

Godlewski, Christophe J.; Turk-Ariss, Rima; Weill, Laurent

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## Do markets perceive sukuk and conventional bonds as different financing instruments?

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Christophe J. Godlewski, Rima Turk-Ariss  
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Christophe J. Godlewski, Rima Turk-Ariss and Laurent Weill<sup>+</sup>

## Do markets perceive sukuk and conventional bonds as different financing instruments?

### Abstract

The last decade witnessed a proliferation in issues of *sukuk*, Islamic financial instruments structured to replicate the cash flows of conventional bonds. Using a market-based approach on Malaysian data, we consider whether investors react differently to the announcements of *sukuk* and conventional bond issues. Our findings suggest the stock market is neutral to announcements of conventional bond issues, but reacts negatively to announcements of *sukuk* issues. We attribute this finding to the excess demand for Islamic investment certificates and explain the difference in stock market reactions as an adverse selection mechanism that favors *sukuk* issuance by lower-quality debtor companies. Unlike previous studies, our findings indicate markets readily distinguish between *sukuk* and conventional bonds.

JEL Codes: G14, P51

Keywords: financial instruments, Islamic finance, sukuk, event studies.

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<sup>+</sup> Corresponding author. Address: Institut d'Etudes Politiques, 47 avenue de la Forêt Noire, 67082 Strasbourg Cedex, France. Phone : 33-3-68-85-21-38. E-mail: laurent.weill@unistra.fr.

Christophe J. Godlewski, Rima Turk-Ariss and Laurent Weill

## Do markets perceive sukuk and conventional bonds as different financing instruments?

### Tiivistelmä

Viime vuosikymmenellä ns. *sukuk*-velkakirjojen liikkeeseenlaskut kasvoivat merkittävästi. Näillä velkakirjoilla tarkoitetaan islamilaisia rahoitusinstrumentteja, jotka muistuttavat rahavirtojen rakenteeltaan tavanomaisia velkakirjoja. Markkinapohjaista menetelmää ja Malesiaa koskevaa aineistoa käyttäen tässä tutkimuksessa analysoidaan, reagoivatko sijoittavat eri tavoin ilmoituksiin *sukuk*-velkakirjojen ja tavanomaisten velkakirjojen liikkeeseenlaskusta. Tulosten mukaan osakemarkkinat reagoivat neutraalisti ilmoituksiin tavanomaisten velkakirjojen liikkeeseenlaskusta, mutta negatiivisesti ilmoituksiin *sukuk*-velkakirjojen liikkeeseenlaskusta. Tämän tuloksen selitetään johtuvan islamilaiden sijoitustodistusten ylikysynnästä. Osakemarkkinoiden erilaiset reaktiot johtuvat ns. adverse selection -mekanismista, joka johtaa siihen, että *sukuk*-velkakirjoja laskevat liikkeeseen taloudellisesti huonompilaatuiset velallisyrietykset. Aiemmistä tutkimuksista poiketen vaikuttaa siltä, että markkinat tekevät selkeän eron *sukuk*-velkakirjojen ja tavanomaisten velkakirjojen välillä.

Avainsanat: sijoitusinstrumentit, islamilainen rahoitus, sukuk, tapahtumatutkimukset

# 1 Introduction

The past decade witnessed an unprecedented expansion in Islamic finance, including a notable widening of operations of Islamic banks and extensive issuance of *sukuk*, investment certificates that comply with Islam's *Shari'a* legal code.<sup>1</sup> Recent figures indicate that Islamic banks operating in over 75 countries have total assets of about \$300 billion and enjoy an annual growth rate exceeding 15% (Chong and Liu, 2009). The *Financial Times* estimates the value of industry overall in excess of \$1 trillion (Financial Times Special Report, 2010). Much of this expansion has been fuelled by *sukuk* issuance. Just as Islamic banks provide an alternative mode of financing compared to conventional banking, *sukuk* are similar in structure to conventional bonds but allow sovereign and corporate entities to raise funds in capital markets in conformance with *Shari'a* principles.

Islamic financial instruments were pioneered in the Far East (Malaysia and Indonesia) and the Gulf Cooperation Council (GCC) countries. The issuance of *sukuk* rose from \$7.2 billion in 2004 to \$39 billion in 2007, with a global outstanding volume exceeding \$90 billion (Jobst et al., 2008). *Sukuk* today are also issued in other regions by sovereign, corporate, and international bodies such as the Saxony-Anhalt German State, GE Capital, and the International Finance Corporation (IFC). Perhaps most striking is that European governments (including France and Britain) have taken legal steps to accommodate *sukuk* issues in their countries. Among the motivations for this development in countries outside the Muslim world, it is hard to overlook the eagerness of Western governments to attract funds from the GCC countries to finance sovereign and corporate debt.

For *sukuk* to be *Shari'a*-compliant, three criteria must be met: 1) the certificates must represent ownership in tangible assets, usufruct or services of revenue-generating firms; 2) payments to investors should come from after-tax profits; and 3) the value repaid at maturity should reflect the current market price of the underlying asset – not the original amount invested. A debate was recently ignited after a leading *Shari'a* scholar announced that most *sukuk* do not comply with *Shari'a* because they are in violation with at least one of the three principles, effectively making them no different than conventional bonds. Miller, Challoner, and Atta (2007) and Wilson (2008) similarly contend that *sukuk* instruments do not constitute financial innovation as they are generally structured along Western rules of securitization. Cakir and Raei (2007) offer that counterargument that *sukuk* are in fact distinct from conventional bonds as they offer unique risk-reduction benefits when added to a portfolio of fixed income securities.

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<sup>1</sup> See Beck, Demirgüç-Kunt and Merrouche (2010) for a broad analysis of Islamic banks.



This study goes to the heart of the debate over whether *sukuk* are financing instruments that mirror conventional bonds or have a distinct character. Here, we examine how a stock market reacts to *sukuk* and conventional bond issues by corporate entities to provide a comparative analysis.

Our approach appraises *sukuk* from two perspectives. First, putting aside theoretical and structural differences and similarities (including the views of *Shari-a* scholars), we ask simply whether stock market participants themselves distinguish between *sukuk* and conventional bonds. We address market-based evidence on differences in company stock returns following issue announcements by applying an event methodology to examine whether announcements of *sukuk* and conventional bond issues lead to significant abnormal returns for the issuers. We then perform a market perception analysis on investor valuations of *sukuk* for insights into their future prospects. While the issuance of *sukuk* is ostensibly motivated by religious principles, we ask whether extrinsic factors such as access to a new class of investors might also be involved.

Our study is topical in light of the recent expansion of *sukuk*. Determining whether investor valuation of *sukuk* is better or worse in comparison to conventional bonds, would allow us to project an optimistic or pessimistic view of the expansion of *sukuk* markets. This work broadens a fairly thin body of research on these still novel securities. Existing work on the emergence of *sukuk* appears in the context of overviews of Islamic finance (e.g. Iqbal and Mirakhor, 2007; Visser, 2009), and few studies investigate their evolution or specific characteristics (e.g. Jobst, 2007; Jobst et al., 2008).

To analyze the stock market reaction to *sukuk* and conventional bond issuance, we consider a sample of Malaysian-listed companies that issued both conventional bonds and *sukuk* during the period 2002–2009. For our purposes, Malaysia is ideal as it is by far the most active in terms of corporate *sukuk* issues. The volume of *sukuk* issued in Malaysia alone in 2007 was \$28.1 billion, compared to \$19 billion for all GCC countries (Ernst & Young, 2009). Furthermore, Malaysia dominates the global corporate *sukuk* market with 75% share of total corporate *sukuk* over the period January 2004–June 2007. In contrast, most GCC *sukuk* are sovereigns; there is no active secondary market as most issues are usually held to maturity.<sup>2</sup> Malaysian *sukuk* are also valuable for the purposes of this study as they represent about half of the total stock of Malaysian corporate bonds (Jobst et al., 2008), i.e. they are not limited to a small portion of the disintermediated financing for companies.

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<sup>2</sup> Similarly, corporate bond issues in the GCC region are quite limited and there is no active debt market in the region. This precludes extending our event analysis to cover this part of the world.

By way of preview, we find that there is an insignificant stock market reaction to conventional bond issuance and a negative reaction to *sukuk* announcements. We also report that there are significant differences in abnormal returns following the issuance of bonds and *sukuk*.

The remainder of the paper is structured as follows. In section 2, we provide an overview of *sukuk* and a literature survey. We present our empirical design in section 3, and discuss our findings in section 4. Section 5 concludes.

