

Stock Market Reaction to Debt-Based Securities: Empirical Evidence

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Abstract

This paper tests for the stock market reaction to corporate debt-based securities offering. A standard event study framework is applied to calculate and test Average Abnormal Returns (AARs) and Cumulative Average Abnormal Returns (CAARs), both on and surrounding the announcement date. A noteworthy conclusion is the absenteeism of significant positive abnormal returns for events surrounding the issue date. Conversely, negative abnormal returns are reported where the AAR is negative on the announcement issue date and remains negative three days thereafter. As for the GCC case, such market behavior reflects the controversy about debt-based securities (*Sukuk*) and their full compliance with Islamic Law. In line with CAARs, the tests indicate insignificant results, including bounded asymmetric and symmetric event windows for periods before and after the announcement date, concluding insignificant CAARs, hence, no wealth effect. Within the equity marketplace, these results will be of practical relevance to corporations, practitioners and decision-makers.

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Key words: Market reaction, Debt-based securities, *Sukuk*, Event studies

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1 - Introduction

Financing decisions and factors affecting corporations' capital structure, together with their concomitant impact on shareholder wealth, have been heavily debated financial issues for years. In terms of capital structure formulation, corporations can build their own structure by issuing pure equity, debt, and/or convertible securities that have a hybrid nature of equity and debt instruments. However, it seems that the stock market reacts differently to such financing source decisions, causing a positive or negative influence on wealth, as evidenced by the literature. For instance, one part of the literature shows that the stock market does not react significantly to the issue of new debt. In addition, the issuance of new equity leads to a significant negative stock price reaction, while the issuance of convertible bonds leads to a significant stock price reduction that is smaller than the reduction associated with the issuance of pure equity. The pragmatic evidence advocates that pure equity financing has a relatively large negative effect, while issues of debt have a small non-negative effect on the value of the issuing corporation (see Roon and Veld, 1995; Abhyankar and Dunning, 1999).

Nevertheless, the most recent financial crises, mainly the Asian financial crisis in 1997 and the world financial crisis in 2008, highlighted the connotation between capital structure decisions and the massive market reaction to the failure of many corporations worldwide. These crises suggested the need for risk diversification in terms of financing decisions made by corporations as well as by governments. The indicators showed that less credit diversification and reliance on direct borrowing from banks would create liquidity problems, thereby causing a negative impact on most economies. Hence, the low records of liquidity ratios, together with other volatile market conditions, reflected relatively high asset-liability maturity mismatches for most corporations, thus calling for them to switch their financing strategies to bond issuing. This was essential in order to replace borrowing from banks and/or to have another alternative to equity financing, which seemed costly. Given this foremost corporate concern, *Sukuk* (as debt-based securities) were proposed as a means of sourcing funds via the capital markets.³

³ As a concept, *Sukuk*, the plural form of the Arabic word *Sakk*, meaning certificate, reflects ownership or participation rights in underlying assets. Actually, *Sukuk* means certificates, while technically it refers to certificates representing financial obligations arising from trade or

In terms of growth, without a doubt, the last decade has seen a dramatic growth in *Sukuk* securities, which have typified the fastest growing debt instrument in the Islamic capital market. Notably, since 2001, capital markets have experienced substantial expansion towards sustaining most *Sukuk* structures, by offering investors the chance to add portfolio diversification advantages and allocate funds to investment alternatives in the form of new asset classes.⁴ Issuers can take advantage of this increased liquidity by tapping into a growing demand from high net worth investors who are digging for Islamic law (*Shari'a*)-compliant investment ventures and/or products. Furthermore, it is obvious that the growth of *Sukuk* is supported by their many descriptions within the field of debt-based financing. For example, aside from other features, *Sukuk* products are asset-backed securities that grant value to investors and issuers and hence trigger supply and demand activities from Muslim and non-Muslim economies, without exception.⁵ Other reinforcement factors include the growing sophistication of structures, the clarity of regulatory treatment, and the strategic focus necessary to develop comprehensive Islamic financial systems (see ISRA, 2012).

To sum up, the growing trend of the Islamic debt market, and the emergence of new types of debt-based financing instruments, provide the ground to undertake dynamic market tests to provide market insights for

commercial businesses. According to *Shari'a* standard 17 (2), AAOIFI (2008) defines *Sukuk* (*Sukuk-istithmar*) investment as “certificates of equal value representing undivided shares in ownership of tangible assets, usufructs and services, assets of particular projects or special investment activity..” Given its adequacy standard (IFSB 2), the Islamic Financial Services Board (IFSB) defines *Sukuk* as “certificates that represent the holders’ proportionate ownership in undivided part of an underlying asset where the holder assumes all rights and obligations to such asset,” (IFSB, 2005). The Securities Commission Malaysia (SC) defines *Sukuk* as a “document or certificate which represents the value of an asset.”

⁴ As far as *Sukuk* structure is concerned, they can be structured into various types based on many Islamic financing models. The AAOIFI has issued guideline standards for 14 different types of *Sukuk* that can be tradable or non-tradable development and industrial financing. As broad categories, there are three major clusters, namely (1) sale-based *Sukuk*, including *murabahah* (cost-plus sale), *bay’ bithaman ajil* (deferred payment sale), *bay’ al-inah, istisna’*, and *salam*; (2) lease-based *Sukuk*, including *ijarah* (leasing) and a mixture of *ijarah* and *istisna’*; and (3) equity-based *Sukuk*, including *musharakah* (profit and loss-sharing), *mudharabah* (cost-plus-profit-sharing) and *wakalah bi istithmar* (ISRA, 2012). From a financial perspective, there are three common types of *Sukuk*, namely fixed income *Sukuk*, asset-backed *Sukuk* (ABS), and hybrid *Sukuk*.

⁵ See the following section for a comparison between *Sukuk* and conventional bonds.

corporations and governments. This paper tests for the stock exchange market reaction to corporate *Sukuk* offerings, using data for the GCC region. More precisely, we test whether the announcement of corporate *Sukuk* issues will cause a significant abnormal return for issuing corporations. Abnormal as well as cumulative average abnormal returns are calculated and tested using the standard event study framework, which allows for assessing the impact of a corporate event on stock returns.⁶ As per the GCC context, we include firms issuing corporate *Sukuk* for the period spanning 2004-2012, where 15 listed corporations are included. In addition, we argue that as the bulk of *Sukuk* is made up of corporate debt, testing for the stock exchange market reaction to such debt is extremely valuable.

