Risks of Sukuk Structures: Implications for Resource Mobilization

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Executive Summary

This research deals with the evolution of and growing markets for sukuk (Islamic asset-based securities) in emerging economies. The types of sukuk and their liquidity, credit, and market risk are discussed. Further refinements of the structures with embedded call and put options are analyzed in pursuit of risk management mechanisms that are, thus far, absent. The research is an attempt to discuss the risks of these growing financial assets and their role in the mobilization of resources and development of debt markets in emerging economies. © 2007 Wiley Periodicals, Inc.

INTRODUCTION

The Islamic law (Shariah) prohibits the charging and paying of interest. Therefore, in countries where Muslim populations constitute an important segment of the society, considerations for Islamic law have recently hampered the advancement of competent systems for monetary control (Sundararajan, Martson, & Ghiath, 1998). Hence, governments as well as corporate entities seeking resource mobilization and debt management necessitate the development of alternatives to traditional debt markets that can be acceptable by Islamic law.
Recently, there has been a rapid growth of a thriving multibillion-dollar market in Shariah-compliant sovereign and corporate Islamic structured financial instruments known as sukur. Generally, sukur are asset-backed, stable income, tradable and Shariah-compatible trust certificates. The primary condition for the issuance of sukur is the existence of assets on the balance sheet of the government, the monetary authority, the corporate body, the banking and financial institution, or any entity that wants to mobilize their financial resources. As of 2006, the total worth of sukur in issue globally is estimated to be over $25 billion. Sovereign issuers include Bahrain, Malaysia, Qatar, and Saxony-Anhalt in Germany. Hence, the sukur are emerging as a very important vehicle for resource mobilization. However, the minimum investment requirements of the sukur issues are often very large, and mainly institutional and high net worth investors have been able to participate in such investment opportunities. The effectiveness of sukur as an efficient tool for resources mobilization can be enhanced, provided these can be accessible to the general public with feasibly minimum amounts of investment requirements.

Significant ideas are covered in Haque and Abbas (1999), Kahf (1997), Elgari (1997), and Zarqa (1997) with regard to public-sector financing in Islamic economies. Also, Al-Suwailem (2000) and El-Gamal (2000) scrutinize the functionality of uncertainty within the realm of Islamic finance that will become a focal point of the feasibility of Islamic risk management mechanisms in this research. The objective of this study is to assess the sukur structures and analyze the various risks underlying the Islamic sovereign and corporate sukur structures. The article contrasts the risks underlying traditional fixed-income instruments and those underlying the sukur structures. We also aim to suggest Shariah-compatible frameworks that can replicate the functions of interest-rate swaps and derivatives in managing the risks of sukur.

The success and popularity of the sukur framework as an alternative asset management platform will invariably require inbuilt mechanisms that can be instrumental in mitigating risks that exist in the structures due to their fixed pricing features as well as their benchmarking with market references such as the London Interbank Offer Rate (LIBOR). This phenomenon will be investigated in the light of the unique requirements of Islamic finance. Ultimately, the aim is to put together sukur structures that can be competitive without utilizing derivatives, making sukur an efficient channel of resource mobilization.
EVOLUTION AND PROFILE OF SUKUK STRUCTURES AND MARKETS

Types of Sukuk
The proper classification of the asset classes will also determine the type of certificates to be issued. It is imperative to note that these assets can be prepared for the issuance of trust certificates in a number of ways conditional to the need of the issuing entity. The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) has extensively outlined the various asset classes that can form the base for sukuk certificates (see AAOIFI, 2002).

Pure Ijarah Sukuk
These certificates are issued on stand-alone assets that are identified on the balance sheet. The assets can be parcels of land or fixed assets to be leased such as aircrafts and ships. The rental rates of returns on these sukuk can either be fixed or floating depending on the particular originator.

Hybrid/Pooled Sukuk
The underlying pool of assets can consist of istisna, murabahah, and ijarah receivables. Indeed, having a portfolio of assets composed of different classes allows for a greater mobilization of funds as previously inaccessible murabahah and istisna assets can comprise a portfolio. However, at least 51% of the pool must be composed of ijarah assets. Due to the fact that the murabahah and istisna receivables are part of the pool, the return on these certificates can only be a predetermined fixed rate of return.

Variable Rate Redeemable Sukuk
In some circumstances, implementing sukuk by representing the full strength of an issuer’s balance sheet can prove to be beneficial. Several corporate entities refer to these sukuk as Musharakah Term Finance Certificates (MTFCs). These can be considered as an alternative to sukuk because of their seniority to the issuer’s equity, their redeemable nature, and their relatively stable rate as compared to dividend payouts. MTFCs have two main advantages. First, employing musharakah returns is preferred from the viewpoint of jurists, as such an arrangement would strengthen the paradigm of Islamic banking that considers partnership contracts as the embodiment of core ideals. Second, the floating rate of return on these certificates would not depend on benchmarking with market references such as LIBOR but would instead be contingent on the firm’s balance-sheet actualities.
Fixed-Rate Zero-Coupon Sukuk
Another possible classification of sukuk structures can be created where the assets to be mobilized do not yet exist. Consequently, the objective of the fund mobilization would be to create more assets on the balance sheet of company through *istisna*. However, certificates of this nature would not readily be tradable because of Shariah restrictions (see Usmani, 2002). The primary asset pools to be generated would be of a nature warranted by *istisna* and installment purchase/sale contracts that would create debt obligations.