## 2 An overview of *sukuk*

This section starts with a discussion of what distinguishes *sukuk* from conventional bonds and recent market developments. We review the prospects and challenges facing *sukuk*, and conclude by addressing our main research question as to whether markets see *sukuk* as distinct from conventional bonds.

### 2.1. What are *sukuk*?

The new millennium opened with Islamic capital markets embracing *Shari'a*-compliant financial instruments known as *sukuk*.<sup>3</sup> *Sukuk* investments represent a distinct class of securities issued by sovereign and corporate entities. They are investment certificates with both bond and stock-like features issued to finance trade or the production of tangible assets. Like bonds, *sukuk* have a maturity date and holders are entitled to a regular stream of income over the life of the *sukuk* along with a final balloon payment at maturity. However, *sukuk* are asset-based rather than asset-backed securities, with the underlying asset being necessarily *Shari'a*-compliant in both nature and use. The eligibility of *sukuk* rests on identifying an existing or a well-defined asset, service, or project capable of being certified by a third party, and for which ownership can be recorded in some form. *Sukuk* holders might be responsible for asset-related expenses, and the sale of *sukuk* results in the sale of a share of an asset. Bonds, in contrast, are pure debt obligations issued to finance any activity and whose value rests on the creditworthiness of the issuer. *Sukuk* prices can vary both with the creditworthiness of the issuer and the market value of the underlying asset. However, while *sukuk* and

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<sup>3</sup> The Arabic term *sukuk* is a plural form of *Sakk*, which derives from a Persian term meaning “to strike one’s seal on a document” (McMillen, 2007). Adam (2006) notes that the term was introduced in Medieval Europe, eventually becoming our modern word “Cheque.”

shares of stock are similar in the sense that they represent ownership claims and that the return on both investments is not guaranteed, *Sukuk* must be related to a specific asset, service or project for a period of time. Equity shares, of course, represent ownership claims on the whole company with no maturity date.

In May 2003, the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) officially defined *sukuk* in the *Standard for Investment Sukuk* as certificates of equal value representing undivided shares in ownership of tangible assets, usufruct and services, and it identified at least fourteen possible *sukuk* structures. The AAOIFI Standard distinguishes *sukuk* from stocks, bonds, and from the conventional process of securitization as well, emphasizing that *sukuk* are not debt certificates with a financial claim to cash flow and that they may not be issued on a pool of receivables. Rather, they are similar to a trust certificate with proportional or undivided interest in an asset or a pool of assets, and the right to a proportionate share of cash flow is derived from ownership interest that carries risks and benefits.

*Sukuk* can denote partial ownership in a debt, asset, project, business, or investment: i.e. *Murabaha* (cost-plus sales), *Salam* (pre-payment of an asset for future delivery), *Ijara* (rental/ lease agreement), *Istisna* (build-to-own property), and *Mudaraba* and *Musharaka* (partnership forms).<sup>4</sup> Most offerings to date are *Ijara* or asset-based, with some recent innovations taking place in the structuring and pricing of *Musharaka Sukuk* (Abdel-Khaleq and Richardson, 2007; Wilson, 2008). Appendixes 1 and 2 present diagrams to illustrate *Ijara* and *Musharaka Sukuk* structures, respectively.

In a typical *Ijara Sukuk* structure, the originator sells assets to the *sukuk* issuer, a bankruptcy-remote special purpose vehicle (SPV) created to act as a trustee for investors acquiring the assets (Iqbal and Mirakhor, 2007).<sup>5</sup> The assets are then leased back to the *sukuk* issuer for a stated period, with the agreement to sell the asset back to the lessee at the end of the lease period.<sup>6</sup> At the same time, the SPV issues certificates of participation to investors representing undivided ownership in the underlying asset. Over the term of the lease contract, the trustee receives rental payments

<sup>4</sup> *Murabaha*, *Salam*, and *Istisna Sukuk* certificates are not readily tradable on the secondary market due to *Shari'a* restrictions (Usmani, 2002).

<sup>5</sup> *Shari'a* scholars agree that ownership of an asset is possible with proper documentation, even if the title is not registered under the buyer's name. The common practice is to transfer beneficial title (not legal title of ownership) to avoid transfer taxes and other unfavorable costs. The sole exception is the case of Qatar global *sukuk*, whereby land title is actually transferred to the SPV.

<sup>6</sup> It should be noted that there are *Shari'a* restrictions to executing a contract of sale of the leased assets at a future date at the time of initiating the *Ijara* agreement. The sale/purchase deal is not an integral part of the *Ijara* agreement and can only be executed at the time of transferring back the assets from the lessor to the lessee. Alternatively, an initial sale/purchase undertaking can be entered into, allowing the lessee to ultimately purchase back the assets. Such an undertaking is not a contract and is only binding on the undertaker while the other party has the option not to proceed. It is only signed after completing the initial sale agreement relating to the assets.

for the use of the asset and distributes them to certificate holders in proportion to their ownership stake.<sup>7</sup> Upon expiry of the lease contract, the *sukuk* holder's ownership claims cease and the payment flow halts. The principal is returned to the holder and asset ownership reverts to the lessee. If the asset has a market value, the *sukuk* holder can realize a capital gain or loss. However, if the underlying is a public good for which there is no market, the *sukuk* holder exercises an embedded put option whereby the originator buys back the underlying assets at face value.

Alternatively, in a *Musharaka Sukuk* structure, the two parties include an originator providing a pool of assets and an SPV which raises cash by selling *sukuk* notes to investors (Abdulkader and Nathif, 2004). These parties enter into a *Musharaka* (partnership) arrangement for a fixed period and agree on profit- and loss-sharing ratios. The issuer also undertakes to buy the *Musharaka* shares of the SPV on a periodic basis. The two partners then appoint a managing agent (usually the originator) to act on behalf of the *Musharaka*, and to develop or make efficient use of the asset(s). In return, the agent gets a fixed agency fee and a variable incentive fee payable. The cash returns generated from the *Musharaka* are paid as profits to the *Sukuk* investors. At the end of the fixed *Musharaka* period, the issuer would have bought back the *Musharaka* shares at pre-agreed prices and intervals, and the SPV no longer has any shares in the partnership. Partnership contracts through *Musharaka Sukuk* strengthen the paradigm of Islamic finance and are preferred from the viewpoint of jurists because they rest on profit-and-loss arrangements. The returns on such participation certificates are contingent on the company fundamentals and not benchmarked to market rates. They are also attractive to investors because they are negotiable instruments that can be traded in the presence of an active secondary market.

## 2.2 A brief history of *sukuk*

Although *sukuk* were first issued in the 1980s, nearly all growth has come within the past decade. According to Moody's (2007, 2008), the global outstanding volume of *sukuk* exceeded \$90 billion in 2007 and at that time expected to reach \$200 billion by 2010. Issuance quadrupled from \$7.2 billion in 2004 to nearly \$39 billion by the end of 2007, and was up from \$336 million in 2000. Table 1 shows the distribution of *sukuk* across corporate and sovereign issues over the period 2000-2007.

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<sup>7</sup> Most *Ijara Sukuk* pay a predetermined rate of return to investors. Variable rate *sukuk* linked to an agreed upon pricing benchmark, usually the LIBOR, may be issued under a Master Lease Agreement.

Table 1 indicates that corporate *sukuk* quickly gained a dominant market share in the Islamic banking world, reaching more than 94% in 2005. Corporate *sukuk* broaden the firm's financing base away from traditional sources of fund (such as bank loans and lines of credit that are saved for other strategic investments), and extend their maturity beyond the short-term horizon usually granted by banks. Further, corporate *sukuk* issues increase public recognition of the company and raise its profile in the market.

As noted above, Malaysia dominates the *sukuk* market, accounting for approximately 75% of total issues even with the mega-deals of the past two years that have established Dubai International Financial Exchange (DIFX)'s position as global *sukuk* center, with eight listings exceeding \$10 billion as of June 2007 (DIFC, 2007).<sup>8, 9</sup> Thanks to a special provision for non-profit trusts similar to English law, Malaysian law has played a significant role in developing the market for *sukuk* (Wilson, 2008). Malaysia's legal framework facilitates the establishment of the SPVs required for all *sukuk* to hold title of the underlying securitized assets and administer payments to investors.<sup>10</sup> Given this favorable legal environment, *sukuk* issues proliferated in Malaysia and a secondary market that is much more active than in the GCC region developed there.<sup>11</sup> For the purposes of our study, therefore, we concentrate on *sukuk* from Bursa Malaysia. Figures 1 and 2 document the expansion of *sukuk* in Malaysia over the past decade.