In order to motivate this study, it is driven by the following attributes. First, we examine market reaction to the issuance of debt (*leverage*) securities in varied institutional and regulatory settings within the GCC region. Second, we seek to understand how the issuing of debt-based securities influences the value of a corporation. In terms of capital structure, this would be reasonably relevant for managers who are in charge of taking financing decisions. Third, we ascertain the nature of the information and understand the informational content of bond (*Sukuk*) issuance, which will provide the chance to explore whether the issuance of *Sukuk* would deliver new information about future cash flows to security holders, namely stockholders and bondholders, in the marketplace. Keeping this in mind, this paper contributes to the literature through the following: First, based on a dataset of *Sukuk* securities issued between 1980 and 2012 by GCC corporations, we examine the market reaction to *Sukuk* issues. Previous studies have concentrated on conventional bonds, but less or even no attention has been directed towards *Sukuk* as an alternative to conventional bonds. Second, we examine the market reaction to corporate *Sukuk* offerings issued by a variety of corporations in domestic GCC markets. This is quite relevant to managers and regulators in the field of fund sourcing. Third, the paper explores different hypothetical model forecasts, by relating issue-period abnormal returns and the cross-sectional corporate characteristics of *Sukuk* issuers.

⁶ The event study methodology is used earlier by Godlewski et al. (2010) and Modirzadehbami and Mansourfar (2011). The former analyzed the stock market reaction to *Sukuk* and conventional bonds issuance within the Malaysian context, while the latter tested for the impact of debt announcements on private firms' stock returns.

The focus on the GCC region is justified by the following. First, given the tightened liquidity conditions beginning in 2008, regulatory policy initiatives reflected an increasing reliance on external debt financing. Second are unstable and volatile liquidity conditions in the region, stimulated mainly by fluctuations in oil prices, therefore reflecting volatility in credit growth rates for banks and causing a slowdown in the economy, along with worsening bank asset quality (see Al-Hassan et al., 2010). Third, statistically, the GCC has 10% of the global *Sukuk* market, with total issuances worth US\$6.6 billion—Saudi Arabia leads the GCC region with US\$5.3 billion, followed by UAE (US\$650 million) and Bahrain (US\$595.98 million). Furthermore, while domestic GCC issuances have been limited, the region has moved toward the international market, reflecting more confidence in the structure of the global *Sukuk* market. For example, the GCC international *Sukuk* increased from 0 in H1 2011 to US\$750 million in H2 2011 and US\$650 million in H1 2012. Also, in terms of currency, for H1 2012, while the Malaysian ringgit enjoyed the largest share of issuance with 70% of the market, GCC international dollar *Sukuk* issuance came second with a total of USA\$7.7 billion, reflecting that in the GCC most issues are in US dollars, against which these currencies are pegged.

The findings conclude the absenteeism of significant positive abnormal returns for events surrounding the *Sukuk* issue date window [-3,3] (for {-3, 3} days after the issue date, here and throughout); however, negative abnormal returns are reported where the AAR is negative on the announcement issue date and remains negative over [0,3]. The findings show significant negative abnormal returns on day [1] before the announcement date [-1] and insignificant negative AARs over [0,3], reflecting negative market reaction on the issue date and three days thereafter. As per the CAARs, the *p-values* for both the *z*-test and *t*-test indicate insignificant results, including asymmetric and symmetric event windows for periods before and after the announcement date. Negative CAARs surrounding the issue dates [-1,1], [-2,2], and [-3,3], and the CAARs for event windows [-1,0] and [0,1], indicate that such a type of debt does not lead to significant cumulative abnormal returns, therefore concluding that no wealth effect is found during the event window surrounding the announcement date for *Sukuk* issuance.

The rest of the paper is organized as follows. Section 2 outlines differences between *Sukuk* and conventional bonds, while section 3 reviews the related literature. Section 4 outlines the standard event study methodology

used. Findings and discussions are given in section 5, while summary and concluding remarks are provided in section 6.

2 - Comparison between *Sukuk* and conventional bonds

One question from an empirical-theological framework pertains to the difference between *Sukuk* and conventional bond issuance. In financial terminology, both are equivalent; however, *Sukuk* are generally structured as debt instruments approved by most *Shari'a* scholars based on compliance with *Shari'a* principles (the Islamic legal code). Nevertheless, while *Sukuk* allow governments (via issuing sovereign *Sukuk*) and corporations (via issuing corporate *Sukuk*) to raise funds in capital markets, there is a current debate as to whether these debt instruments differ significantly from conventional bonds. In possible response to this notion, Miller et al. (2007) and Wilson (2008) focused on *Sukuk* returns and contended that they are designed to replicate features of standard bonds. Other common features include late payment penalties upon default, purchase undertaking in equity-based structures, and ownership status in asset-based transactions (Cakir and Raei, 2007; Lahsasna and Lin, 2012). Additional similarities may include the following: (1) similar to conventional bonds, *Sukuk* provide a risk reduction benefit in terms of investment diversification, particularly when investing in fixed income portfolios; (2) *Sukuk* are considered to serve as security instruments that generate predictable fixed or floating levels of return; (3) *Sukuk* are traded in the secondary market, albeit less than conventional bonds; and (4) *Sukuk* are rated by international rating agencies (see Cakir and Raei, 2007; Lahsasna and Lin, 2012).

Conversely, unlike *Sukuk*, conventional bonds represent issues of pure debt, while *Sukuk* typify an ownership stake in the underlying asset or security. For example, many *Sukuk* contracts generate a lessee/lessor agreement rather than a lender/borrower relationship (Mirakhor, 2007). In addition, *Sukuk* securities must be backed by a real asset or project, whereas conventional bonds are based solely on cash flows, indicating that conventional bonds seem to be riskier than *Sukuk* to many investors in the marketplace. In terms of structure—and thus valuation—*Sukuk* do not engender the exchange of paper or money; however, the structure is similar to asset securitization (see Ayob, 2008). As such, the asset becomes the focal point of tests and analysis, unlike conventional bonds where the issue remains the focus. Unlike *Sukuk*, conventional bonds usually represent non-asset-

backed interest-based funding for general corporate purposes. Accordingly, as trading in all-purpose “indebtedness” is prohibited by *Shari’a* principles, the issuing and trading of conventional bonds hence do not seem compliant with *Shari’a* principles either (Howladar, 2009).

