0.1234 |
| 47 | -0.4269 | -1.7406 | 0.1829 | 0.6061 |
| 55 | 0.2055 | 0.6414 | 0.8879 | 2.1153 |
| 62 | -0.4392 | -1.8189 | -0.0217 | -0.0927 |
| 63 | 0.5994 | 1.8329 | 0.0594 | 0.1929 |

**Table 5.** Daily AAR surrounding the issue of a sub-category of conventional bonds

| | Straight Bond (125 Observations) | | Convertible Bond (33 Observations) | |
|---|---|---|---|---|
| Day | AAR | *t*-test | AAR | *t*-test |
| 4 | -0.7028 | -2.1866 | 0.7434 | 1.3390 |
| 8 | -0.6678 | -2.1924 | -1.3425 | -0.8773 |
| 13 | -0.6128 | -1.9338 | 0.0461 | 0.0397 |
| 17 | -0.7626 | -1.9664 | 1.4156 | 2.0978 |
| 18 | 0.7985 | 0.9900 | -0.8635 | -1.8640 |
| 20 | 0.4749 | 0.5495 | -1.6531 | -2.9542 |
| 23 | -0.0517 | -0.1687 | -1.5207 | -2.1600 |
| 26 | -0.8095 | -2.2334 | 0.5369 | 0.4449 |
| 29 | -0.8033 | -2.4089 | -0.1436 | -0.2217 |
| 33 | -1.0515 | -2.1666 | -0.5413 | -0.8201 |
| 37 | -0.6610 | -1.9516 | -0.1515 | -0.2827 |
| 42 | -0.7301 | -2.0274 | -0.7025 | -1.0039 |
| 45 | -0.1449 | -0.6233 | 2.1223 | 2.1696 |
| 47 | -0.2439 | -1.0270 | -1.2565 | -1.8320 |
| 49 | -0.6012 | -1.9663 | 0.6449 | 1.1771 |
| 63 | 0.2679 | 0.8263 | 2.1026 | 1.7288 |

partnership-based *sukuk* as reported in Table 6 partly support the arguments of Millar and Rock (1985). They explain that the initial positive reaction of the market could be due to a positive signal the market received in relation to a confirmation of planned corporate expansion exercises that are to be financed by the debt securities. However, the subsequent access to corporate and market intelligence perhaps alters the investors' perceptions, possibly resulting in negative return reactions. This study's findings concerning convertible bond offers was well-supported by Bancel and Mitoo (2004) who suggested that a majority of firms issue convertible bonds as 'delayed equity', and value its ability to provide a signal about the future and prospects of the firm. Furthermore, the subsequent significant negative firm returns were consistent with the belief that convertible bonds are viewed as a form of 'backdoor equity' (Stein 1992), and thus, an increase in the number of shares will

**Table 6.** Daily AAR surrounding the issue of each sub-category of *sukuk*

| | Exchange-based *Sukuk* | | Partnership-based *Sukuk* | |
|---|---|---|---|---|
| Day | AAR | t-test | AAR | t-test |
| 3 | 0.4536 | 1.2617 | 1.0749 | 2.5376 |
| 5 | 0.1671 | 0.8718 | 1.0283 | 1.9972 |
| 13 | -0.2227 | -0.7270 | -0.8340 | -1.9307 |
| 17 | 0.0239 | 0.0809 | -0.5315 | -3.3583 |
| 19 | -0.3641 | -0.8128 | -0.6330 | -1.8359 |
| 22 | -0.5925 | -2.7220 | -0.6793 | -1.1689 |
| 27 | 0.2445 | 0.9838 | -0.6255 | -2.5109 |
| 37 | 0.0621 | 0.2584 | -0.9740 | -2.0093 |
| 40 | 0.2562 | 0.9626 | -0.6845 | -2.5258 |
| 46 | -0.4787 | -1.7706 | -0.0035 | -0.0084 |
| 48 | 0.4535 | 1.7497 | -0.0647 | -0.1534 |
| 55 | 0.9832 | 1.9543 | 0.4989 | 0.8330 |

ultimately dilute existing shareholdings. This would expose the firm to adverse selection effects and therefore, explains why the market reacts negatively to convertible bond offers.