At the international level, London seeks to retain its role in provision of Islamic financial services, signaling its intention with specific language in the UK Finance Bill 2007 (Miller, Challenor, and Atta, 2007). The legislation was designed to give *sukuk* a level playing field with conventional securitization formats by providing tax treatment equivalent to similar financial products.

In late 2009, two issues marked a widening in the recognition and acceptance of *sukuk* outside the Islamic world (Parker, 2010b). The first issue was the much-oversubscribed 5-year Aaa-rated \$100m *sukuk* of the International Finance Corporation (IFC), which was jointly arranged by HSBC, Dubai Islamic Bank and Kuwait Finance House-Bahrain. It was designed to increase funding for development activities in emerging markets, including the MENA region. Although small

<sup>8</sup> The GCC mega-issues of *sukuk* include the 2004 Department of Civil Aviation of UAE issue for \$750 million to fund the expansion of the Dubai International Airport, the 2006 *sukuk* by Dubai Ports, Customs and Free Zone Corporation for \$3.5 billion, the 2006 Abu Dhabi Aabar Petroleum oil exploration and production fully convertible *sukuk* for \$460 million, the 2006 Abu Dhabi Islamic Bank \$800 million floating rate Islamic note which secured ratings from Fitch Ratings and Moody's, and the 2006 Nakheel Group record of \$3.52bn unrated *sukuk* with unique IPO rights.

<sup>9</sup> As of December 2009, Bursa Malaysia took the lead in terms of total *sukuk* value which exceeds \$17.6 billion for 12 issues, followed by DIFX (\$15.7 billion), London (£6.5 billion), Luxembourg (\$7.3 billion), and Bahrain (\$2.18 billion and BD330 million) (Parker, 2010a).

<sup>10</sup> According to Wilson (2008), lead *sukuk* managers include Citigroup, HSBC, Standard Chartered, and Deutsche Bank.

<sup>11</sup> Wilson (2008) posits that Malaysian *sukuk* could provide an alternative tool for Islamic banks to manage liquidity problems, say, going to London Metal Exchange to buy/sell commodities on a *Murabaha* basis.

relative to mega-*sukuk* issues, it demonstrated that leading international institutions such as the World Bank acknowledge the importance of *sukuk* as a financing tool. The second issue was US-based GE Capital's 5-year \$500 million *sukuk* to raise money for general corporate and balance sheet purposes. This "toe-in-the-water" transaction was seen as strategically important for GE as it raised funds from a new and important investor base.

### 2.3 Are *sukuk* that different from conventional bonds?

The recent controversy over whether some *sukuk* actually comply with the precepts of *Shari'a* suggests that *sukuk* are generally structured along Western rules of asset securitization. This raises the question of whether these innovative financial instruments are really all that different from conventional bonds. According to Miller, Challoner, and Atta (2007), *sukuk* are structured to ensure an equivalent return to a conventional bond, with the difference that the return on the *sukuk* is generated from an underlying asset, not from the obligation to pay interest. Similarly, Wilson (2008) argues that financiers make special efforts to render *sukuk* identical to conventional securities so unfamiliar investors can assess the risk of these new investments. Such *sukuk* essentially mirror conventional securities, defeating the notion of product innovation coupled with distinctive and pricing-risk characteristics in the Islamic finance industry.

*Shari'a* scholars oppose the structuring of Islamic financial instruments to please international investors precisely because of this danger of making them conventional interest-based products. They dismiss the need for similarity with conventional bonds to bridge the gap between conventional capital markets and emerging Islamic securities markets to strengthen global financial integration. According to the President of the AAOIFI *Shari'a* Council, Mohammad Taqi Usmani, current practices of issuing *Sukuk* replicate the structure of conventional bonds in terms of lack of ownership, right to a fixed return, and the guarantee of repayment of principal. Usmani (2007) argues against seeking international bond ratings, since *sukuk* can be rated by the recently established regional ratings agency, if needed, and Islamic banks should stand ready to endorse the acceptability of *sukuk*.

Cakir and Raei (2007) take an opposing view, suggesting that *Sukuk* are truly different from conventional bonds. The authors examine the risk-reduction advantages of issuing sovereign *sukuk* as alternative financing instruments compared to conventional sovereign bonds. Using a sample of sovereign *sukuk* and eurobonds from the same issuer, the authors estimate and compare

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value-at-risk (VaR) for a portfolio that includes both instruments to a pure eurobond portfolio. They find that the VaR is reduced when *sukuk* are added to the portfolio of fixed-income securities, demonstrating that these investment certificates create diversification benefits for investors.

For our purposes, we can forego the larger debate and ask whether the market itself perceives a difference between a sample of actively traded *sukuk* and bond instruments in Malaysia.

### 3 Empirical design

In this section, we provide a description of the data and relevant descriptive statistics, followed by an explanation of the methodology and presentation of the results.

#### 3.1 Data and summary statistics

The sample of issues of *sukuk* and conventional bonds comes from Bloomberg, and spans 2002 to 2009. The sample size is determined by information availability on all requested variables, notably closing stock prices for companies issuing debt for a time span long enough before the announcement date of the issue in order to apply the market model and compute abnormal returns. Our final sample comprises 170 issues (77 *sukuk* and 93 conventional bonds).

Table 2 presents descriptive statistics on our sample of securities classified by issue type. On average, the conventional bond issues are considerably larger (314 million ringgit) than the *sukuk* (96 million ringgit).<sup>12</sup> The maturity is, on average, twice longer for conventional bonds than for *sukuk* (six-and-a-half years versus three-and-a-half years, respectively). The shorter maturity of *sukuk* could suggest that these financial instruments pay lower total returns in terms of both current yield and capital gains yield. However, the descriptive statistics show that the average coupon rate on *sukuk* is higher than for conventional bonds (4.06% versus 3.79%), and that Islamic securities in Malaysia are issued at a deeper discount compared to conventional debt instruments (97.94% versus 99.17% of par) thereby offering greater potential for capital appreciation. These preliminary observations are interesting in the sense that higher promised returns on *sukuk* could be associated with higher investment risk, notwithstanding their shorter maturity. It also suggests that *sukuk* issuers are

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<sup>12</sup> Approximately \$92 million and \$28 million at the current exchange rate.

keen on offering greater return incentives to purchase their securities, who are unwilling to commit their funds for long periods.

To shed light on the nature and characteristics of different issuers of conventional bonds and *sukuk*, Table 3 provides descriptive statistics by issuer for each security. We find that companies issuing *sukuk* tend to be smaller than conventional bond issuers, both in terms of balance sheet assets and market valuation. These firms are also more indebted and exposed to greater financial risk. *Sukuk* issuers are less capitalized with an average equity-to-assets ratio below 20%, or half of the average 40% equity-to-assets ratio of conventional bonds issuers. Debt ratios are similarly higher than those of conventional bonds issuers. The long-term debt-to-assets ratio of companies issuing *sukuk* approaches 30%, while firms borrowing in the conventional market average around 20%. In normal economic conditions, greater financial risk likely translates into higher profitability levels. All profitability ratios listed in Table 3 indicate that they are worse for firms issuing *sukuk* compared to companies raising funds through conventional bonds. Indeed, the operating margins and ROA are negative for companies issuing *sukuk*, suggesting greater operating risk on top of their already heightened financial risk. In a nutshell, these observations point to a better financial and operating position for companies issuing conventional bonds than those engaging in *sukuk* issues, and that the shorter maturities and lower average amount of *sukuk* issues reflect lower-quality borrowers.

*Sukuk* issuers issued about double the average number of investment certificates (6.63 issues) than conventional bond issuers (3.10 issues). This finding comports with the fact that *sukuk*, because they tend to be smaller and have shorter maturities, require more issues.

### 3.2 Methodology and findings

Following the literature, we use a standard market model to estimate abnormal returns around the event date for a security issue.<sup>13</sup> Our sample period (2002–2009) contains 93 events for conventional bonds and 77 events for *sukuk*. The date of announcement is treated as day 0. We estimate market model parameters over the period (-100, -10). This filter reduces the sample size to companies that have at least 100 days of stock returns observations. Using larger estimation periods (150 trading days) and stopping the estimation period up to 30 days before the event date has no effect on

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<sup>13</sup> See, for instance, Lummer and McConnell (1989); Preece and Mullineaux (1996); and Gasbarro et al. (2004). MacKinlay (1997) provides an excellent survey on event studies methods.



our results. We define returns as  $[P(t)-P(t-1)]/P(t-1)$ , where  $P$  is the stock market daily price at closing. We use several Malaysian stock indices (FBM 100, FBMKLCI, FBMEMAS, FBMS), and all give similar findings.<sup>14</sup> In the tables below, we show the results pertaining to the stock index giving the largest  $R^2$  for the market model regression (or FBMEMAS).