In general, as a distinctive feature of *Sukuk*, asset-backed *Sukuk* perform differently to conventional asset-based securities, where *Sukuk* should grant the investor a share of an asset or business/project venture along with the cash flows and risk commensurate with this ownership (Howladar, 2009).⁷ In other words, as trading in debt securities is not permitted under *Shari’a* principles, *Sukuk* must be asset-backed, whereby what is being bought and sold in the case of trading *Sukuk* is a right to the underlying asset or security. Investors in *Sukuk* cannot receive interest but rather permissible returns such as rents in the case of *ijara* (lease) *Sukuk* or profit shares in the case of *Sukuk mudarabah* (profit sharing) and/or *Sukuk musharakah* (profit-loss sharing).

Furthermore, Dusuki and Mokhtar (2010) identified that *Sukuk* are frequently referred to as “Islamic bonds,” instigating the misunderstanding that they are just like bonds; however, the two debt instruments are diametrically opposed in nature. The authors reported that *Sukuk* should be in the form of an investment certificate representing ownership of an asset or venture, while conventional bonds are generally issued to evidence debt. They added that, unlike *Sukuk*, conventional bonds do not typify ownership but instead document the interest-bearing debt owed to the bondholder by the bond issuer who owned the commercial or industrial enterprise. *Sukuk* are unlike conventional bonds, which are structured as debt instruments with fixed interest and cannot be structured to evidence a loan. Coupon interest payments in the case of conventional bonds are determined as a fixed percentage of the bond par value, not as a percentage of actual profits. Unlike *Sukuk*, conventional bonds guarantee the bond principal (bond par value) when redeemed at maturity. Under *Sukuk*, holding investors receive a pass-through of income, which represents their proportionate beneficial ownership in the underlying asset. The return may be fixed or floating, but it cannot be by any means in the form of interest for lending pure money (the usage of money as a commodity) based on *Shari’a* prohibition of interest.

⁷ However, from a risk-return perspective, it seems that most current *Sukuk* structures (unsecured asset-based structures) have much in common with conventional fixed income or debt instruments, and unsecured fixed income securities in particular, Howladar (2009).

To conclude, *Sukuk* presents an alternative debt instrument to conventional bonds and uses assets and many contracts in order to comply with *Shari'a* and provide an alternative financing instrument. Furthermore, *Sukuk* holders are entitled to share revenues generated by the *Sukuk* assets and may be entitled to a share of the proceeds from realizing the *Sukuk* assets. The sharing proportion of the proceeds is not fixed upfront; rather, it is based on the actual profit realized from the project or the venture (Usmani, 2007; Mokhtar and Abdulkader, 2009; Dusuki and Mokhtar, 2010). It seems that *Sukuk* are an alternative to asset monetization, syndicate project financing, financing through asset-backed securitization, and public financing, and therefore, given the many forms of *Sukuk* used in practice, they are instruments used in Islamic finance to tap capital markets.

3 - Literature review

Empirical evidence on stock market reactions to *Sukuk* issuance are limited and provide ambiguous results. Cakir and Raei (2007) examine the risk-reduction advantages of issuing sovereign *Sukuk* by considering them and two Eurobond sovereign issues via the same source and by computing VaR for Eurobond issue-only portfolios and Eurobond issues along with the *Sukuk* issues, finding reduced VaR for the second case.

By using data for firms listed in Bursa Malaysia, Ashhari et al. (2009) investigate the impact of *Sukuk* and conventional bond announcements on shareholder wealth for the period 2001 to 2006. They use 61 days (30 days before the announcement day and 30 days thereafter) to undertake an event window analysis in their emerging market. Their results indicate that, on average, investors in the Malaysian market do indeed react to *Sukuk* announcements, thus signaling a wealth effect through the announcement of *Sukuk* issues; however, investors do not react to conventional bond announcements. The bond offering size appears to have a mildly negative influence on the cumulative average abnormal return.

Ibrahim and Minai (2009) examine the wealth effects of *Sukuk* offerings and their determinants. For the period 2000-2006 in Malaysia, they find that the market reaction is significantly positive during event windows $[-3,0]$ and $[-3,3]$ surrounding the announcements of *Sukuk* issuance. In terms of determinants, they conclude that the wealth effect of *Sukuk* issuance announcements is positively affected by the issuers' investment opportunity

and negatively associated with the issue size, firm size, and whether the announcement is accompanied by Security Commission approval.

Ameer and Othman (2010) find significant negative abnormal returns around the announcement days (the responses are asymmetrical) to different types of bond issuance announcements in Malaysia for the period 2001-2007. Practically, the negative reaction observed is not consistent with the optimal capital structure hypothesis, which states that the issuing firm trades off interest tax shield and bankruptcy costs to maximize firms' value via stock appreciation. The theory predicts a non-negative change in the firms' value regardless of leverage change sign (Abhyankar and Dunning, 1999).

Godlewski et al. (2010) test 170 issuances (77 of which are *Sukuk* and 93 conventional bonds) for differences between *Sukuk* and standard bond announcements among Malaysian listed firms that issued both within the 2002 to 2009 window and with an OLS market model. They use 90 days, from 100 days to 10 days, prior to the issuance, to estimate the market model, and they report that extending the period to 150 days before the announcement or stopping it up to 30 days prior to the announcement does not affect the significance or direction of the effect. Additionally, they report to have varied the procedure across four stock indices, resulting in concordant effects. They consider event windows comprising (1) the day of announcement, (2) the day of the announcement, one day prior and one day after, and (3) the day of the announcement, two days prior and two days after. They find that while there is no reaction to the announcement of regular bonds or *Sukuk* issuances over the one- or three-day event windows, there is a negative reaction to the announcement of *Sukuk* bonds over the five-day event window, which they suggest may be due to an adverse selection mechanism whereby *Sukuk* are issued by financially less competent firms.

Additionally, not including a number of days after the announcement may also bias interpretation of the effects. Finally, not reporting sets of event windows other than the three they select may give interpreter-limited information from which to form an appraisal of the effect. They point out the reasons why they do not consider GCC-listed *Sukuk* are that (1) the majority of issues are sovereign and (2) there is no active secondary market for them. We do not see a majoritarian issuance of sovereign bonds among the *Sukuk* class as a reason not to study corporate bonds, however, and neither do we consider the lack of an active secondary market as a reason not to do the same. We agree that the thinness of markets may interestingly affect our

concerns, but this presumably can be tested with data and a considerate modeling approach.