Assessment of Sukuk Structures
The market for *sukuk* has injected a much-needed scope for liquidity management in Islamic banks. Previously, such liquidity could only be secured through continuous *murabahah* transactions (Vogel & Hayes III, 1998). In a global market where conventional finance dominates, liquidity could only be acquired by transactions limited to specific Shariah-acceptable commodities such as industrial goods, metals, and oils. The process of issuing *sukuk* certificates allows Islamic financial institutions to garner a much wider asset pool that was previously either inaccessible or inefficient.

However, some of the corporate and sovereign *sukuk* prospectuses have come under increased scrutiny for their Shariah suitability. The predominant feature of several of the prospectuses is the floating-rate return distributed to the certificate holders. The market reference used is the LIBOR, over which a competitive premium is added. However, it should be observed that in the case of the *ijarah sukuk* arrangements, LIBOR serves as a market reference for the returns, and the intrinsic distributions arise from the rentals pertaining to the leasing arrangements with the originator and Special Purpose Vehicle (SPV).

The *sukuk* issuance by the Islamic Development Bank (IDB) serves as an excellent and promising example for future arrangements. The prospectus contained clear and precise Shariah considerations outlined by numerous leading scholars and it involved an innovative portfolio combination of *ijarah*, *murabahah*, and *istisna* projects. Also, the returns on the *sukuk* were agreed upon a fixed rate of return on the underlying assets rather than being benchmarked to LIBOR.

One dimension of the paradigm of Islamic finance that should not be lost upon compromises for increased profitability is altruism. In this
regard, the *sukuk* prospectuses have not only mobilized previously untapped public-sector funds, but have also introduced long-sought funding for development projects. The Qatar issuance funded a large medical complex (Hamad Medical City) in Doha, and the Malaysian *sukuk* certificates raised funds for several government-owned hospitals as well as offices. Most significantly, the IDB *sukuk* prospectuses raised funds for projects in 21 developing nations in a wide range of schemes that included power transmissions, hospitals, steel manufacturing, mineral water networks, livestock breeding, seaport development, pharmacology research, agricultural irrigation, telecommunications projects, rural development, and colleges.

Table 1 collects a sample of recent developments in *sukuk* markets.

**Basic Structure of Existing Sukuk**

There are variations of the *sukuk* structure, but the basic arrangement is outlined in Figure 1. Fundamentally, there are three parties to a *sukuk* arrangement: the originator of the *sukuk* (the obligor), the Special Purpose Vehicle who is the issuer of the *sukuk* certificates, and the investors that buy these certificates.

The originator of the *sukuk* holds the assets that are intended to be leased to form the rental payments that are the basis of the returns to the *sukuk* holder. He is thus obliged to guarantee these payments. The SPV is created by the originator of the certificates and is designated as a separate independent legal entity. The originator sells the assets to the SPV and then leases it back under a term-specified contract. The SPV securitizes the assets by issuing *sukuk* certificates for sale to potential investors. These *sukuk* notes represent undivided shares in ownership of tangible assets, and the SPV takes on the function of handing over the rent collected from the originator to the investor.

1. Originator sells assets to be leased to the SPV.
2. Originator receives payment for assets sold.
3. The SPV leases assets back to the originator.
4. The SPV receives rent payments from the originator under a term-specified contract.
5. The SPV collects funds from the issuances of *sukuk* certificates to finance the purchase of assets from the originator.
6. The SPV utilizes the rent payments from the originator to disburse distributions on the *sukuk* certificates.
7. Investors (both conventional and Islamic) secure the *sukuk* certificates.
Table 1. Sample Recent Developments in Sukuk Markets