We examine one-day  $[0,0]$ , three-day  $[-1,+1]$  and five-day  $[-2,+2]$  event windows and calculate average abnormal daily returns (non-standardized and standardized). We obtain cumulative average abnormal returns (CAARs) by summing daily excess returns over the respective event windows, and use standard OLS regressions estimate the market model with an average  $R^2$  (not reported) close to 20% for all estimations.

We incorporate two asymmetric four-day event windows, i.e.  $[-1,2]$  and  $[-2,1]$ . Financial markets in emerging economies are not expected to be as efficient as those in more advanced economies, so we expect there could be a leakage of information when new securities are issued. As such, it is possible that abnormal returns are realized prior to the announcement date.

We perform t-tests to investigate the statistical significance of CAARs and standardized CAARs.<sup>15</sup> To investigate if the stock market discriminates between the type of investment certificate event (*sukuk* or conventional bond issuance), we apply Student, Wilcoxon and Kruskal-Wallis tests to the CAARs and standardized CAARs by debt type.

Table 4 displays CAARs and standardized CAARs by type of security issue (*sukuk* or conventional bonds). The percentage of positive CAARs appears in the fourth column, while the last two columns provide p-values for t-tests of CAARs significance. Across all event windows, we note that all computed CAARs are positive for conventional bonds and negative for *sukuk*, despite lack of significance over the  $[0,0]$  and  $[-1,1]$  windows of returns. The CAARs and standardized CAARs of *sukuk* issues, however, are negative and significantly different from 0 for the largest event window  $[-2,2]$  and for the asymmetric event windows  $[-2,1]$  and  $[-1,2]$ .<sup>16</sup> Further, the percentage of positive *sukuk* CAARs is lower than the corresponding ratio for conventional bonds for all windows with the exception of the smallest, and it decreases as the event window widens, whereas the percentage of positive conventional bonds CAARs rises with larger event windows.

<sup>14</sup> **FBM 100:** FTSE Bursa Malaysia Top 100 Index is a capitalization-weighted index comprised of the top 100 large- and mid-cap companies on the Bursa Malaysia Main Board. **FBMKLCI:** FTSE Bursa Malaysia KLCI Index comprises of the largest 30 companies by full market capitalization on the Bursa Malaysia Main Board. **FBMEMAS:** FTSE Bursa Malaysia EMAS Index is a capitalization-weighted index comprised of large- and mid-cap constituents of the FTSE Bursa Malaysia 100 Index and the FTSE Bursa Malaysia Small Cap Index. **FBMS:** FTSE Bursa Malaysia EMAS Shariah index is a market-capitalization weighted index that incorporates the large- and mid-cap stocks of the FTSE Bursa Malaysia 100 Index and the FTSE Bursa Malaysia Small Cap Index.

<sup>15</sup> We standardize CAARs using the square root of the product of the number of days in the event window and the mean square error.

<sup>16</sup> We also use Patell (1976), Boehmer et al. (1991), and cross-sectional t-statistics and obtain similar findings.

Table 5 displays the results of Student, Wilcoxon and Kruskal-Wallis tests for the difference of CAARs and standardized CAARs by type of issue (*sukuk* versus conventional bonds). For the first two tests, the null hypothesis is that the difference of CAARs (respectively standardized CAARs) between *sukuk* and conventional bond issues' events is null. For the Kruskal-Wallis test, the null hypothesis is that the samples for *sukuk* and conventional bond issue events come from identical populations. CAAR and standardized CAAR variances are unequal according to Fisher tests, so we use the Satterthwaite method for the Student tests. Student approximation gives similar results to normal approximation for Wilcoxon tests. We display the normal approximation (Z-score) for this test.

We note that the Student and Wilcoxon tests allow rejecting the null hypotheses for standardized CAAR over the largest event window [-2,2] and the asymmetric event window [-2,1] at the 10% confidence level, i.e. the difference between the CAARs of *sukuk* and bonds is not zero. In other words, abnormal returns are different for *sukuk* and conventional bond issues or, stated differently, the market does not react in a similar manner to these two types of issues and is capable of discriminating between them. This result reinforces our previous finding of a negative market reaction to *sukuk* issues in Table 4.

We test the robustness of our results by using a different market model. In our sample, companies that issue conventional bonds do not issue *sukuk*, and those that issue *sukuk* do not issue conventional bonds. Since our sample exhibits market segmentation, it may be inappropriate to use the same market model for both types of companies.<sup>17</sup> From this perspective, stock returns for companies issuing different types of securities may be sensitive to different stock market indices. To address this, we perform two separate regressions to compute normal returns for companies issuing each type of security. The first uses the FBMEMAS index as a proxy of market return for companies issuing conventional bonds, and the second employs the FBMS Islamic index as a proxy for market return for companies issuing *sukuk*.<sup>18</sup> The rest of the methodology is exactly the same as described in sub-section 3.2.<sup>19</sup> We display the results using different market models in Tables 6

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<sup>17</sup> The average betas for companies issuing conventional bonds and *sukuk* are equal to 1.21 and 1.11, respectively, when employing the same market model with the FBMEMAS index to proxy for market return. Using a t-test, we cannot reject the null hypothesis of betas equality.

<sup>18</sup> The R<sup>2</sup> for the market model regression using the FBMS index equals 15.46%. It is slightly lower than for the market model with FBMEMAS index (18.47%).

<sup>19</sup> One alternative is to apply Asset Pricing Theory and estimate normal returns using a Fama-French multi-factor model. We ruled out this approach for two reasons. First, recent evidence indicates that event study results are weakly sensitive to the type of specification used to compute returns and that simple models are more appropriate (Ahern, 2009).

(CAARs and standardized CAARs by type of security issue) and 7 (Student, Wilcoxon and Kruskal-Wallis tests for the difference of CAARs and standardized CAARs by issue type). We observe that changing the market model specification does not alter our main findings, again finding that stock market reaction is negative and significant for *sukuk* over the largest event window [-2,2] and the asymmetric event windows. We also note that, for this event window and the asymmetric event window [-2,1], the stock market reaction differs following the type of security issued, confirming that investors have a different perception of conventional bonds and *sukuk* issues.<sup>20</sup>

These additional robustness checks confirm and thus reinforce our earlier results. Overall, the Malaysian stock market is capable of distinguishing *sukuk* from conventional bond issues and stock market reaction is negative for *sukuk* issues.

## 4 Discussion

Our empirical results yield three insights related to sukuk and conventional bond issues: 1) the absence of significant stock-market reaction to conventional bond announcements, 2) the negative reaction to sukuk issues, and, 3) as a corollary, the significant difference in stock market reactions to sukuk and conventional bond issues.

The first finding of an absence of significant reaction of stock markets to conventional bond announcements is not at odds with former literature, which includes studies providing evidence that stock markets do not react to debt announcements including bond issuances (Eckbo, 1986; Mikkelson and Partch, 1986), even if some find support for a negative reaction (Spiess and Affleck-Graves, 1999). The reaction of stock markets to the issue of bonds is influenced by opposing effects. Debt issuance may send a credible signal about the quality of firms, helping solve the adverse selection problem that results from information asymmetries between firm insiders and outsiders, and thus leading to a positive stock market reaction (Ross, 1977). It can also reduce moral hazard behavior and agency costs resulting from conflicts of interest between shareholders and managers (Jensen, 1986). On the other hand, stock markets could react negatively to debt issue events because greater debt may contribute to increasing moral hazard behavior under two scenarios. First, debt enhances the bankruptcy risk of the borrower, (since bankruptcy is associated with

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Second, the implementation of a multi-factor model requires information about company characteristics only available in limited cases. This would have drastically reduced the scope of our investigation.

<sup>20</sup> We obtain similar findings using two asymmetric event windows and two different market model specifications.

the failure to repay due debt commitments); and second, debt increases the agency costs resulting from the conflicts of interest between shareholders and debtholders (Jensen and Meckling, 1976).

Against this background, we interpret the absence of significant reaction to conventional bond announcements in the Malaysian stock exchange as the result of these opposing effects, which, again, is in line with findings of former studies.

However, we find a significant difference in stock market reaction to *sukuk* and conventional bond issues, following the negative reaction to *sukuk* issues compared to the insignificant reaction to conventional bond issues.