Modirzadehbami and Mansourfar (2011) examine the impact of *Sukuk* announcements on private firms' stock returns, in order to determine the information content of Islamic private debt offerings. Their sample consists of 45 listed firms on Bursa Malaysia involved in issuing Islamic debt for the period 2005 to 2008. After calculating abnormal and cumulative average abnormal returns, their results show that significant (negative) abnormal returns occur one day before announcement day, representing market investors' adverse behavior towards an Islamic private debt announcement. As for the cumulative average abnormal returns (CAARs), their results reveal insignificant negative CAARs, rejecting their hypothesis regarding positive market reactions to an Islamic bond announcement.

Ahmad and Rahim (2013) investigate whether markets react asymmetrically to the issuance of selected *Sukuk* structures, namely *ijarah* (leasing) and *musharakah* (profit-loss sharing), in Malaysia for the period 2008-2011. They use cumulative average abnormal returns on symmetric and asymmetric events based on the reaction of the FTSE Kuala Lumpur Composition Index to the announcement of *Sukuk* issuance. They conclude with significant, positive symmetric and asymmetric market reactions to selected *Sukuk* structure issuances.

4 - Methodology specification

4.1 Aggregate cumulative abnormal returns

We follow sources such as Gasbarro et al. (2004), Lummer and McConnell (1989), and Preece and Mullineaux (2007), and in particular we adopt a great deal of the notation and exposition of MacKinlay (1997).

First, we compute the stock's pre-event return, or normal return. Then, we compute the abnormal return: The actual ex-post return over the event window minus the normal return over the event window, with the normal return being the expected return without conditioning on the event taking place. Notationally, the abnormal return can be expressed as:

$$AR_{it_0} = R_{it_0} - E(R_{it_0} | X_{t_0}), \quad (1)$$

with i indexing the firm, t_0 the event date (in place of the time index t), R_{it_0} the actual return, X_{t_0} conditioning information for the normal return model, and $E(R_{it_0} | X_{t_0})$ normal returns. In practice the “event date” is expanded to an “event window” over which period the event effect is considered (that is presuming X_{t_0} is given prior to the event date but not updated over the event window), and X_{t_0} is estimated using a period (immediately or shortly) prior to the event date.

The normal return is typically modeled with the constant mean return model, with X_{t_0} a constant, or the market model, where X_{t_0} is the market return. Here, the market return model assumes a linear relationship between the market return and the firm’s stock return.

It is possible to use a method that is consistent, given the autocorrelation and heteroskedasticity of abnormal returns, for example by using a GMM estimation, though authors such as Brown and Warner (1980,1985) find the constant mean return model can be comparable to such methods.

One can measure real returns or excess returns (the return minus the nominal risk-free return of a T-bill with one month left to maturity) as well as nominal returns. We consider nominal returns in this paper, arguing that our time horizon is sufficiently short to do so without significant bias.

By removing the portion of the return related to variation in market return, abnormal return variance is reduced, and so the market model may improve upon the constant mean return model. Its benefit depends on the R^2 of the market model regression, with a higher R^2 suggesting greater variance reduction. One can additionally include other factors such as industry indexes in the model, as discussed in Sharpe (1970) and Sharpe et al. (1999).⁸ Additionally, one can select firms of similar size relative to the market value of their equity as a sampling method to reduce possible noise.

We consider the market model. In particular, we estimate:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}, \quad (2)$$

⁸ For more information on portfolio selection, capital markets and financial assets, see Markowitz (1959) and Ghosh (2010).

for R_{mt} period- t return on the relevant market index, and ε_{it} the error term, with $E(\varepsilon_{it} = 0)$ and $\text{var}(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2$, using OLS, with a window of 100 days before the event, that is for $t = -100$ to $t = -1$, with $t_0 = 0$.

With our estimates for α_i and β_i , $\hat{\alpha}_i$ and $\hat{\beta}_i$, respectively, we then compute our estimate for the abnormal returns:

$$\hat{AR}_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt}, \quad (3)$$

for the 30 days after and including the event (the event window), i.e. for $t = t_0 = 0$ to $t = 29$. This gives us $N_1 = 100$ returns which can be used to estimate X_{t_0} and $N_2 = 30$ abnormal returns to consider changes in information as a result of the event.

Given a null hypothesis of no effect, abnormal returns will be jointly normally distributed with zero mean and:

$$\sigma^2(\hat{AR}_{it}) = \sigma_{\varepsilon_i}^2 + \frac{1}{N_1} \left[1 + \frac{(R_{mt} - \hat{\mu}_m)^2}{\hat{\sigma}_m^2} \right], \quad (4)$$

for $\hat{\mu}_m = \frac{1}{N_1} \sum_{t=-100}^{-1} R_{mt}$. The second additive term, in addition to $\sigma_{\varepsilon_i}^2$, is due

to a sampling error in α_i and β_i across event window observations, which leads to the serial correlation of abnormal returns. We remind the reader of our disparate sample sizes noted above and that this issue exacerbates the

problem. However, as $N_1 \rightarrow \infty$, $\frac{1}{N_1} \left[1 + \frac{(R_{mt} - \hat{\mu}_m)^2}{\hat{\sigma}_m^2} \right] \rightarrow 0$, as will the serial correlation of abnormal returns. We consider our estimation window to be of sufficient length to neglect this term, which implies:

$$\hat{AR}_{it} : N(0, \sigma^2(\hat{AR}_{it})). \quad (5)$$

We then aggregate our returns by security through time. To achieve this we compute the cumulative abnormal returns:

$$\widehat{CAR}_i(t_1) = \sum_{t=t_0=0}^{t_1} \widehat{AR}_{it}, \quad (6)$$

for each $t_1 \in \{0,1,\dots,29\}$, which gives us cumulative abnormal returns up to and including t_1 .