<table>
<thead>
<tr>
<th>Name of Ijarah Sukuk</th>
<th>Type</th>
<th>Amount</th>
<th>Maturity</th>
<th>Pricing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guthere Co. Malaysian Global</td>
<td>Corporate</td>
<td>US$150 M</td>
<td>5 years</td>
<td>Floating reference rate on underlying Ijarah</td>
</tr>
<tr>
<td>First, Malaysia</td>
<td>Corporate</td>
<td>US$500 M</td>
<td>7 years</td>
<td>Floating reference rate on underlying Ijarah</td>
</tr>
<tr>
<td>Malaysian Global Ijarah Sukuk</td>
<td>Sovereign</td>
<td>U.S.$700 M</td>
<td>7 years</td>
<td>Floating reference rate on underlying Ijarah</td>
</tr>
<tr>
<td>Qatar Global Ijarah Sukuk</td>
<td>Sovereign</td>
<td>U.S.$150 M</td>
<td>5 years</td>
<td>Floating reference rate on underlying Ijarah</td>
</tr>
<tr>
<td>Tabreed Global Ijarah Sukuk</td>
<td>Corporate</td>
<td>U.S.$390 M</td>
<td>24 years</td>
<td>Sale of usufruct rights as weekly time shares</td>
</tr>
<tr>
<td>Sukuk Al Intifaa Makkah, Saudi Arabia</td>
<td>Corporate</td>
<td>Euro 100 M</td>
<td>5 years</td>
<td>Floating reference rate on underlying Ijarah</td>
</tr>
<tr>
<td>Ijarah Sukuk Saxony-Anhalt, Germany</td>
<td>Sovereign</td>
<td>U.S.$1 B</td>
<td>5 years</td>
<td>Floating reference rate on underlying Ijarah</td>
</tr>
<tr>
<td>Dubai Department of Civil Aviation</td>
<td>Corporate</td>
<td>Euro 100 M</td>
<td>5 years</td>
<td>Floating reference rate on underlying Ijarah</td>
</tr>
<tr>
<td>(DCA) Ijarah Sukuk</td>
<td>Corporate</td>
<td>RM 150 M</td>
<td>2 to 7 years</td>
<td>Fixed-rate return</td>
</tr>
<tr>
<td>Sitara Musharakah Term Finance, Pakistan</td>
<td>Corporate</td>
<td>Pak Rupees 360 M</td>
<td>5 years</td>
<td>Fixed rate on profits</td>
</tr>
<tr>
<td>Sudanese Government Investment Sukuk</td>
<td>Sovereign</td>
<td>SD 6 B</td>
<td>2 years</td>
<td>Fixed rate on profits</td>
</tr>
<tr>
<td>Solidarity Trust Certificates Islamic</td>
<td>Corporate</td>
<td>U.S.$400 M</td>
<td>5 years</td>
<td>Fixed-rate return</td>
</tr>
<tr>
<td>Development Bank (IDB)</td>
<td>Corporate</td>
<td>U.S.$500 M</td>
<td>5 years</td>
<td>Fixed-rate return</td>
</tr>
<tr>
<td>IDB</td>
<td>Corporate</td>
<td>U.S.$600 M</td>
<td>5 years</td>
<td>Floating-rate return</td>
</tr>
<tr>
<td>Pakistani International Sukuk</td>
<td>Government</td>
<td>U.S.$600 M</td>
<td>5 years</td>
<td>Floating-rate return</td>
</tr>
<tr>
<td>Ample Zone Berhad, Malaysia</td>
<td>Corporate</td>
<td>RM 150 M</td>
<td>2 to 7 years</td>
<td>Fixed-rate return</td>
</tr>
<tr>
<td>Dubai Global Sukuk, UAE</td>
<td>Sovereign</td>
<td>U.S.$1 B</td>
<td>5 years</td>
<td>Floating-rate return</td>
</tr>
<tr>
<td>Sarawak Global Sukuk, Malaysia</td>
<td>Sovereign</td>
<td>U.S.$350 M</td>
<td>5 years</td>
<td>Floating-rate return</td>
</tr>
<tr>
<td>Ingress Sukuk Barhad, Malaysia</td>
<td>Corporate</td>
<td>RM 160 M</td>
<td>3 years</td>
<td>Fixed rate return</td>
</tr>
<tr>
<td>First Islamic Investment Bank, Bahrain</td>
<td>Corporate</td>
<td>Euro 76 M</td>
<td>2 years</td>
<td>Floating rate return</td>
</tr>
<tr>
<td>Emaar, UAE</td>
<td>Corporate</td>
<td>U.S.$65 M</td>
<td>5 years</td>
<td>Floating rate return</td>
</tr>
<tr>
<td>Bahrain Monetary Agency (BMA), Bahrain</td>
<td>Sovereign</td>
<td>Total</td>
<td></td>
<td>Various</td>
</tr>
<tr>
<td></td>
<td></td>
<td>U.S.$970 M</td>
<td></td>
<td>One issuance floating rate reference</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min 3,</td>
<td></td>
<td>Max 10 years</td>
</tr>
</tbody>
</table>

Source: Calculated from Liquidity Management Centre Web site (http://www.lmcbahrain.com/Global-table.asp) and various Sukuk prospectuses (see, for example, Malaysian Global First Ijarah Sukuk, 2001; Malaysian Global Inc., 2002; Qatar Global Sukuk, 2003; and Tabreed Financing Corporation (2004)).
8. The investors are reimbursed periodically by the distributions from the SPV, which are funded by the originator’s rental payments on the leased assets.

At the expiry of the term of the sukuk (and lease of the assets), the ownership of the asset would reside with the collective sukuk holders, and they would then realize a capital gain or loss on this asset depending on its market value at the time. It follows that the costs of financing incurred by the originator would be higher if the assets under question have no viable market. Often, the originator may not be willing to part with the assets upon maturity of the contract, and so the closure of the sukuk contract would include a stipulation stating the originator’s willingness to buy back the assets at their face value.

The SPV is generally designated to be a stand-alone entity that is bankruptcy remote from the originator. However, there may be a notion of settlement risk involved with the SPV in that the originator will have to channel the payments through a clearinghouse. The certificate holders will then be reimbursed through the clearinghouse.

**RISKS UNDERLYING SUKUK STRUCTURES**

The novelty of sukuk inherently entails a higher exposure to certain market and financial risks. In this section, we will discuss the nature of the different risks that the sukuk arrangements are confronted with, as summarized in Table 2.
Market Risks

Rate of Return Risk

Sukuk based on fixed rates are exposed to this risk in the same manner as fixed-rate bonds are exposed to interest-rate risk. The rise in market interest rates leads to a fall in the value of fixed-income sukuk. There is also a dimension of reinvestment risk and the opportunity cost of investing at the new rate, particularly if the asset is not liquid, as in case of the zero-coupon nontradable sukuk.