We suggest two explanations for this. Following the adverse selection argument, we propose that only borrowers with the lowest return expectations have an incentive to prefer *sukuk*. Here, borrowers can choose between interest-based (conventional bonds) and profit-and-loss sharing (*Sukuk*) securities. If entrepreneurs expect a low profit, they prefer profit-and-loss sharing financing schemes to minimize their loss in the likely event of failure. If entrepreneurs expect a high profit, they prefer interest-based financing to maximize their gain in the likely event of success. As a result, stock market participants will expect the worst borrowers to choose to issue *sukuk* and will interpret such issuance as a negative signal on the financial position of the issuing firm.

Kuran (2004) provides a similar argument to explain why many Islamic banks do not supply more equity-like financing instruments in line with the profit-and-loss sharing principle (*Musharaka* and *Mudaraba*) and in comparison with debt-based financing instruments. Since Islamic banks coexist with conventional banks in most countries, they are likely to face adverse selection problems if they only propose equity-like financing instruments. Borrowers with low expectations might opt for these instruments whereas those with high expectations will deal with conventional banks.<sup>21</sup>

As a second explanation, we propose that our finding could result from the excess demand for *sukuk* from Islamic banks. All banks (conventional and Islamic) have incentives to hold a portfolio of investment assets as they are more liquid than loans and yield a higher return than interbank loans. However, the liquidity needs of Islamic banks are accentuated by the lack of acceptable means to deal with the asset- liability mismatch inherent in banking operations. Islamic banks can-

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<sup>21</sup> “By allowing entrepreneurs to choose between interest and profit and loss sharing, conventional banks create an adverse selection problem for the Islamic banks: entrepreneurs with below-average profit expectations prefer profit and loss sharing in order to minimize their losses in the likely event of failure, while those with above-average expectations prefer interest in order to maximize their gains in the likely event of success. The upshot is that the Islamic banks receive a disproportionately large share of the bad risks.” (Kuran, 2004, p.12)

not borrow in the interbank market or at the central bank's discount window because such transactions involve the payment of interest. As Wilson (2004) argues, the vast majority of *sukuk* is held by Islamic banks because these financial instruments represent the backbone for the development of a much needed secondary Islamic capital market.

As a consequence, the existence of a strong demand for *sukuk* from Islamic banks associated with the limited supply of *sukuk* on the market leads to an excess demand for *sukuk* that makes these instruments easier to sell than conventional bonds. Thus, companies that are weak financially and unable to issue a conventional bond might still have access to financing through *sukuk*. Since the market anticipates this, it does not react positively to the issuance of *sukuk*. Furthermore, companies that are in good standing know that firms in bad shape must issue *sukuk* as they have been shut out of the conventional bond market. As a result, they have an incentive to prefer the issuance of conventional bonds to avoid sending a negative signal about their own quality.

Both interpretations of our findings are supported empirically by differences in the characteristics of the issuers of the two categories of securities. Companies issuing *sukuk* are typically in worse financial shape than those issuing conventional bonds, i.e. more leveraged and less profitable. These weaker companies can well have economic incentives to prefer issuing a security based on a profit-and-loss sharing principle rather than a fixed-income instrument that imposes a greater financial burden, and they may be shut out of the conventional bond market.

To determine whether it is the financial instrument or the financial situation of *sukuk*-issuing firms that ultimately contribute to the negative abnormal returns, we make an additional analysis. Thus, while we claim issuing *sukuk* leads to the negative market reaction, one could make the alternative argument that the weak financial characteristics of *sukuk*-issuing firms is what leads to the negative abnormal return. In that case, the instrument plays no signaling role as the stock market is capable of distinguishing among issuers according to their financial health within the *sukuk* category of financial instruments.

To investigate if the instrument matters for the adverse selection mechanism, we split our sample of *sukuk*-issuing firms in two subsamples according to the quality of the issuer and test the differences in abnormal returns for good and bad issuers.

If the instrument matters, we would expect to observe no significant difference in abnormal returns among issuers as all *sukuk*-issuing firms are similarly affected by the issuance of *sukuk*. Conversely, if the financial situation is what matters, we should observe a significant difference in abnormal returns between good and bad *sukuk* issuers.

For these additional tests, only event windows for which our initial CAAR and standardized CAAR results were significant are used (i.e. [-2,2], [-2,1], [-1,2]). We only report results for the [-2,2] event windows for space reasons, but the results are similar with both other event windows. We consider five different financial ratios (equity to total assets, total debt to total assets, EBIT to total interest expenses, current ratio, operating margin, return on assets) to capture solvency, profitability, and liquidity characteristics of the issuer. We then split the sample according to the median of each ratio to create two subsamples of *sukuk* issuers (financially healthy and unhealthy)

Table 8 displays the results of the tests of significance for the difference of CAARs and standardized CAARs according to the financial situation of the issuer. Overall, we find no significant difference in abnormal returns between *sukuk*-issuing firms in good financial shape and those in bad shape. This finding suggests that the market cannot discriminate issuer quality within the *sukuk* financial instrument category.

As a consequence, these findings strengthen the view that the sign of the abnormal returns observed for *sukuk*-issuing firms are driven by the financial instrument category, and confirm the role of *sukuk* issuance as a negative signal for the market.

Our major conclusion regarding the negative market reaction to *sukuk* issues in comparison with insignificant reaction to conventional bond issues has several implications. First, the fact that stock market investors are able to distinguish between *sukuk* and conventional bonds supports the view of Cakir and Raei (2007) that *sukuk* are indeed distinct from conventional bonds, and tends to undermine the arguments of Wilson (2008) and Miller, Challoner, and Atta (2007). Although *sukuk* are similar in structure to conventional bonds (Usmani, 2007), stock market participants perceive these instruments as special and react differently to their issuance.

A second implication relates to the evolution of *sukuk* and the predictions of strong growth of this market. While there may well be a variety of motivations for firms to issue *sukuk*, including religious factors, our analysis suggests a valid financial explanation. The fact that stock markets negatively perceive *sukuk* should deter healthy firms from the use of these securities as negative stock returns following a *sukuk* issuance could be detrimental to firm value, at least in the short run. This would limit shareholder incentives to issue these investment certificates unless they know that they have no other access to financing.

The third implication concerns the economic effects of the expansion of *sukuk* on Islamic banks. *Shari'a*-compliant financial institutions hold *sukuk* on their balance sheet as liquidity man-

agement tools in the same way that conventional banks invest in fixed income securities. However, the industry suffers from the absence of a secondary market for trading *sukuk*, which prior literature has attributed to insufficient supply. If negative stock returns correlate with lower *sukuk* prices, the absence of *sukuk* trading may stem from a reluctance to post losses on these instruments. It is also possible that the negative market perception registered for *sukuk* issues might erode the image of the holders (i.e. Islamic banks) as well.

## 5 Conclusions

Using event study methodology on a sample of Malaysian public companies, this paper analyzed stock market reactions to announcements of *sukuk* and conventional bond issues. Our findings support the view that stock markets react differently to issuances of both securities. While there is no significant market reaction to conventional bond issues, we observe a significant negative stock market reaction to *sukuk* issues.

We attribute this different reaction of stock markets to the expectations of participants from two perspectives. On the one hand, investors expect that an adverse selection mechanism encourages less-healthy companies to prefer *sukuk* over conventional bond financing. Companies with low profit expectations have incentives to finance their project through *sukuk* as these instruments are based on profit-and-loss sharing schemes to allow them minimize their share in the loss. In contrast, companies with high profit expectations will opt for conventional bonds as it means a fixed repayment schedule and the maximization of their upside potential.

On the other hand, investors may take the view that even if companies issuing *sukuk* may have been shut out of the conventional bond market, they can still take advantage of excess demand for *sukuk* from Islamic banks. Indeed, analysis of our sample found that companies issuing *sukuk* tended to be in weaker financial and operating situations than companies issuing conventional bonds.

Our findings are relevant for two major debates in Islamic finance. First, Islamic finance is subject to criticism because its empirical application exhibits great similarity with conventional finance. Ayub (2007) observes that a major criticism of Islamic finance rests on the lack of differences with incumbent modes of finance. We provide countervailing evidence that stock markets are can readily distinguish between *sukuk* and conventional bonds. Thus, market-based information

supports the existence of differences between instruments emerging from Islamic finance and those associated with conventional finance.

Regarding the economic effects of the expansion of Islamic finance, our results show that *sukuk* announcement likely leads to a negative market reaction that can adversely affecting firm value. In contrast, issuance of conventional bonds has a neutral impact on market capitalization. Therefore, the increasing use of *sukuk* as currently structured and sold may be detrimental to firm values, at least in the short run.