As $N_1 \rightarrow \infty$,

$$\text{var}(\widehat{CAR}_i(t_1)) = \sigma_i^2(t_1) \rightarrow (t_1 - t_0 + 1)\sigma_{\varepsilon_i}^2. \quad (7)$$

This asymptote is often used as an estimate of true variance, and we use it in this case as well. The null hypothesis of no effect across the firm's cumulative abnormal returns by time period become:s

$$\widehat{CAR}_i(t_1) : N(0, \sigma_i^2(t_1)). \quad (8)$$

We then aggregate our estimates for the individual firms' cumulative abnormal returns series across firms, to derive a sample-wide time series of sample cumulative abnormal returns. For each time period we have:

$$\overline{CAR}(t_1) = \frac{1}{N_i} \sum_{i=1}^{N_i} \widehat{CAR}_i(t_1), \quad (9)$$

for $N_i = 15$ the number of firms.

In order for this to be a consistent estimator, we need to have no clustering, in that none of the event windows overlaps with another, and there is no correlation across exchanges or firms. In our case, the Kuwait firm (which has only 55 days over which to compute the normal return) overlaps in its entirety with a Bahraini firm (the one with only 26 days after and including the announcement with which to consider changes in X_{t_0}), with its event date being November 1st 2007, and that of the Bahraini firm being November 15th 2007. However, our assumption that the different exchanges provide independent samples also applies to independence relative to time periods. If this hypothesis does not hold, it will introduce a clustering bias that would additionally translate into a joint serial correlation bias relative to the varying time period of estimate bias, though this would go to zero, as $N_1 \rightarrow \infty$. We

finally remind the reader of our discussion regarding clustering relative to country and firm class in this regard.

Given the above discussion:

$$\text{var}(\overline{CAR}(t_1)) = \frac{1}{N_i^2} \sum_{i=1}^{N_i} \sigma_i^2(t_1), \quad (10)$$

with correspondent null hypothesis of no effect of announcement

$$\overline{CAR}(t_1) : N(0, \text{var}(\overline{CAR}(t_1))). \quad (11)$$

Using the consistent sample variance estimate of $\sigma_{\varepsilon_i}^2$ from the market model:

$$\hat{\sigma}_{\varepsilon_i}^2 = \frac{1}{N_i - 2} \sum_{t=-100}^{-1} (R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt})^2, \quad (12)$$

In place of the known variance, we can consider our final null hypothesis by using the asymptote as $\{N_1, N_i\} \rightarrow \infty$.

4.2 Aggregate abnormal returns

We are additionally interested in aggregate abnormal returns across securities by time period:

$$\overline{AR}_t = \frac{1}{N_i} \sum_{i=1}^{N_i} \hat{AR}_{it}, \quad (13)$$

with:

$$\lim_{N_1 \rightarrow \infty} \text{var}(\overline{AR}_t) = \frac{1}{N_1^2} \sum_{i=1}^{N_i} \sigma_{\varepsilon_i}^2. \quad (14)$$

5 - Data collection

Data were extracted from the Islamic Finance Information Service (IFIS) database, and we included all firm-issued corporate *Sukuk* for the period 2004-2012. The net sample size is controlled by information availability for variables, namely closing stock prices for corporations issuing debt-based *Sukuk* and synchronized market index closing prices, for a variety of GCC stock exchanges. The filtering process accounts for, out of a gross 39 listed corporate issues, a net figure of 15 corporate *Sukuk* issues included in the test. This cohort is large enough to apply the market model and to test for the null hypothesis of no abnormal daily returns under the event study framework, where non-standardized and standardized average abnormal daily returns (AARs) and cumulative average abnormal daily returns (CAARs) are calculated.

In this paper, we consider corporate *Sukuk* issuance announcements and their effect on stock returns for four GCC exchanges: Saudi Arabia, Kuwait, the United Arab Emirates, and Bahrain. In our sample of 15 firms we include 10 from Saudi Arabia (three of which are subsidiaries of the same company, SABIC), three from Bahrain, one from the United Arab Emirates (UAE), and one from Kuwait. Here, we assume all exchanges—‘GCC exchanges’—are equivalent across countries, while subsidiaries of SABIC function autonomously, so there is no clustering across countries or firms.

Additionally, three of our firms do not have complete pre-announcement data, and two different firms do not have complete post-announcement data. In particular, whereas the other firms have stock price data for each of the 100 days prior to the date of the announcement, one of the SABIC subsidiaries only has 92, one of the firms from Bahrain has 35, and another firm from Saudi Arabia is missing six days. The two firms with less than the standard 30 days of returns (including announcement date) are the other Bahraini firms, with 26 and six days after the returns each. This may pose significant violations of the hypotheses mentioned earlier, in addition to autocorrelation across firms and countries, though all of the concerns can be annulled if we consider our sample to represent sufficiently the asymptotic results of the standard linear theory.

6 - Findings and discussion: Event study analysis

6.1 Aggregate abnormal returns

Table 1 presents the findings of the event study as per average abnormal returns (AARs). Given space limitations, we restricted our analysis to the event period comprising a total of 31 days, estimated from [-15] to day [15] after the *Sukuk* issue announcement.⁹

The results show that, out of 31 days, the AARs were negative for about 10 out of the 15 days before the *Sukuk* announcement, while they were negative for about four out of the 15 days after announcing the issue date. In addition, the results show that the AARs were positive for about five out of the 15 days before the *Sukuk* announcement, while they were positive for about 11 out of the 15 days after announcing the issue date. The AARs were negative on the *Sukuk* issue date and remained negative three days after [0,3], followed by positive days thereafter, except for day 12.

The market reaction is revealed to be significantly positive for day [-12] and day [14], with average announcement period abnormal returns of 1.1% and 1.6%, respectively. No significant positive abnormal returns are concluded for other periods; however, positive average abnormal returns are reported for day [-3] and day [-2]. In addition, positive average abnormal returns are revealed from [4] to [15] (except [12]), thereby indicating that the stock market reacts positively to late *Sukuk* issuance announced by firms, particularly to those whose shares are traded more frequently.

On the contrary, the *Sukuk* announcement does not result in a positive impact on stock returns during the event period surrounding the issue date [-1,1]. The negative abnormal return on [-1] is significant at the 10% level, reflecting negative market reaction the day before the issue date, while the announcement day ([0]) and one day thereafter ([1]) are insignificant. Market reaction is revealed to be significantly negative for the [-6] and [-1] periods, with average announcement period abnormal returns of 0.90% and 0.70%, respectively. As per our case, regardless of market reaction behavior (positive or negative), a possible justification for the early market response is attributed to market inefficiency, where offering information is leaked before the announcement.

⁹ According to Panayides and Gong (2002), an 11-day event window can fully capture the effects of an event of interest.