Sukuk certificates are indirectly exposed to interest-rate fluctuations through the widespread benchmarking with LIBOR in their financing operations. For example, the markup is a defining characteristic of the murabahah contract that is the most popular Islamic financial instrument on the asset side of the balance sheet (Vogel & Hayes III, 1998). Every contract benchmarked with LIBOR inherits the possibility that in the future the LIBOR rates will rise and that the issuer, on the asset side, will not have made as much profit as future market conditions might dictate. Interlinked is the liabilities side of the issuer’s balance sheet that has provisions for adjusting to market conditions. The sukuk issuers will have to respond to fluctuations in LIBOR because any increase in earnings will have to be jointly with the investors. However, on the asset side, the repricing of murabahah contracts is not possible, as debts are nontradable in Islamic finance (Usmani, 2002, pp. 17–18). Therefore, we have a situation where murabahah contracts expose the issuer as well as the buyer of the issuance to a considerable interest-rate risk, albeit indirectly. Some of the sukuk issuances, such as the IDB trust certificates, have an underlying portfolio of assets that include murabahah receivables, rendering the whole issuance indirectly exposed to an interest-rate risk.

The underlying assets of the sukuk certificates are subject to numerous risks as well. Primarily, there is the risk of loss of the assets. These are minimal with regard to ijarah assets of land parcels. However, in the case of equipment and large-scale construction typifying some of the underlying IDB assets, the risk of loss may not be so negligible. Nevertheless, Islamic finance has Shariah-compliant provisions for insurance claims in the form of takaful, and these arrangements will have to be utilized to mitigate the risks of asset losses. Also, there is the need to maintain the structures of the assets. Proper maintenance will ensure adequate returns to the certificate holder. According to Shariah principles, the SPV will usually be required to bear the responsibilities on ensuring asset structure maintenance (AAOIFI, 2002).
<table>
<thead>
<tr>
<th>Types of Sukuk</th>
<th>Description of Sukuk Structure</th>
<th>Credit Risk</th>
<th>Rate of Return (Interest-Rate Risk)</th>
<th>FX Risk</th>
<th>Price Risk</th>
<th>Other Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero-Coupon Sukuk</td>
<td><em>Isisna</em>, <em>Murabahah</em> debt certificates—<em>nontradable</em></td>
<td>Unique basis of credit risks exists (see Khan &amp; Ahmed, 2001)</td>
<td>Very high due to fixed rate, remains for the entire maturity of the issuance</td>
<td>If all other conditions are similar, FX risk will be the same for all cases of <em>Sukuk</em>. However, those <em>Sukuk</em> that are liquid or relatively short term in nature will be less exposed. The composition of assets in the pool will also contribute to the FX risk in different ways. Hence, this can be a very useful tool to overcome the FX risk by diversifying the pool in different currencies.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed-Rate Ijarah Sukuk</td>
<td>Securitized <em>Ijarah</em>, certificate holder owns part of asset or usufructs and earns fixed rent—<em>tradable</em></td>
<td>Default on rent payment, fixed rate make credit risk more serious</td>
<td>Very high due to fixed rate, remains for the entire maturity of the issuance</td>
<td>Price risk relates to the prices of the underlying commodities and assets in relation to the market prices. <em>Ijarah Sukuk</em> are most exposed to this, as the values of the underlying assets may depreciate faster as compared to market prices.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floating-Rate Ijarah Sukuk</td>
<td>Securitized <em>Ijarah</em>, certificate holder owns part of asset or usufructs and earns floating rent indexed to market benchmark such as LIBOR—<em>tradable</em></td>
<td>Default on rent payment, floating rate make default risk less serious—see previous case</td>
<td>Exists only within the time of the floating period normally six months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed-Rate Hybrid/ Pooled Sukuk</td>
<td>Securitized pool of assets; debts must not be more than 49%, floating rate possibility exists—<em>tradable</em></td>
<td>Credit risk of debt part of pool, default on rents, fixed rate make credit risk serious</td>
<td>Very high due to fixed rate, remains for the entire maturity of the issuance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Musharakah Term Finance Sukuk (MTFS)</td>
<td>Medium-term redeemable <em>musharakah</em> certificate based on diminishing <em>musharakah</em>—<em>tradable as well as redeemable</em></td>
<td><em>Musharakah</em> has high default risk (see Khan &amp; Ahmed, 2001); however, MTFS could be based on the strength of the entire balance sheet</td>
<td>Similar to the ease of the floating rate. This is, however, unique in the sense that the rate is not indexed with a benchmark like LIBOR; hence, least exposed to this risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salam Sukuk</td>
<td><em>Securitized salam</em>, <em>fixed-rate and nontradable</em></td>
<td><em>Salam</em> has unique credit risk (see Khan &amp; Ahmed, 2001)</td>
<td>Very high due to fixed rate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Foreign Exchange-Rate Risks

Currency risk arises from unfavorable exchange-rate fluctuations, which will undeniably have an effect on foreign exchange positions. In the event of a divergence between the unit of currency in which the assets in the sukuk pool are denominated and the currency of denomination in which the sukuk funds are accumulated, the sukuk investors are rendered to an exchange-rate risk. A clear manifestation of this situation arises with the IDB prospectus. The unit of account of the IDB is an Islamic Dinar (ID), and is equivalent to one Special Drawing Right (SDR) of the International Monetary Fund that is weight-composed of 45% in U.S. dollars, 29% in euros, 15% in Japanese yen, and 11% in British pounds. However, the sukuk certificates are denominated in U.S. dollars, and consequently there is a currency mismatch. Although during the initial sukuk issuances, this mismatch has resulted in a profit for the IDB because of the weakness of the U.S. dollar relative to the Islamic Dinar, any appreciation of the U.S. dollar against the ID will invariably result in a currency loss.