In the case of partnership-based *sukuk,* initial positive market reactions demonstrate that the market perceives that the design of joint business venture features embedded within this structure signals favourable information about the issuing firm, specifically with regard to its future growth prospects. This is in line with the descriptive data from this study which showed that firms with the highest growth opportunities favour partnership-based *sukuk* compared to other types of financial instruments. The subsequent significant negative firm returns reactions can be explained by two plausible scenarios. Firstly, using the adverse selection effects of Godlewski *et al.* (2010; 2013)in which investors' reactions signal their understanding that only firms with the lowest profit expectations issue *sukuk* and secondly, it could indicate that the profit-sharing features with *sukuk* holders create a new form of conflict between them and existing shareholders that never existed in the traditional model.

The first scenario can be rejected based on the findings in the descriptive statistics. This paper proposes that several factors adversely affect shareholders' wealth in the second scenario: share dilution effects like those experienced with convertible bond offers; and profit-sharing features within partnership-based contracts could result in a loss in unrealised future profit together with business controlling provisions. Since this is merely a deduction based on the design of partnership-based *sukuk*, our multi-horizon investors' dimensions analysis in the following sections will test this deduction.

Overall, our event-study analysis addressed that the following answers above have led to a few noteworthy conclusions within the context of our first research question. Firstly, equity market investors perceive that *sukuks* and conventional bonds are different financial instruments. Secondly, variations in investors reactions persist when each sub-category of *sukuk* and conventional bonds are examined separately. Detailed analysis was conducted on the source of the reaction by accommodating the multi-horizon nature of the investors in the equity market.

*4.2 Wavelet Analysis to Address Research Question 2*

This section investigated how the announcement of each *sukuk* and conventional bond affected the issuer's, day trader's, and institutional shareholder's wealth effects derived from the multi-horizon nature of the stock market investors' reactions. To resolve this, this study confined findings to two specific contexts. Firstly, given that earlier evidence showed that *sukuk* was perceived as being different to conventional bonds, this study focused on each sub-category of debt instruments within each principle. Secondly, since the analytical approach using wavelets was novel, the interpretations of this study's findings are made only with reference to existing theoretical models to explain investors' reactions owing to their different decision-making time horizons only when the wealth effects of day traders and institutional investors occurred simultaneously.

As reported in Panel 1 of Table 7, based on the magnitude of influence by day traders and investors observed above, overall it can be concluded that the issuance announcement of straight bonds immediately destroyed a firm's value. Theoretically, there were two possible scenarios that could explain this negative reaction. Firstly, the announcement conveyed unfavourable information due to a lack of substantial future growth opportunities (Myers and Majluf 1984). Secondly, the announcement signalled that firms were unable to pay their existing mature debt using their own internally generated funds (Miller and Rock 1985). However, with reference to the longest length of positive long-term positive reactions pattern observed, it can be concluded that the announcement of straight bonds had a minimal negative impact on overall shareholder wealth. This is plausible since the design of straight bonds is not embedded with features that might adversely affect the interest of shareholders. Instead, shareholders' wealth might increase since straight bond offers allow firms to reduce their expected tax bill and increase their after-tax cash flows, thus increasing the potential for a higher dividend payment (Modligliani and Miller 1958).

Results from this study Panel 2 of Table 7 also indicate that day trader's and institutional investor's wealth were not affected with the issuance announcement of exchange-based *sukuk*. Specifically, the influence exerted by day traders and long-term investors on the decomposed AAR series was negligible. Market players perceived favourably the use of underlying assets in this structure in two ways. Firstly, it mitigated risk-shifting and asset substitution problems (Jensen and Meckling 1976) thus reducing the adverse effects on market investors. Secondly, only financially stable firms with huge assets would choose to issue exchange-based *sukuk* since the asset backing underlying this structure is a mandatory requirement by SC and market investors expect this outcome.

The results of this study reported in Panel 3 of Table 7 further revealed that the issuance announcement of convertible bonds did not have any immediate impact on day traders either positively or negatively. However, only after day +17 of the convertible announcement, were there greater magnitudes of negative reactions found amongst long-term investors' return reactions. This could be attributed to the design of convertible bonds. In Malaysia, most convertible bonds are issued with unique feature that they are irredeemable. Being irredeemable, the bond is eventually converted to equity, unlike other typical convertible bonds that provide conversion options to the bondholders. As expected, based on the decomposed evidence, the forced conversion to equity feature had no short-term effects, especially amongst day traders. In contrast, long-term investors' adverse return reactions were due to the forced nature of conversion in Malaysian convertible bonds that would