Furthermore, a noteworthy conclusion at this stage is the absenteeism of any significant market reaction to *Sukuk* issuance within the GCC region, particularly for events surrounding the *Sukuk* issue date [-2,2], therefore suggesting that issuing additional debt may be interpreted as a negative signal in many conditions. In other words, it seems that debt announcements may send negative credibility signals regarding the quality of the issuing firm, thus causing adverse selection problems (asymmetric information) between market participants and leading to higher agency costs—and hence adverse stock market reactions.

Overall, our conclusions align with earlier studies which provide evidence that stock markets do not react, or even react negatively, to debt announcements.¹⁰ For example, Akhigbe et al. (1997) show that stock prices react negatively to new debt issuance announcements, when issuing debt is encouraged by an unexpected cash shortfall. Also, as suggested by Godlewski et al. (2010), negative market reactions to debt announcements may be attributed to the belief that more debt would cause greater moral hazard that may exist under two scenarios: (1) more debt would cause higher levels of credit as well as bankruptcy risks and (2) more debt upsurges agency costs that exist due to conflicts of interest between debt holders and shareholders.¹¹

For the GCC case, we first argue that the controversy regarding *Sukuk* and its compliance with *Shari'a* typifies the crucial reason behind the limited investor base for Islamic *Sukuk*, justifying, in turn, the limited market response to the *Sukuk* issue. Second, similarities between *Sukuk* and conventional bonds reduce investor belief in *Sukuk* as a pure Islamic finance security. As a point of illustration, Usmani (2009), as cited by Shaikh and Saeed (2010), stated that 85% of the *Sukuk* issued worldwide did not comply with *Shari'a* principles, in addition to other similarities such as late payment

¹⁰ See Eckbo (1986) and Mikkelson and Partch (1986) for conventional bond issues and Ameer and Othman (2010), Godlewski et al. (2010), and Modirzadehbami and Mansourfar (2011) for *Sukuk* issues.

¹¹ They justified negative market reaction to the *Sukuk* announcement by using the adverse selection mechanism argument, whereby borrowers with low credit worthiness, low return anticipation, less profitability, and high leverage have the motive to offer profit and loss-sharing financing securities (*Sukuk*) schemes, in order to control for risk in case of business failure. These less healthy borrowers, and those with lower expected earnings (lower financial results), will prefer to issue *Sukuk*, in order to reduce their share in case of loss, rather than fixed income securities schemes, which normally shoulder a higher financial burden. Given such a scenario, issuing *Sukuk* is going to be considered a negative signal to market participants, causing in turn lower stock prices that adversely affect a firm's value.

penalties upon default. In addition, Herwany and Febrian (2010) identified that due to the absence of relevant *Sukuk* pricing models, the same pricing benchmarking is used for both of *Sukuk* and conventional bonds, i.e. Libor.

In fact, most of these factors caused less deepening of faith in *Sukuk* within the context of GCC countries. However, such attitudes may change future-wise, given the good indicators of *Sukuk* performance in global markets. For instance, according to S&P, it is expected that the GCC region will issue more *Sukuk* as a result of benefiting from high oil prices and increasing hydrocarbon projects that need massive funding.

Table 1. AARs of *Sukuk* issuance over the period 2004-2012

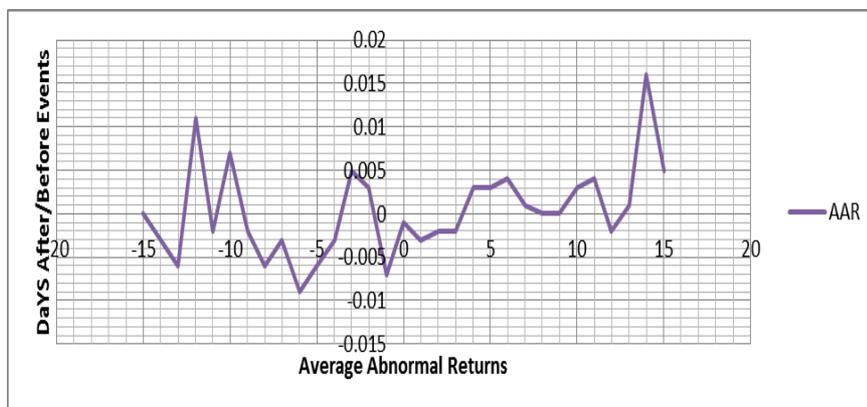
Days	AAR	AAR <i>Stat.</i>	AAR- <i>z</i> <i>(p-value)</i>	AAR- <i>t</i> <i>(p-value)</i>
[-15]	0.000	-0.007	0.497	0.498
[-14]	-0.003	-0.618	0.268	0.274
[-13]	-0.006	-1.010	0.157	0.166
[-12]	0.011	2.032	0.021**	0.032**
[-11]	-0.002	-0.367	0.357	0.360
[-10]	0.007	1.196	0.116	0.127
[-9]	-0.002	-0.294	0.385	0.387
[-8]	-0.006	-1.127	0.130	0.141
[-7]	-0.003	-0.519	0.302	0.306
[-6]	-0.009	-1.697	0.045**	0.057**
[-5]	-0.006	-1.048	0.147	0.157
[-4]	-0.003	-0.468	0.320	0.324
[-3]	0.005	0.975	0.165	0.174
[-2]	0.003	0.541	0.294	0.299
[-1]	-0.007	-1.265	0.093***	0.102***
[0]	-0.001	-0.214	0.415	0.417
[+1]	-0.003	-0.633	0.263	0.269
[+2]	-0.002	-0.423	0.336	0.339
[+3]	-0.002	-0.417	0.338	0.342
[+4]	0.003	0.481	0.315	0.319
[+5]	0.003	0.475	0.318	0.321
[+6]	0.004	0.669	0.252	0.258
[+7]	0.001	0.172	0.432	0.433
[+8]	0.000	0.067	0.473	0.474
[+9]	0.000	0.057	0.477	0.478
[+10]	0.003	0.509	0.305	0.310
[+11]	0.004	0.636	0.262	0.268

Table 1. AARs of *Sukuk* issuance over the period 2004-2012 (cont.)