The IDB serves as a guarantor and thus protects the investors from any exchange-rate fluctuations. Indeed, the investors in all the sukuk prospectuses are shielded through similar provisions. However, this does not eliminate the exchange risk faced by the originators. In truth, exchange-rate risks are compounded with a rapidly growing industry and increasingly multinational investment arrangements. The challenge for sukuk-issuing corporate entities and sovereigns becomes to devise an effective exchange risk management strategy congruent to Shariah principles.

Credit and Counterparty Risk

Credit risk refers to the probability that an asset or loan becomes irrecoverable due to a default or delay in settlements. Chapra and Khan (2000), Khan and Ahmed (2001), and El-Hawary, Grais, and Iqbal (2004) identify various unique credit risks that are particular to Islamic finance. Sukuk prospectuses operate, for the most part, in emerging markets where counterparties possess less sophisticated risk management mechanisms. The rescheduling of debt at a higher markup rate is not existent due to the prohibition of interest. Consequently, counterparties would be more inclined to default on their commitments to other parties. Also, the nature of profit-loss sharing (PLS) arrangements means that agency costs will be higher.

Default Risk

Each prospectus has provisions for the termination of the certificate in the event of a default by the obligor. If the obligor fails to pay the
rentals on the *ijarah* agreements that form the coupon payments, the certificate holder can exercise the right to nullify the contract and force the obligor to buy back the assets. Furthermore, in the event that the obligor fails to reimburse the principal amount, the certificate holder can exercise the right to take legal action and force the obligor to enter into debt-rescheduling proceedings.

**Coupon Payment Risk**

The obligor may fail to pay the required coupons on time. Any delayed coupons will be subject to a specified payment amount that will be accumulated with the SPV. Nonetheless, such accumulated funds are recommended by *Shariah* boards to be donated for charitable purposes.

**Asset Redemption Risk**

The originator has to buy back the underlying assets from the certificate holder. The principal amount paid may not be equal to the *sukuk* issuance amount, and, as a result, there is the risk that the assets may not be fully redeemed.

**Shariah Compliance Risks**

*Shariah* compliance risk refers to the loss of asset value as a result of the issuers’ breach of its fiduciary responsibilities with respect to compliance with *Shariah*. The dissolution clauses of the *sukuk* prospectus define events that will make the *sukuk* deed null and void due to *Shariah* noncompliance. For example, if the *sukuk* is based on a hybrid of *ijarah* and *istikna* assets, *ijarah* must always be more than *istikna* in the pool; otherwise the *sukuk* deed will dissolve (Usmani, 2002, p. 218). The issue then becomes that of competitiveness and survival in the market as a distinct *Shariah*-compliant asset class.

There are a number of discrepancies regarding the applicability of Islamic financial instruments reflecting the different schools of thought as well as the legal regimes in which the *sukuk* are issued. Such a theoretical ambiguity would pose further procedural risks that the Islamic bank might run afoul of *Shariah* jurisdictions. For example, the theoretical applicability of the *murabahah* contract varies between different schools of thought. Numerous jurists, such as the Organization of the Islamic Conference (OIC) *Fiqh* Academy, concur that the *murabahah* contract is binding on only the seller of the contract and not on the buyer. Other jurists hold the view that both the parties to a contract have an equal obligation to the terms of the contract (Vogel & Hayes III, 1998).
An additional case relates to the liquidity facility. The sukuk prospectuses analyzed have had stipulations for a liquidity facility to abate lags between payments to investors and returns on the underlying asset pools. Some liquidity facilities have been formed to permit the trustee to benefit the facility for any liquidity deficit ensuing from default in the sukuk asset pools. The imbursement of the liquidity services has been provisional upon surplus funds after the distribution of coupon payments to the sukuk holders. The sole purpose of such a liquidity facility would be to ease out lags between investor payments and returns on the underlying asset pools. The importance of such a liquidity facility can most effectively be garnered where the arrangement had floating-rate payments, as fixed-rate returns would imply the nonexistence of interest-rate differentials.

Sukuk prospectuses are subject to the same fiduciary risks as Islamic banks (El-Hawary et al., 2004). The reputation of the originator would suffer tremendously as investors would lose confidence in its ability to conform to industry regulations. Accordingly, the investor may also incur economic losses from not being able to recoup on potential investments. In conclusion, the association of Shariah supervisors with sukuk issuances will ensure investor confidence. However, the convenience with which the Shariah compliance requirements can be married with the conditions of market competitiveness will remain a great challenge for the sukuk issuances.