**Table 7.** Decomposed significant AAR series into frequency scales for respective sub-categoris of *sukuk* and conventional bond offers

| Day | Significant AAR | D1 (2 to 4 days) | D2 (4 to 8 days) | D3 (8 to 16 days) | D4 (16 to 32 days) | D5 (32 to 64 days) |
|---|---|---|---|---|---|---|
| Panel 1: Straight Bond | | | | | | |
| 4 | -0.7028 | -0.6795 | -0.3036 | -0.0114 | 0.0535 | 0.2383 |
| 8 | -0.6678 | -0.5504 | -0.3339 | 0.0304 | -0.0393 | 0.2254 |
| 13 | -0.6128 | -0.1862 | -0.4168 | -0.0909 | -0.0969 | 0.1780 |
| 17 | -0.7626 | -0.6095 | -0.2551 | -0.0364 | 0.0141 | 0.1244 |
| 26 | -0.8095 | -0.5042 | -0.1333 | -0.1561 | 0.0121 | -0.0280 |
| 29 | -0.8033 | -0.7444 | -0.0746 | 0.1457 | -0.0502 | -0.0798 |
| 33 | -1.0515 | -0.4944 | -0.2594 | -0.1091 | -0.0502 | -0.1384 |
| 37 | -0.6610 | -0.1430 | -0.4205 | 0.0669 | 0.0087 | -0.1731 |
| 42 | -0.7301 | -0.1178 | -0.3697 | -0.1102 | 0.0339 | -0.1664 |
| 49 | -0.6012 | -0.3210 | -0.1592 | -0.0255 | -0.0315 | -0.0639 |
| Panel 2: Convertible Bond | | | | | | |
| 17 | 1.4156 | 0.9705 | 0.4747 | 0.1691 | -0.1360 | -0.0626 |
| 18 | -0.8635 | -0.9307 | 0.1805 | 0.1079 | -0.1194 | -0.1018 |
| 20 | -1.6531 | -0.9535 | -0.3208 | -0.1244 | -0.0985 | -0.1558 |
| 23 | -1.5207 | -0.8472 | -0.1500 | -0.3095 | -0.0385 | -0.1754 |
| 45 | 2.1223 | 1.0120 | 0.0811 | 0.0340 | 0.0645 | 0.9306 |
| 47 | -1.2565 | -0.2927 | 0.0825 | -0.2447 | 0.0625 | -0.8640 |
| 63 | 2.1026 | 0.6167 | -0.5039 | 0.1020 | 0.2599 | 1.6279 |
| Panel 3: Exchange-based *Sukuk* | | | | | | |
| 22 | -0.5925 | -0.1499 | -0.1021 | -0.1224 | -0.1319 | -0.0861 |
| 46 | -0.4787 | -0.2108 | -0.1884 | -0.0516 | -0.0352 | 0.0073 |
| 48 | 0.4535 | 0.0934 | 0.2124 | 0.1096 | 0.0162 | 0.0218 |
| 55 | 0.9832 | 0.2312 | 0.6166 | 0.0223 | 0.0202 | 0.0930 |
| Panel 4:Partnership-based *Sukuk* | | | | | | |
| 3 | 1.0749 | 0.5614 | 0.1989 | 0.1341 | 0.0441 | 0.1364 |
| 5 | 1.0283 | 0.4032 | 0.1858 | 0.2981 | 0.0645 | 0.0767 |
| 13 | -0.8340 | -0.5729 | -0.0942 | 0.0985 | -0.0457 | -0.2196 |
| 17 | -0.5315 | -0.2276 | 0.0663 | 0.0775 | -0.1026 | -0.3451 |
| 19 | -0.6330 | 0.0373 | 0.0337 | -0.2267 | -0.0858 | -0.3915 |
| 27 | -0.6255 | -0.3043 | -0.1417 | 0.1523 | 0.0944 | -0.4262 |
| 37 | -0.9740 | -0.2320 | -0.2825 | 0.0983 | -0.0544 | -0.5035 |
| 40 | -0.6845 | -0.3461 | -0.0663 | -0.1444 | 0.0258 | -0.1534 |

dilute their stock value in the future (Stein 1992). This study concluded that the convertible feature of bonds had no effects on day traders, whilst concurrently adversely affect overall shareholder's wealth.