Days	AAR	AAR <i>Stat.</i>	AAR- <i>z</i> <i>(p-value)</i>	AAR- <i>t</i> <i>(p-value)</i>
[+12]	-0.002	-0.436	0.331	0.335
[+13]	0.001	0.167	0.434	0.435
[+14]	0.016	2.830	0.002*	0.008*
[+15]	0.005	0.947	0.172	0.181

Figure 1 shows AARs during the 15-day event window. They show a sharp drop over days -9 to -4, reflecting negative AAR values, followed by an upward trend for days -3 and -2, showing slightly positive AAR values. The positive trend is reversed again to negative one day before the *Sukuk* issue date [-1], assigning the possibility of market anomaly. The AARs experienced negative value on the issue date, followed by three days thereafter, namely days 1, 2, and 3. The negative trend adjusts gradually during days 4 to 15, indicating fluctuating positive AARs, excluding day 12. The AARs conclude at a positive peak two weeks after issuance, on day [14].

Figure 1. AARs of *Sukuk* during the 15-days event window



6.2 Cumulative aggregate abnormal returns

Table 2 presents the cumulative average abnormal returns (CAARs) and reports positive CAAR results for events over 31 days, estimated from 15 days before to 15 days after the *Sukuk* issue announcement. Like the AAR, CAAR is considered a helpful statistical analysis that assists in gaining

awareness of the aggregate impact of the AAR, particularly if the effect of the event during the event window is not restricted purely to the event date.

Out of 31 days, 12 event windows show positive CAARs, namely nine event windows before the event day ([-15] to [-7]) and three thereafter, namely [11], [14], and [15]. Conversely, 18 event windows show negative CAARs. The CAARs are negative for the six days before the *Sukuk* announcement ([-6] to [-1]) and are negative for 12 days after announcing the issue date ([1] to [13]), except for day [11]. As for the issue date, it shows negative CAARs. To provide more insight, we extend the analysis period to a total of 61 days, estimated from [-30] to day [30], where positive CAARs are reported for the period ([-30,16] to [-30,29]).

Overall, the CAAR *p-values* for both the *z*-test and *t*-test indicate insignificant results, including asymmetric and symmetric event windows for periods before and after the announcement date. The insignificant and negative CAARs surrounding the issue date [-1,1], [-2,2] and [-3,3] indicate that there is no wealth effect for the shareholders of firms-issuing Islamic bonds (*Sukuk*). Meanwhile, CAARs for event windows [-1,0] and [0,1] indicate that such a type of debt does not lead to significant cumulative abnormal returns, concluding no wealth effect is found during the *Sukuk* event window.

However, when the event window is extended to day [0,14], positive and insignificant CAARs are reported and remain until day [0,19]. Also, when the event window is extended to [0,29], positive and significant CAARs are concluded at the 5% and 10% levels. The wealth effect is small, ranging from 1.5% for window [0,14] and 2.01% for window [0,29], with the maximum wealth effects reported to windows [0,19] and [0,20], with 3.059% and 3.037%, respectively. Both are significant at the 5% level.

Table 2. CAARs of *Sukuk* issuance over the period 2004-2012

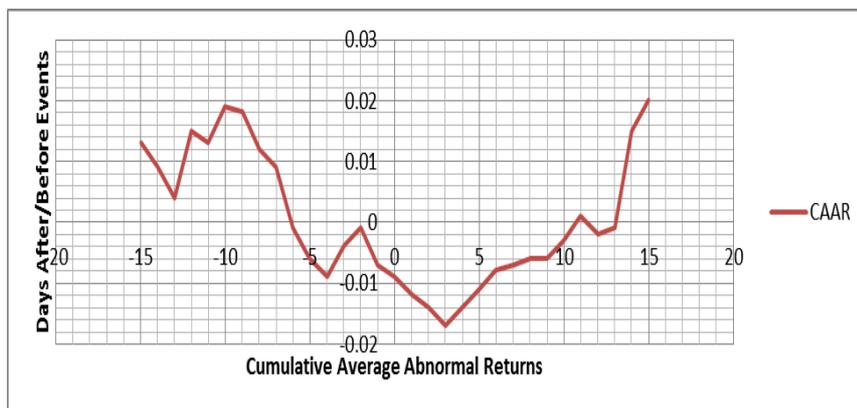
Days	CAAR	CAAR <i>Stat.</i>	CAAR- <i>z</i> <i>(p-value)</i>	CAAR- <i>t</i> <i>(p-value)</i>
[-15]	0.013	0.245	0.404	0.404
[-14]	0.009	0.179	0.429	0.429
[-13]	0.004	0.073	0.471	0.471
[-12]	0.015	0.283	0.389	0.389
[-11]	0.013	0.243	0.404	0.404
[-10]	0.019	0.365	0.358	0.358
[-9]	0.018	0.332	0.370	0.371

Table 2. CAARs of *Sukuk* issuance over the period 2004-2012 (cont.)

Days	CAAR	CAAR <i>Stat.</i>	CAAR- <i>z</i> <i>(p-value)</i>	CAAR- <i>t</i> <i>(p-value)</i>
[-8]	0.012	0.214	0.416	0.416
[-7]	0.009	0.161	0.436	0.436
[-6]	-0.001	-0.011	0.496	0.496
[-5]	-0.006	-0.115	0.454	0.455
[-4]	-0.009	-0.161	0.436	0.436
[-3]	-0.004	-0.064	0.475	0.475
[-2]	-0.001	-0.010	0.496	0.496
[-1]	-0.007	-0.134	0.447	0.447
[0]	-0.009	-0.154	0.439	0.439
[+1]	-0.012	-0.215	0.415	0.415
[+2]	-0.014	-0.255	0.399	0.399
[+3]	-0.017	-0.294	0.384	0.375
[+4]	-0.014	-0.246	0.403	0.403
[+5]	-0.011	-0.200	0.421	0.421
[+6]	-0.008	-0.133	0.447	0.447
[+7]	-0.007	-0.116	0.454	0.454
[+8]	-0.006	-0.109	0.457	0.457
[+9]	-0.006	-0.102	0.459	0.459
[+10]	-0.003	-0.053	0.479	0.479
[+11]	0.001	0.009	0.497	0.497
[+12]	-0.002	-0.033	0.487	0.487
[+13]	-0.001	-0.017	0.493	0.493
[+14]	0.015	0.251	0.401	0.401
[+15]	0.020	0.340	0.367	0.368

The cumulative abnormal returns trend can be seen clearly in Figure 2. The CAARs show positive/negative values, thus suggesting a positive/negative interpretation of *Sukuk* announcements by market participants. Except for day 11, which shows positive CAARs, downward CAAR value trend are reported for day -6 to day 13, after which CAAR values are adjusted to have positive values for days 14 and 15. It appears that investors need time—two weeks after the issue date in our case—to digest the information content of a *Sukuk* announcement. The positive but insignificant CAAR values illustrate that there is no announcement effect, and hence no wealth effect, linked to Islamic *Sukuk* offerings.