Liquidity Risks
The certificate holder is rendered to several risks pertinent to sukuk structures. These are primarily regarding liquidity issues. The sukuk structures, as welcome as they are in dealing with liquidity management issues in Islamic finance, are exposed to a liquidity risk because there currently does not exist a well structured and sufficiently liquid secondary market. The certificates are listed on several local markets, but this alone does not signify their liquidity. The sukuk certificates are medium to long term in maturity, and their continued success will largely depend on their aptitude to evolve into highly liquid means of fund investment with adequate risk management mechanisms. As is currently the case, most of the certificates tend to be held until maturity.

MANAGING THE FINANCIAL RISKS OF SUKUK STRUCTURES

Islamic financial markets have sequentially faced the realities of inflationary pressures and disintermediation owing to the inefficiencies related to the dearth of adequate market-based government mone-
tary policy instruments compatible with Shariah (see Sundararajan & Luca, 2002; Sundararajan et al., 1998). Sukuk certificates aim to bridge this gap and serve to replicate the functions of conventional bonds and tradable securities to effectively mobilize resources into the markets and inject liquidity into enterprises or governments. Moreover, they provide a stable source of income for investors in Islamic markets. However, there are some stark differences between sukuk and bonds. The legitimacy of sukuk structures within Shariah lies in the fact that they do not take advantage of interest-rate movements. Also, investing in sukuk issuances involves the funding of trade or production of tangible assets. Furthermore, sukuk investors have an inherent right to information on the use of their investments, nature of underlying assets, and other particulars that would otherwise be redundant in conventional investments.

In the next section, we discuss some aspects of enhancing the competitiveness of sukuk structures by overcoming some of the undesirable underlying risks. In this regard, we discuss some aspects of institutional reform and some possible mechanisms of financial engineering.

**SUKUK AND THE CHALLENGE OF DERIVATIVES**

The nonexistence of interest rates in Islamic finance ostensibly makes the need for derivative instruments redundant in Islamic markets. However, we need to note some important qualifiers. First, the prohibition of interest and gharar should not categorically close the door for financial engineering in compliance with the Shariah. Second, sukuk cannot avoid being competitive in those conventional markets in which they operate. Finally, the positive aspects of derivative markets can be valuable for developing capital markets if replicated in emerging economies.

An impending concern for the managers and investors in sukuk is their ability to protect themselves from different types of risks. The next logical step in the evolution of Islamic finance is the provision of risk management mechanisms that replicate the functions of conventional instruments in a way compliant with Islamic law. Shariah does not recognize financial options as a form of wealth. Hence, these options cannot be traded (see Usmani, 2002; Vogel & Hayes III, 1998).

**Embedded Options and Gharar**
The previously cited position on derivatives has been with regard to the applicability of stand-alone contracts such as call and put options.
Embedded options are not detachable and are not traded, but instead these form part of the initial issuance contract. As such, embedded options can create callable or puttable bonds. A callable bond contains provisions allowing the issuing firm to buy back the bond at a predetermined price at a certain time in the future. Such bonds normally cannot be recalled within the first few years of the issuance. Conversely, the puttable bond allows the holder to demand an early redemption at a predetermined price at a certain time in the future. A puttable bond commonly has lower yields than option-free bonds because it is more attractive to the buyer. Similarly, the callable bond will have higher yields than noncallable bonds as it is deemed less valuable to the holder.

Merton (1995) identifies that puttable bonds are equivalent to a portfolio of discount bonds and a short-term bond at the risk-free rate. The put option is exercised when the discount prices fall, and this reduces interest-rate risk faced by the holder of the bond. Accordingly, it is concluded that when prices of discount bonds fall, the prices of embedded options on these bonds fall less. Embedded options, therefore, help to stabilize the prices of these instruments.

The applicability of embedded options can be analyzed through the suggestive framework developed by Al-Suwailem (2000). To analyze the term *gharar* in a conventional sense, it is compared to the ideals of zero-sum games. *Shariah* dictates the prohibition of *gharar* as it renders a financial contract unfair to the extent that one party will wholly benefit at the expense of the counterparty. Furthermore, it is determined that all zero-sum games are not compatible with *Shariah* principles.

It will be argued that embedded options do not strictly take the shape of zero-sum games that tradable option contracts take. Non-zero-sum games can have a different spectrum of “win-win,” “lose-lose,” and “win-lose” payoff structures. *Shariah* considerations do not reproach contracts that embody risk but rather when this risk is an avenue for one party to entirely benefit at the expense of the counterparty. Al-Suwailem discusses the *Shariah* guidelines by which risk can be tolerated in non-zero-sum games before it becomes *gharar*. These criteria are that the risk must be: (1) *negligible* in that the probability of loss must be small enough to be acceptable, (2) *inevitable* such that a mutually beneficial outcome can be garnered, and (3) *unintentional* in that the participants should avoid zero-sum games.
Scrutinizing the functions of embedded options under these three criteria we can make a case for their Shariah acceptability. Any eagerness by Shariah jurists to accept embedded options may be undermined by the underlying uncertainty associated with the exercising of the option. The concern is whether this uncertainty amounts to gharar or can be accepted within the boundaries of Islamic jurisdiction.