As negative stock market reactions may limit incentives for companies to issue *sukuk*, market mechanisms are likely to curb the expansion of *sukuk*, despite the religious motivations. On the bright side, our results are related to the adverse selection mechanism that emerges from the co-existence of *sukuk* and conventional bonds on the Malaysian market. Such a mechanism cannot exist if only *sukuk* are issued on an exchange, implying that the negative reaction to *sukuk* issues would be reduced in a pure Islamic financial system. In any case, before considering large-scale adoption of Islamic finance, additional research is needed to assess the long-run implications of *sukuk* financing in economic development.



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Table 1

Total *sukuk* issues 2000-2007

This table gives the value of *sukuk* issues in millions of US dollars for each year in the period 2000–2007. The figures are adapted from data provided by the Islamic Finance Information Services (IFIS).

	2000	2001	2002	2003	2004	2005	2006	2007
Corporate <i>sukuk</i>	336.30	530.00	179.90	4,537.06	5,731.19	11,358.89	24,832.50	31,916.70
% of total	100.00	67.95	18.36	79.36	79.48	94.14	90.65	82.69
Sovereign <i>sukuk</i>	0.00	250.00	800.00	1,180.00	1,479.35	706.50	2,560.00	6,679.90
% of total	0.00	32.05	81.64	20.64	20.52	5.86	9.35	17.31
Total <i>sukuk</i> issues	336.30	780.00	979.90	5,717.06	7,210.54	12,065.39	27,392.50	38,596.60

Table 2  
Descriptive statistics by bond type

The table below provides the mean and standard deviation for several characteristics of the issues by bond type. All variables are in millions of Malaysian ringgit, with the exception of coupon and issue price (percent), maturity (years), and number of past issues. Amount issued is the original issue amount for the security. Amount outstanding is the current amount of the issue outstanding. Coupon is the current interest rate of the security. Issue price is the price of the security at issue.

Variable	N	Mean	Standard deviation
Conventional bonds			
Amount issued	93	314.15	1,034.87
Amount outstanding	93	208.37	304.87
Coupon	93	3.79	3.13
Issue price	51	99.17	4.14
Maturity	82	6.51	11.69
<i>Sukuk</i>			
Amount issued	77	96.00	160.73
Amount outstanding	77	84.42	151.88
Coupon	76	4.06	3.37
Issue price	21	97.94	7.56
Maturity	62	3.53	4.14

Table 3  
Descriptive statistics by issuer

The table below provides the mean and standard deviation for issuer characteristics by bond type. All variables are in millions of ringgit, with the exception of financial ratios and number of past issues. Global amount outstanding is the debt distribution among outstanding for the current issuer only (excluding subsidiaries). Number of past issues is the number of securities used in calculation of debt distribution values for the issuer.

<b>Variable</b>	<b>N</b>	<b>Mean</b>	<b>Standard deviation</b>
<i>Conventional bonds</i>			
Total assets	47	4,719.99	10,772.23
Total market value	47	4,558.93	12,121.02
Sales	47	1,122.33	3,015.00
Equity to total assets	47	40.60	20.41
Total debt to total assets	47	32.16	15.39
Long term debt to total assets	47	20.34	11.24
Ebit to total interest expenses	43	3.60	5.63
Current ratio	44	2.13	1.60
Operating margin	47	13.60	17.36
Return on assets	46	1.73	6.45
Global amount outstanding	47	653.36	1,287.50
Number of past issues	47	3.10	3.68
<i>Sukuk</i>			
Total assets	30	3,057.78	5,437.40
Total market value	29	2,944.87	5,507.26
Sales	30	2,028.13	4,169.64
Equity to total assets	30	19.70	119.42
Total debt to total assets	30	52.62	96.67
Long term debt to total assets	30	29.84	35.92
Ebit to total interest expenses	29	3.27	5.87
Current ratio	29	1.90	1.43
Operating margin	30	-4.32	86.39
Return on assets	28	-3.10	33.25
Global amount outstanding	30	610.66	1,487.26
Number of past issues	30	6.63	6.96

Table 4  
Cumulative average abnormal returns

This table displays cumulative average abnormal returns (CAARs) and standardized CAARs by type of event (*sukuk* vs. conventional bond announcement) in the third and fourth columns, and across five event windows. The percentage of positive CAARs is in the fifth column, while the last two columns provide p-values for t-tests of CAARs and Std. CAARs significance. \*, \*\*, \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

Event window	Type of announcement	CAAR	Std. CAAR	Positive CAAR (%)	Prob. >  t  for CAAR	Prob. >  t  for Std. CAAR
[0,0]	Conventional bonds	0.01426	0.34058	0.41860	0.46865	0.46057
	Sukuk	-0.00388	-0.09743	0.43421	0.28957	0.39266
[-1,1]	Conventional bonds	0.01828	0.12773	0.44086	0.26698	0.57526
	Sukuk	-0.00858	-0.19963	0.42857	0.18531	0.15673
[-2,2]	Conventional bonds	0.01904	0.14915	0.47312	0.29123	0.46663
	Sukuk	-0.01552**	-0.28522***	0.36364	0.01303	0.00812
[-1,2]	Conventional bond	0.01740	0.09836	0.46237	0.31130	0.63475
	Sukuk	-0.01319*	-0.25224*	0.38961	0.05976	0.05545
[-2,1]	Conventional bond	0.01991	0.17901	0.44086	0.22326	0.38247
	Sukuk	-0.01090*	-0.23953**	0.40260	0.05445	0.03319

Table 5  
Difference significance tests by event type  
for cumulative average abnormal returns

This table displays the results of Student, Wilcoxon and Kruskal-Wallis tests for the difference of CAARs and standardized CAARs by type of investment security event (*sukuk* vs. conventional bonds) across each of five event windows. For the first two tests, the null hypothesis is that the difference of CAARs (and standardized CAARs) between *sukuk* and conventional bond events is zero. For the Kruskal-Wallis test, the null hypothesis is that the *sukuk* and bond events samples come from identical populations. \*, \*\*, \*\*\* denote significance at the 10%, 5%, and 1% levels, respectively.

Event window		Student test		Wilcoxon test		Kruskal-Wallis test	
		t	Prob. >  t	Z	Prob. >  Z	Chi <sup>2</sup>	Prob. > Chi <sup>2</sup>
[0,0]	CAAR	0.91	0.3650	-0.1091	0.4566	0.0123	0.9118
	Std. CAAR	0.93	0.3570	0.0990	0.4606	0.0101	0.9198
[-1,1]	CAAR	1.53	0.1293	-0.4696	0.3193	0.2220	0.6375
	Std. CAAR	1.23	0.2214	-0.1033	0.4589	0.0110	0.9165
[-2,2]	CAAR	1.82*	0.0708	-1.1489	0.1253	1.3235	0.2500
	Std. CAAR	1.89*	0.0605	-1.3304*	0.0917	1.7742	0.1829
[-1,2]	CAAR	1.66*	0.0966	-0.767	0.2216	0.5906	0.4422
	Std. CAAR	1.44	0.1524	-0.5009	0.3082	0.2524	0.6154
[-2,1]	CAAR	1.79*	0.0754	-1.2804	0.1002	1.6433	0.2022
	Std. CAAR	1.80*	0.0733	-1.4838*	0.0689	2.2064	0.1374

Table 6  
Cumulative average abnormal returns – robustness check  
using different market models

This table displays CAARs and standardized CAARs by type of event (*sukuk* vs. conventional bond announcement) in the third and fourth columns, and across five event windows. We use the FBEMAS index as a proxy of market return for companies issuing conventional bonds, and the FBMS index as a proxy of market return for companies issuing *sukuk*. The percentage of positive CAARs is in the fifth column, while the last two columns provide p-values for t-tests of CAARs and Std. CAARs significance. \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

Event window	Type of announcement	CAAR	Std. CAAR	Positive CAAR (%)	Prob. >  t  for CAAR	Prob. >  t  for Std. CAAR
[0,0]	Conventional bonds	0.01426	0.34058	0.38710	0.46865	0.46057
	Sukuk	-0.00420	-0.11036	0.45455	0.25460	0.33673
[-1,1]	Conventional bonds	0.01828	0.12773	0.44086	0.26698	0.57526
	Sukuk	-0.00828	-0.19885	0.46753	0.20898	0.16729
[-2,2]	Conventional bonds	0.01903	0.14915	0.47312	0.29123	0.46663
	Sukuk	-0.01442**	-0.27218**	0.36364	0.01900	0.01073
[-1,2]	Conventional bond	0.01740	0.09836	0.46237	0.31130	0.63475
	Sukuk	-0.01200*	-0.23871*	0.38961	0.09145	0.07296
[-2,1]	Conventional bond	0.01992	0.17901	0.44086	0.22326	0.38247
	Sukuk	-0.01072*	-0.23781**	0.40260	0.05784	0.03512