Figure 2. CAARs of *Sukuk* during the 15-day event window



7 - Summary and concluding remarks

An extensive body of literature has examined issues related to the concept and structure of *Sukuk*, the extent of their compliance with Islamic (*Shari'a*) law, and the differences between *Sukuk* and conventional bonds, while limited contributions have been made in the literature regarding the corporate finance perspective of *Sukuk* issues. This paper bridges this gap by testing for the stock exchange market reaction to corporate *Sukuk* offerings, using data for the GCC region over the period 2004-2012.

To capture fully the effects of our event of interest, we used an event period of 31 days to consider event windows estimated from -15 days prior to and 15 post a *Sukuk* issue announcement. As for aggregate abnormal returns, it is concluded that the market reacts positively as well as negatively to a *Sukuk* offering. The market reaction is revealed to be significantly positive at the 5% level for the [-12] and the [14] issuance periods, implying a limited positive influence on shareholder wealth. Correspondingly, while no significant positive abnormal returns are concluded for other periods, positive and insignificant average abnormal returns are reported for the [-3] and [-2] periods. The AAR is negative on the *Sukuk* issue dates and remains negative three days thereafter ([1], [2], and [3]), followed by positive days, except for day 12, thereby indicating that the stock market reacts positively and late to *Sukuk* issuances announced by firms. The announcement of *Sukuk* results in a negative impact on stock returns during the event period surrounding the issue

date $\{-1,0,1\}$. Furthermore, at the 10% level, the market reaction is revealed to be significantly negative for the $[-6]$ and $[-1]$ periods, implying a negative influence on shareholder wealth.

Overall, the positive or negative market reactions prior and post the issue date indicate that either investors anticipate the announcement or there is market inefficiency whereby offering information is leaked out to the market before the announcement date. However, given the features of the GCC stock markets and their microstructure, the possibility of information leakage might be higher than investors' anticipation of *Sukuk* issuance. In addition, given the limited significant values revealed, it seems that GCC stock markets do not consider issuing *Sukuk* as good news which may positively affect the stock prices of the issuing firms, thus reflecting low confidence in *Sukuk* as a wealth maximization instrument and low investor appreciation for the information content of *Sukuk* issuance.

In terms of their synchronized nature and timing, *Sukuk* issuances do not seem to be crucial in transferring information regarding firms' future earnings, and hence their future performance and capital sourcing, thus suggesting low, if not negative, impacts on firms' stock prices. This provides little support for the signaling hypothesis in terms of *Sukuk* issuance.

Our conclusion regarding the aggregate abnormal returns of *Sukuk* issuance may imply that they are not particularly relevant for future stock price predictions, demonstrating that stock price reactions may not fully reflect the impact of *Sukuk* announcements, particularly for emerging markets. Given this possibility, future research, to test for positive abnormal returns for firms with more actively traded stocks relative to less actively traded stock, would be helpful.

For cumulative abnormal returns aggregated across securities, we test the hypothesis as to whether or not they are different from a zero mean normal distribution with equal variance (asymptotically) to the estimated distribution. As prior and post event periods, out of 31, 12 event windows show positive CAARs while 19 show negative CAARs, including the issue date. The CAAR *p-values* for both the *z*-test and *t*-test indicate insignificant results, including asymmetric and symmetric event windows for periods before and after the announcement date. The insignificant and negative CAARs surrounding the issue date $[-1,1]$, $[-2,2]$ and $[-3,3]$ indicate that such a type of debt does not lead to significant cumulative abnormal returns, concluding that there is no wealth effect associated with shareholders of firms issuing Islamic bonds

(*Sukuk*). When the event window is extended to include days [0,14] to [0,29], positive and significant CAARs are found at the 5% and 10% levels.

As per the average cumulative abnormal returns, it is obvious that none of the aggregate cumulative abnormal returns is significant. However, when we instead test for an increase in estimator point mass, i.e. perform a one-tailed test on our distribution, all returns after and including 15 days after the announcement are significant at the 10% level. One possible reason for this may be that the firms are credit-starved, a common feature of developing countries, and when they do acquire the required capital they are able to put it to use in a manner to which the market responds. It is interesting that it takes about two weeks to register the effect, and that the effect is consistent for the next two weeks.

Again, variabilities in the market reaction to *Sukuk* issues, and the concluded zero wealth effect of *Sukuk* issuance, are justified by low financial market efficiency and legal disclosure requirements within the framework of emerging and developing economies, where there is a chance of leakage of information when new *Sukuk* offerings are on the cards. This suggests that investors receive information about *Sukuk* issues on the grapevine, before the news becomes public knowledge. As such, it is possible that abnormal returns are realized prior to the announcement date. For our case, this period is expected to be one to two weeks prior to the announcement date.

A second potential justification for the low wealth effect of *Sukuk* issuance announcements is that there are smaller investor bases for *Sukuk* within the GCC region, signaling lower cost advantages and thus causing higher capital cost. This establishes that *Sukuk* in the GCC region are still controversial in regard to legal acceptability or compliance with *Shari'a*, due to the belief that *Sukuk* features in general are not significantly different from conventional bonds. In other words, *Sukuk* offerings do not contribute positively towards enhancing the *Shari'a*-compliance status of the issuing firms, thereby causing a lower investor base for *Sukuk*, leading to lower CAARs, and hence, no significant wealth effect.

A third possible reason may be attributed to firms' tax considerations while sourcing by debt via *Sukuk*, which might not gain much on tax subsidies or tax deductibility, since *Sukuk* do not have coupon characteristics. Thus, *Sukuk* issues are not considered examples of low-cost capital investment, causing the higher possibility of default risk in case of more debt issues typified by *Sukuk*. In this regard, the massive issues surrounding *Sukuk* lie outside the GCC region, in order to benefit from tax considerations and hence

tax subsidies; the massive amounts of *Sukuk* issues are officially registered for Malaysia and Indonesia rather than GCC.

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