

الجامعة
البريطانية في
دبي



The
British University
in Dubai

How risky sukuk are: comparative analysis of risks associated with sukuk and conventional bonds

تتمثل خطورة الصكوك في التحليل المقارن بين بالصكوك والسندات
التقليدية

**By
Zhamal K Nanaeva**

Dissertation submitted in partial fulfillment of
the degree of MSc in Finance and Banking

Faculty of Business

Dissertation Supervisor
Dr Dayanand Pandey

May 2010

Abstract

Recent issues of Islamic bonds were “welcomed” with broad criticism, both by Islamic scholars and conventional investors. Presented paper attempts to analyze sukuk-associated risks and problems, and review their competitiveness in the capital market. In doing so, it compares sukuk with its conventional counterparts and conducts empirical analysis of the Value-at-Risk of both instruments in order to present potential sukuk investors with complete picture.

Table of contest:

Acronyms

I. Introduction

1.1 Principles of Islamic finance	6
1.2 Overview of Islamic financial market	8
1.3 Sukuk: definition and structure	9
1.4 Modes of sukuk issues	12
1.5 Objectives and outline of research paper	14

II. Theoretical aspects

2.1 Overview of debt market	16
2.1.1 Bond market overview	16
2.1.2 Sukuk market overview	18
2.2 Risk and challenges of sukuk market	21
2.2.1 Bond associated risks	21
2.2.2 Sukuk associated risks	23
2.2.2.1 Rate of return risk	23
2.2.2.2 Risk of default	25
2.2.2.3 Foreign exchange risk	27
2.2.2.4 Shariah compliance risk	27
2.2.2.5 Liquidity risk	29
2.2.2.6 Asset related risk	31
2.2.2.7 Legislative risk	31
2.2.2.8 Regulatory risk	32
2.2.2.9 Staff related risk	34
2.2.2.10 Other sukuk related problems	35
2.3 Managing sukuk associated risks	36

III. Empirical analysis

3.1 Methodology	39
3.2 Data	44

3.3 Calculations	48
3.4 Results	50
IV. Conclusion	54
Appendices	
Bibliography	

Acronyms

AAOIFI	Accounting and Auditing Organization for Islamic Financial Institutions
BIS	Bank for International Settlements
DIFC	Dubai International Financial Center
GCC	Gulf Cooperation Council
IFC	International Finance Corporation
IFI	Islamic Financial Institution
IFSB	Islamic Financial Services Board
LIBOR	London Interbank Offered Rate
MENA	Middle East and North Africa
OIC	Organization of the Islamic Conference
VaR	Value-at-Risk

I. Introduction

2008 and 2009 were difficult years for the Islamic capital markets. In October 2008, \$167 million East Cameron Gas Sukuk filed for bankruptcy. Later, in May 2009, Dar Al Kuwait failed to meet its obligation on \$100 million sukuk. Saudi Arabia's Saad Group is another example of failing to meet sukuk payments (June 2009).

The above mentioned defaults as well as recent Nakheel troubles in sukuk repayments generated a new wave of discussions on Islamic finance. A lot of questions were raised about robustness of Islamic finance system in general and sukuk market in particular.

1.1 Principles of Islamic finance

Islamic finance is governed by the principles of Shariah as defined in Quran and Sunnah. Its main doctrine is justice and equity for all parties involved in a transaction. The key principles are the prohibition of Riba (interest) and avoidance of Gharar (excessive uncertainty and/or ambiguity in the contract) as well as Maisir (gambling). Islamic bank's operations should not be involved in any Haram (forbidden for Muslim) activity, such as production of alcohol, gambling industry, production of products containing pork. All transactions of Islamic banks should be backed by tangible assets. All profits in the industry should be gained through direct participation in asset performance. Profits can occur only if investment generates income and it cannot be guaranteed in advance.

Islamic finance transactions are based on set of contracts. Main modes of Islamic finance, *Mudarabah* and *Musharakah*, are based on principles of profit and loss sharing (PLS). *Mudarabah* is the trust contract, when one of the partners provides capital and another provides managerial skills. The profits are shared at predetermined rate, while the losses are covered by capital provider. Deposits in Islamic banks are generally based on *Mudarabah* principles.

Musharakah contract is the analogy of conventional partnership, when each partner provides a capital and obtains managerial rights in proportion with his share. The profits

of the project are divided among the partners at predetermined rate, while losses are shared proportionally to the initial capital contribution.

Murabahah, *Ijarah*, *Istisnaa* and *Salam* are other instruments of Islamic banking. These operations are closer to conventional banking instruments and are based on mark-up principle. In case of *Murabahah* (analogy of consumer loan in conventional bank), the bank buys an asset and sells it to customer with a premium. Typically, repayment for asset is deferred and is made in installments. This mode of financing remains the most popular among IFIs (Ahmed 2003).