Table 7  
Difference significance tests by event type for cumulative average abnormal returns – robustness check using different market models

This table displays the results of Student, Wilcoxon and Kruskal-Wallis tests for the difference of CAARs and standardized CAARs by event (*sukuk* vs. conventional bonds) across each five event windows. For the first two tests, the null hypothesis is that the difference of CAARs (and standardized CAARs) between *sukuk* and conventional bond events is zero. For the Kruskal-Wallis test, the null hypothesis is that the *sukuk* and bond events samples come from identical populations. We use the FBEMAS index as a proxy of market return for companies issuing conventional bonds, and the FBMS index as a proxy of market return for companies issuing *sukuk*. \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

Event window		Student test		Wilcoxon test		Kruskal-Wallis test	
		t	Prob. >  t	Z	Prob. >  Z	Chi <sup>2</sup>	Prob. > Chi <sup>2</sup>
[0,0]	CAAR	1.27	0.2071	0.2007	0.4205	0.0409	0.8397
	Std. CAAR	1.11	0.2689	-0.1817	0.4279	0.0336	0.8546
[-1,1]	CAAR	1.43	0.1550	-0.1534	0.4390	0.0240	0.8769
	Std. CAAR	1.40	0.1641	-0.2536	0.3999	0.0651	0.7986
[-2,2]	CAAR	1.77*	0.0796	-1.0143	0.1552	1.0319	0.3097
	Std. CAAR	1.84*	0.0680	-1.2240	0.1105	1.5020	0.2204
[-1,2]	CAAR	1.59	0.1142	-0.5948	0.2760	0.3556	0.5509
	Std. CAAR	1.38	0.1702	-0.3788	0.3524	0.1447	0.7037
[-2,1]	CAAR	1.78*	0.0771	-1.2553	0.1047	1.5797	0.2088
	Std. CAAR	1.80*	0.0748	-1.5089*	0.0657	2.2814	0.1309



Table 8  
Difference significance tests by quality of sukuk issuer for cumulative average abnormal returns

This table displays the results of Student, Wilcoxon and Kruskal-Wallis tests for the difference of CAARs and standardized CAARs for sukuk-issuing firms according to their quality measured with five financial variables (equity to total assets, total debt to total assets, ebit to total interest expenses, current ratio, operating margin, and return on assets). We use the medians of these five ratios to split the sample into financially healthy and unhealthy issuers. The medians are respectively equal to 38.55%; 35.21%; 2.55%; 1.65%; 11.23%; and 3.60%. We display the results for the event window [-2, 2]. For the first two tests, the null hypothesis is that the difference of CAARs (and standardized CAARs) between *sukuk* and conventional bond events is zero. For the Kruskal-Wallis test, the null hypothesis is that the *sukuk* and bond events samples come from identical populations. We use the FBEMAS index as a proxy of market return for companies issuing conventional bonds, and the FBMS index as a proxy of market return for companies issuing sukuk. \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

Variable	Event window		Student test		Wilcoxon test		Kruskal-Wallis test	
			T	Prob. >  t	Z	Prob. >  Z	Chi <sup>2</sup>	Prob. > Chi <sup>2</sup>
Equity to total assets	[-2,2]	CAAR	-0.0176	0.9860	0.4078	0.6834	0.1749	0.6758
		Std. CAAR	-0.1197	0.9055	0.2405	0.8100	0.0630	0.8019
Total debt to total assets	[-2,2]	CAAR	-0.7389	0.4637	-0.4863	0.6268	0.2466	0.6195
		Std. CAAR	-0.7385	0.4640	-0.5897	0.5554	0.3601	0.5485
Ebit to total interest expenses	[-2,2]	CAAR	-0.6089	0.5465	-0.2477	0.8044	0.0665	0.7964
		Std. CAAR	-0.6070	0.5481	-0.1651	0.8689	0.0308	0.8608
Current ratio	[-2,2]	CAAR	-0.0703	0.9443	0.8255	0.4091	0.6986	0.4033
		Std. CAAR	0.0657	0.9479	0.9081	0.3639	0.8434	0.3584
Operating margin	[-2,2]	CAAR	0.7710	0.4458	-1.6186	0.1055	2.6535	0.1033
		Std. CAAR	0.3246	0.7476	-1.4124	0.1578	2.0242	0.1548
Return on assets	[-2,2]	CAAR	-1.9062*	0.0634	-1.5272	0.1267	2.3639	0.1242
		Std. CAAR	-1.8699*	0.0697	-1.7129*	0.0867	2.9695*	0.0848

Figure 1  
 Number of issues per year from 2002 to 2009 on the Malaysian market

This figure is based on data from the Bloomberg database. The breakdown distinguishes *sukuk* and conventional bonds.