Finally, in Panel 4 of Table 7, it was found that the issuance announcements of partnership-based *sukuk* were met with positive return reactions from day traders. However, from day +13 onwards, return reactions were adversely affected by long-term investors. The issuer choice for partnership-based *sukuk* provided a credible signal to daily traders about the issuer's future growth prospects. This was also in tandem with the SC's mandatory

requirement that issuers must have specific business potential in order to execute the joint venture (or partnership), an essential feature of this contract. Subsequently, a reversal took place within two weeks of its issuance. Wavelet decomposition analysis indicated that these negative reactions were sourced from reactions amongst long-term investors. Reiterating the event-study findings earlier, it was found that the adverse return reaction amongst long-term investors was in response to the embedded profit-sharing features within this structure. Profit-sharing features allow *sukuk* holders to partly own and share in the returns generated from the specific venture. As such, it creates new forms of conflict over business control provisions and profit claims between stockholders and *sukuk*-holders. Unlike convertible bond offers where the existing stock holders face potential share value dilutions, in this arrangement shareholders face two forms of dilutions, namely, potential control and future revenue dilution, which have both, theoretical and policy implications.

In summary, our decomposed AAR analysis indicates that a firm's announcement of straight bonds immediately destroyed a firm's value. In contrast, the announcement of partnership-based *sukuk* contributed to creating wealth for day traders and had no effect upon the announcement of convertible bonds and exchange-based *sukuk.* The results of this study also indicated that overall shareholder's wealth was not affected with the issuance announcement of straight bonds and exchange-based *sukuk.* On the contrary, shareholder's wealth was negatively affected with the announcement of convertible bonds and partnership-based *sukuk.* This could be attributed to the embedded features within each financial instrument.

## 5. Conclusion

This paper examined whether *sukuk* are really different from conventional bonds using new and unifying empirical models. This paper has made at least two important contributions. Firstly, it showed important structural differences within *sukuk* and coventinal bonds, and their implications on investors' return reactions. Reference was made to the SC's Islamic Securities Guidlines 2011, to classify *sukuk* into exchange-based and partnership-based contracts, and conventional bonds into straight bonds and convertible bonds. Early studies treated all *sukuk* and conventional bond structures uniformly, presumably in the interest of building a more tractable theoretical model or due to a previous lack of data. Secondly, this study acknowledged that in reality, stock market participants consist of thousands of day traders and investors that have different decision-making time horizons in response to firms' debt announcements. As a result, the implication of return reactions upon debt announcement affected both day traders firm value (short-term) and institutional investors wealth (long-term). These implications may affect the investors differently. To accommodate the multi-horizon nature of the different types of investors, wavelet analysis was used to overcome the restrictions of using two time-scale impact measurements in present event-study methodology.

In summary, this study found that based on event-study analysis, equity market investors perceived that *sukuk* and conventional bonds as being different financial instruments. Variations in investors' reactions persisted when each sub-category of *sukuk* and conventional bonds are examined separately. Next, based on a unified approach of event study and wavelet analysis, a firm's announcement of a straight bond was found to immediately destroy the firm's value. In contrast, the announcement of partnership-

based *sukuk* contributed to creating day traders' wealth, with no effect being observed from the announcement of convertible bonds and exchange-based *sukuk.* The results of this study also indicated that overall shareholders' wealth was not affected by the issuance announcement of straight bonds and exchange-based *sukuk.* However, shareholders' wealth was negatively affected by the announcement of convertible bonds and partnership-based *sukuk.* This could be attributed to the embedded features within each financial instrument.

The results have several policy implications. Firstly, the findings contribute to the existing body of literature in that it provides further insights into the differences between *sukuk* and conventional bond offer announcements and more importantly, the difference attributed to specific offers within each of the debt instruments. Market-based information supports that the use of purchase undertaking via the '*waad*' clause in structuring partnership-based *sukuk* does not render its structure to be similar to those of other fixed income instruments. Secondly, the findings showed that reaction implications varied depending on the investor and debt instrument type. In particular, the use of the profit-sharing elements in the partnership-based contracts created new forms of conflict over business control provisions and profit claims between stockholders and *sukuk* holders. Unlike convertible bond offers, shareholders faced potential share value dilutions in partnership-based *sukuk.* Existing shareholders faced two forms of dilution, namely, potential control and future revenue dilution.

As more data becomes available in the future, further investigations can be undertaken for different combinations of *sukuk* contracts between exchange-based and partnership-based *sukuk* to overcome adverse shareholders' wealth effects on the latter's structure.

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