First, we can try to classify this uncertainty as negligible. The embedded option in conventional bonds is usually not exercised before 2–3 years after the issuance of the bond. Even then, it is only exercised subject to economic developments and interest-rate movements pertaining to the value of the bond. Also, with embedded call options, the buyer of the bond is not left “empty-handed” if the option is exercised. Rather, the originator buys back the bond at a predetermined price, and throughout the life of the bond the buyer enjoys a stream of coupon payments. Conversely, a tradable option contract is not bought back but becomes void if markets move against the expectations of the option holder. Consequently, the premium on the contract is lost, and the buyer is left with a financial loss. Therefore, we can move to classify the uncertainty as significantly less in magnitude and possibly less probable for two reasons. First, if the call option is exercised, the buyer is compensated and the bond is bought back at a previously agreed-upon price. Second, the likelihood of the bond option being exercised is only possible several years after the issuance.

Second, the dimension of inevitability states that “win-win” outcomes should be possible. The results of embedded options may not be considered to be totally “win-win.” After all, the option is exercised when circumstances make it profitable to do so. However, because callable bonds are less valuable to the buyer, the coupon payments are higher to reflect this. The buyer also gets reimbursed for the bond that is bought back. Therefore, the overall payoffs to both the parties can be measured to not follow a zero-sum pattern. What is observed are circumstances where both parties to the contract are left better off than had the investment not been undertaken. The buyer of the bond would not have received the coupon payments, and the issuer may not have benefited from the liquidity profits of the bond issuance.

Finally, the intentionality dimension is tied closely to the presence of a zero-sum structure. The embedded option arrangements do not embody such payoff structures that typify tradable call and put option
contracts. Therefore, the upshot from these considerations is that there is scope for embedded options to be considered within the sphere of Islamic finance. The *modus operandi* of the provisions for embedded options in *sukuk* structures must be formulated to be specifically tailored for the purposes of Islamic finance. Instead of tying to interest-rate movements that are typical of conventional bonds, *sukuk* options can be related to the value of the underlying assets and their continued viability and profitability with respect to existing economic conditions.

**Embedded Options as a Risk Management Tool**

Conventional investors have a wide range of financial instruments to select from through which to construct different investment strategies. Bonds with embedded options are one of a myriad of such instruments. Neftci and Santos (2003) identify three opportunities to expand the scope for analyzing embedded bond options. First, these bonds can be evaluated for their price-stabilizing properties. Second, they can be implemented in replicating interest-rate derivative markets. Finally, embedded option bonds traditionally have been popular among private-sector issuers in developed markets and less so among governments of both developed and emerging markets. Their use by governments can be warranted by the bonds’ accomplishments in private-sector issuances.

The price-stabilizing properties identified by Merton (1995) and Neftci and Santos (2003) can be implemented to reap the convexity gains of trading in highly volatile emerging markets. It is against the government’s interests if a puttable *sukuk* certificate is exercised. Thus, another advantage of puttable structures is that after the issuance of such certificates the government will ensure that their economic position is sound so as to be able to honor future commitments in the event that such a put option is exercised. However, puttable and callable structures inherit the possibility that traders of such certificates will try to exploit the price volatility of the underlying bond so as to increase their likelihood of exercising the options.

Previously, we introduced the structure of zero-coupon *sukuk* as a *Shariah*-compatible debt finance instrument. Unlike traditional zero-coupons, the limitation of the zero-coupon *sukuk* is that these are not tradable in Islamic secondary markets. Consequently, these instruments face serious liquidity issues and cannot be adjusted to the variations in market conditions such as prices, interest rates, and exchange rates. Hence, investors in these assets are exposed to serious market risks. Unless these market risks are mitigated efficiently, the *sukuk* markets will face stark challenges in competing with traditional bond markets.
The impending issue is how to manage these market risks inherent in the zero-coupon sukuk. In conventional financial markets, embedded call and put option features of bonds as well as fixed-floating-rate swaps play an important role in mitigating market risks of debt instruments in two important respects. First, these ensure a wider flexibility of financial instruments to market conditions and, hence, improve liquidity of assets by enhancing the prospects of repricing from the perspective of the issuing companies. The ability of an asset to reprice facilitates its protection against price risks. Second, investors obtain a safeguard against risks when they purchase any of these bonds. If the market price of the issuer’s stock grows, the value of the embedded convertible bond also increases. If the market price of the stock goes down, owners of the convertibles lose nothing, as the downsides of these assets are protected by the debts.

**Islamic Embedded Options**

Shariah guidelines do not allow the sale of debts but they allow the exchange of debts for real assets, goods, and services (Usmani, 2002, pp. 18–19). Thus, the opportunity of an exchange of debts against real assets and usufructs can be added to the debt certificates as an embedded option for the settlement of debts. Practically, the enterprise that would implement the funds would write the embedded option. Such an option would not be binding on the financier but, if utilized, the user of the funds is bound by the promise.

Suppose that a firm needs funds for the construction of a new apartment complex. A financier provides funding for construction on the basis of *istikna* at a 6% markup. Also, assume that the total amount of debts amounts to $100 million. These can then be divided into one million zero-coupon sukuk of $100 each. A zero-coupon certificate will accordingly represent $94 of the principal amount and $6 of the markup. Suppose the zero-coupons are issued for ten years.