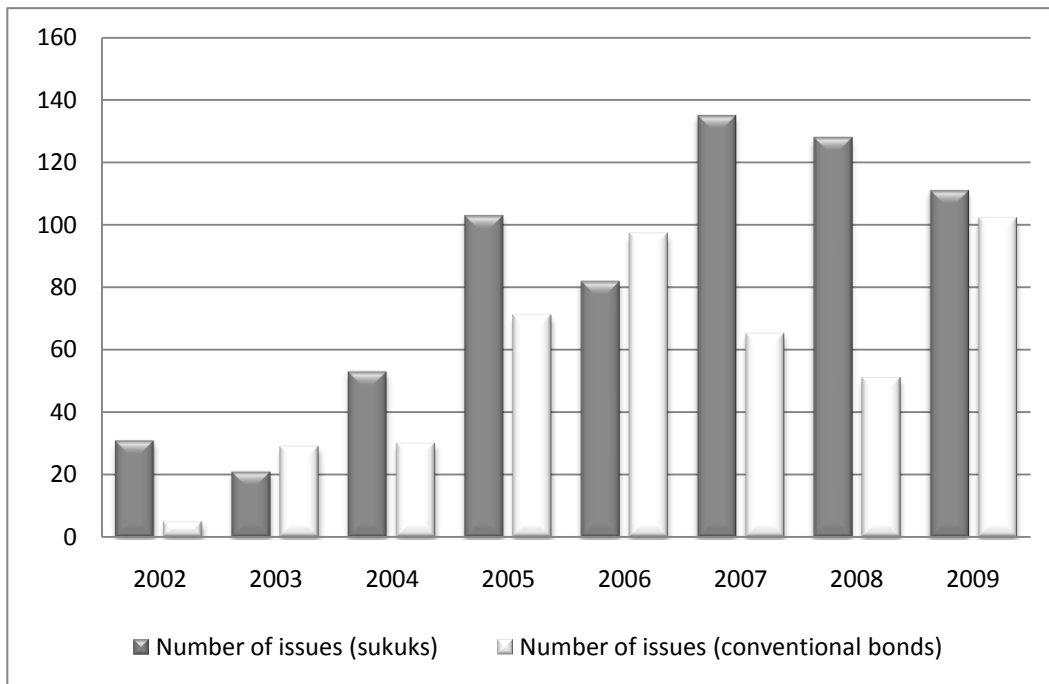
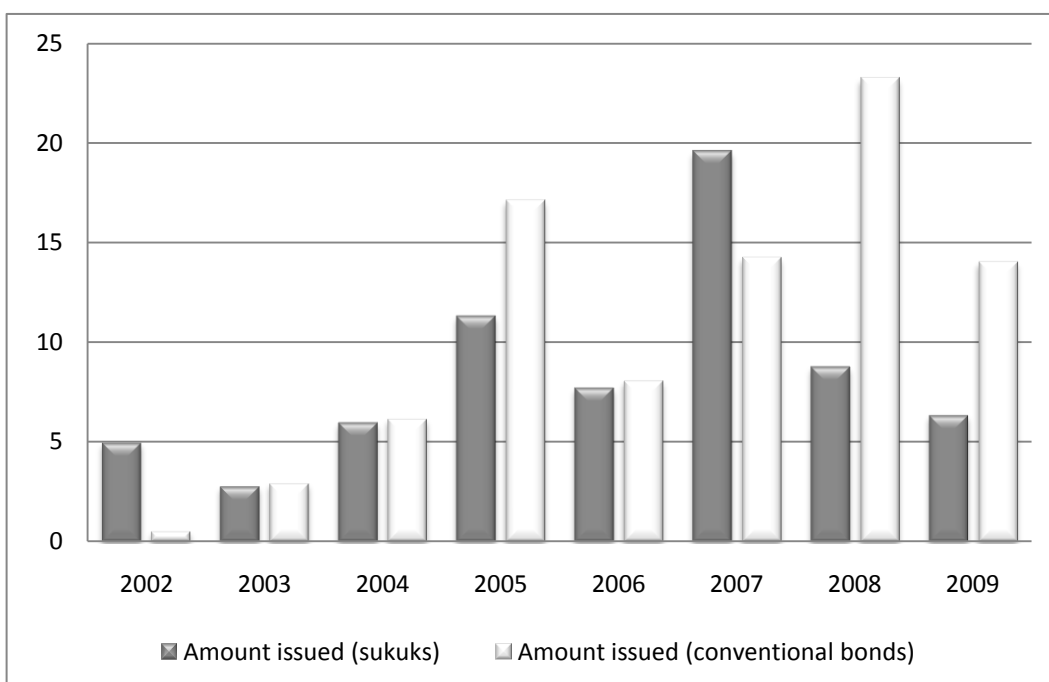
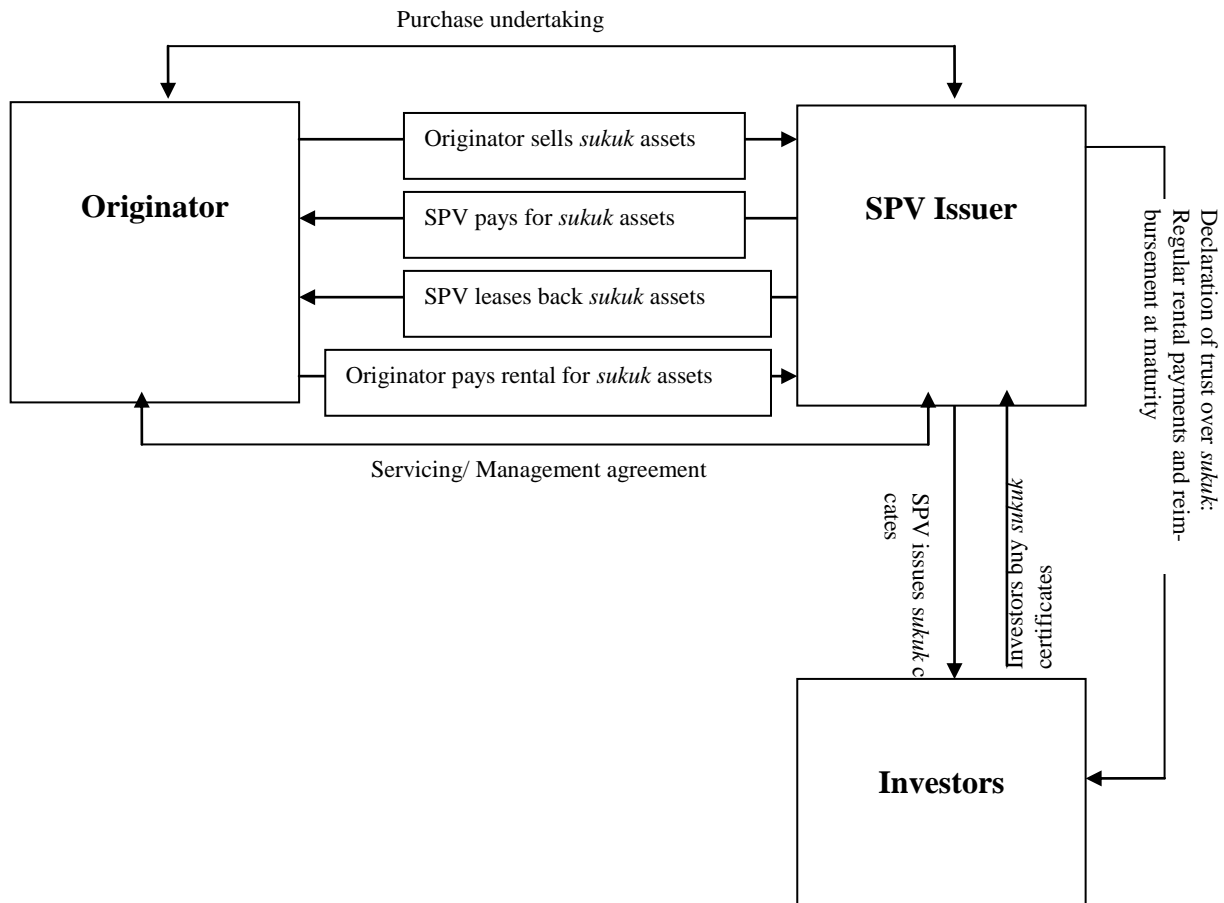


Figure 2  
 Amounts issued per year from 2002 to 2009 on the Malaysian market

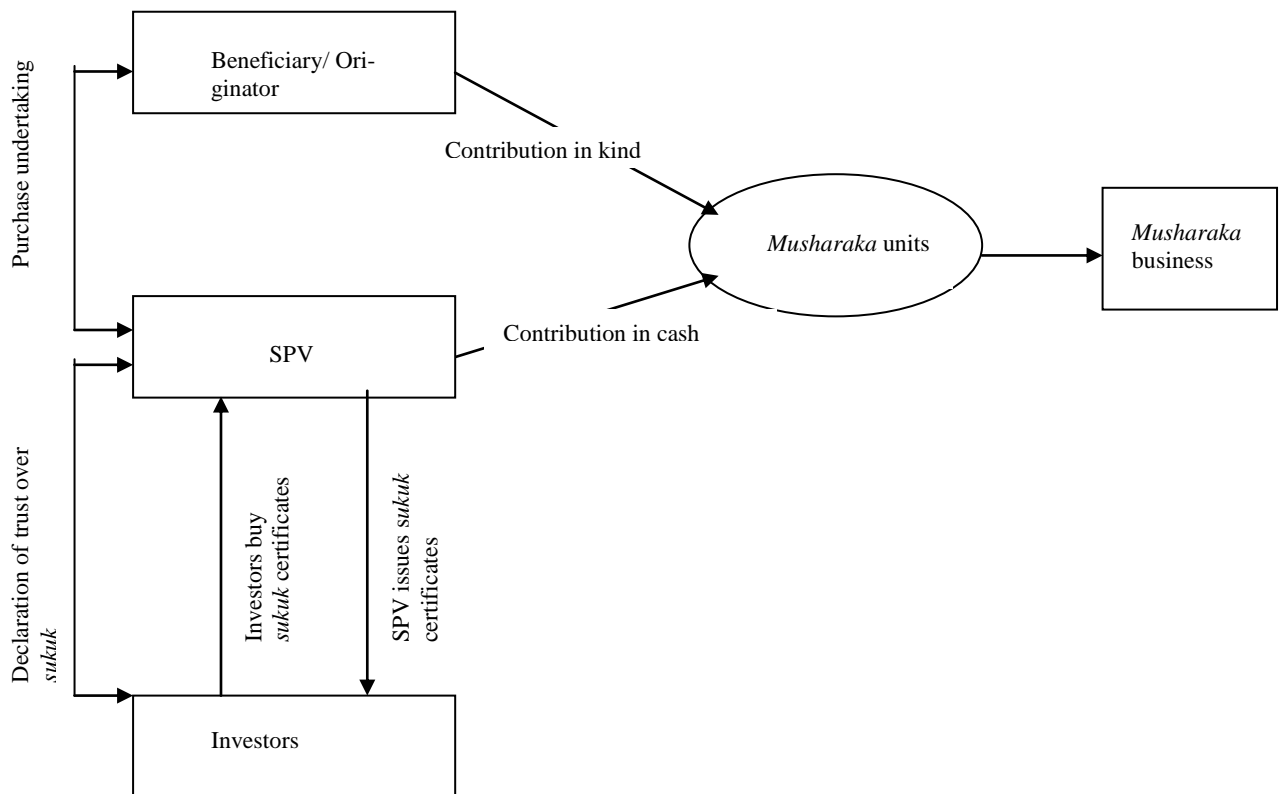
This figure is based on data from the Bloomberg database. The breakdown distinguishes *sukuk* and conventional bonds. Amounts are in millions of ringgit.



Appendix 1 *Sukuk al-ljara* Structure



Appendix 2 *Sukuk al-Musharaka* Structure



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Bank of Finland  
BOFIT – Institute for Economies in Transition  
PO Box 160  
FIN-00101 Helsinki

 + 358 10 831 2268

[bofit@bof.fi](mailto:bofit@bof.fi)

<http://www.bof.fi/bofit>