This financial asset that is a debt has no Islamic secondary market. The zero-coupon needs to be kept for ten years before it can be cashed for $100. Hence, this financial asset is bundled with a number of financial risks such as liquidity risks, reinvestment risks due to the highly illiquid nature of the issued certificates, credit risks due to the long term to maturity, interest-rate risks, and foreign exchange risks.

An embedded option will interestingly transform the risk scenario of this zero-coupon sukuk certificate. Suppose the constructor writes an option on the certificate that if the holders of the certificate wish,
commencing in the second year (the completion of the construction), the holders can purchase apartments or acquire apartments on leases utilizing their zero-coupons. For example, the rent of an apartment of this building may be $3,000 per year. An investor holding zero-coupons worth $3,000 can acquire an apartment on a one-year rent after two years instead of waiting for ten years to cash the zero-coupons.

It should be noted that the embedded feature in this case is a call option on the new assets of the construction company. This call option cannot be detached and sold independently. Therefore, no derivative is created.

However, the embedded call option alters the nature of all the above risks that were previously bundled with the zero-coupons. The downside of the investments is, by default, protected by the fixed markup of 6%. Additionally, the entire nature of the certificates changes depending on the performance of the new construction. These become more attractive, as anyone holding zero-coupons will benefit from the call option. The zero-coupons can easily be liquidated at their face value. Once the call option is utilized, the interest-rate risk, reinvestment risk, credit risk, and exchange-rate risk are all isolated. Indeed, the financial asset is transformed into a real asset with different risk characteristics.

The embedded options can be additional with most Islamic financial contracts like leasing, installment sale, and salam contracts.

The zero-coupon holders may be given the option to exchange their certificate for a suitable amount of output of the company. This is contingent on the nature of the company and output or on the common stocks of the company, if the company or its subsidiaries are listed.

The certificate holders can put back the certificate and rescind from the contract during a specified time period prior to maturity and the company can call back the certificate during a specified time period prior to maturity.

Floating- to Fixed-Rate Swaps of Sukuk
A swap is an exchange of liabilities and obligations. The issue of the permissibility of swaps within the realm of Shariah has not been addressed thus far.
Previously, we described the floating rate sukuk (FRS) and the fixed-rate zero-coupon embedded sukuk (ZCES) based on leasing and istisna transactions, respectively. We know that the FRSs represent ownership in rented assets and/or of usufructs of assets. They are, thus, tradable in secondary markets. The ZCESs, on the other hand, are debt instruments that cannot be traded on secondary markets. However, the ZCESs are exchangeable with real assets, goods, services, and stocks of companies. Hence, the ZCESs are exchangeable with the FRSs given that they are of identical face values. If the face values of the FRSs and ZCESs are not identical, the discrepancies will have to be adjusted by cash payments. For example, an FRS with face value of $100 is exchangeable with a ZCES worth $105 under the condition that the additional $5 is adjusted by cash payments. Accordingly, this can establish a basis for a Shariah-compliant fixed- and floating-rate swap.

**CONCLUSION**

In this research, we discussed and analyzed a number of issues related to the evolution, underlying principles, structures, risks, and competitiveness of sukuk as Shariah-compliant substitutes to traditional financial assets. It is expected that sukuk will encourage many Muslims worldwide to participate in financial markets and, thus, will be instrumental in expanding and deepening these markets, particularly in emerging countries. There are other benefits of sukuk for the economies and financial markets such as heightened discipline and increased financial stability.

*Sukuk* are an indispensable vehicle for resource mobilization, whether in the public or private sector. Through Shariah-compatible financial engineering, sukuk can also become highly competitive in the market and accessible to the general public as an investment opportunity. In the absence of such a stable-income, Shariah-compatible channel for investment, the public has on one hand no incentive to save and on the other hand no possibility to invest.

Investors in conventional markets have also garnered the positive effects of swaps in differing interest rates, exchange rates, and between floating and fixed rates. The emergence of sukuk certificates as mechanisms of liquidity management presents a novel asset-backed securities structure that can set the foundation for supporting risk-management derivative instruments. Our discussion centered on the viability of a swap between floating-rate sukuk (FRS) and fixed-rate zero-coupon-embedded sukuk (ZCES).
Sukuk markets will only continue to grow and they have generated the first truly global convergence between conventional finance and Islamic finance. A greater pool of investors is attracted to this component of Islamic finance because of the relative similarity between conventional fixed-income securities and sukuk certificates. Adequate risk management techniques will foster this growth and enable the satisfaction of a greater variety of investment appetites. The early success of sovereign sukuk issues has encouraged corporate placements to the extent that corporate issues now comprise over 90% of the total volume of global sukuk issuances. To Islamic institutions, sukuk provides for enhanced liquidity and balance-sheet mechanisms. Previously untapped funds are now mobilized. For conventional investors, sukuk certificates are another avenue to reap global diversification benefits and recycle previously idle Islamic assets and funds. Moving forward, the challenge for the industry lies in the development of efficient secondary markets for sukuk certificates to support the growth in primary issues.”

In this study, we made an effort to identify the risks underlying sukuk structures and suggest some possible methods of mitigating such risks. Indeed, the subject is an emerging one and offers rich potential for further research.

REFERENCES