In case of *Ijarah* the bank leases to the client an asset, which remains in the bank's possession until the end of the contract. The lessee can buy an asset at the end of the leasing period at its residual value.

Istisnaa is the contract to fund manufacturing projects. The bank usually enters into parallel *istisnaa* agreement with contractor, who will build the project. Repayments are made to the bank by the client on deferred basis and in installments.

Salam is a mode of financing typically used for commodity production. The bank pays today for the future delivery of commodity. The price paid today is usually lower than expected price at the time of delivery. Unlike conventional forward contract, *Salam* requires immediate payment at the time of signing the contract. It includes several other conditions in order to avoid excessive uncertainty.

Istisnaa, *Murabahah* and *Salam* certificates are usually non-tradable due to Shariah prohibition of debt trading.

Table 1 below provides a typical balance sheet of an Islamic bank.

Table 1- Bank Balance Sheet ¹

Assets	Liabilities
Based on maturity profile	
Short-term trade finance (cash, murabahah, salaam)	Demand deposits (amanah)
Medium-term investments (ijarah, istisnah)	Investment accounts (mudarabah)
Long-term partnerships (musharakah)	Special investment accounts (mudar., mush.)
Fee-based services (joalah, kifalah, and so forth)	Reserves
Non-banking assets (property)	Equity capital

1.2 Overview of Islamic financial market

Islamic finance, in spite of its relatively short modern history, is a fast growing industry. Since the mid 70's, when the first Islamic bank was launched in Dubai, the number of IFIs has mushroomed to more than 300 in 51 countries. The rate of growth is impressive - 20-30% a year. Research by McKinsey and Company suggested that assets of IFIs will exceed US\$1 trillion by year 2010. Ernst & Young estimated this number to exceed US\$2 trillion².

There are several factors behind robust growth of Islamic financial sector:

- First and foremost it is the fast growing Muslim population combined with increased wealth of some Muslim nations.
- Muslim identity has risen significantly since the last century when many Muslim-majority nations received their independence. 9/11 followed by the “war on terror” forced many Muslim investors to divest from the western markets.
- Following increased demand for Islamic products, governments in some countries (e.g. Malaysia) started to encourage development of Islamic financial markets through adopting the set of regulation and tax incentives.
- Recent crisis highlighted the greater resilience of Islamic banks to the aftermaths of financial turmoil, mainly due to their limited exposure towards structured

¹ Greuning H., Iqbal Z., (2008) (p.19)

² Morgan Stanley report, 2008 (pp.01 and 3)

products and requirement to back-up their banking transactions with tangible asset.

- Growing number of Western governments and financial institutions turn to Islamic financial instruments as a source of raising capital and diversification.

In spite of the rapid growth and development, share of Islamic banks in total banking industry remains very low, even in Muslim countries. According to Morgan Stanley, only 3 countries (Saudi Arabia, Qatar and Kuwait) have a share of Islamic banks greater than 20%. In Indonesia and Pakistan this number is less than 2%³. This fact speaks both about significant shortcomings in the sector's development as well as opportunities for its further growth.

1.3 Sukuk: definition and structure

According to IMF, sukuk is the most popular modern Islamic financial instrument⁴. It is also called an Islamic bond, but this definition requires additional explanation of key differences between the two products.

Conventional bond is a debt obligation issued by the sovereign or corporation in order to obtain financial resources. The issuer is committed to pay back a principal amount upon maturity of the bond plus periodic interest payments (coupons). Coupon payment can be fixed or floating.

Due to the bond issuance, the borrower obtains direct access to the market and avoids higher interest payments to the financial intermediaries. Bonds are considered to be safer investments compared with other modes of financing such as stocks. In the period of crisis, when banking loans became expensive and more complicated sources of funding, growing number of corporations seek bond issuance. According to the Financial Times, US corporations made a "dramatic shift" in their financing preferences. There is a sharp

³ Morgan Stanley report, 2008. (p. 4)

⁴ Jobst A., Kunzel P., Mills P., Sy A., (2008)

increase in long-term bond issuance. \$900 billion was raised in the capital markets in 2008 compared with \$474 billion through bank loans⁵.

Standard structured bond is a fixed-coupon security, delivering its periodic payments on announced earlier dates and principal at the end of maturity period, without any embedded option. Besides them there is vast number of non-standard bonds. The most popular are strips, saving bonds, callable bonds, floating-rate notes, and inflation-indexed bonds (Martellini 2005). For the purpose of comparison, current paper concentrates on the standard structured bonds.

Conventional bonds are prohibited in Islamic finance due to the interest they carry and prohibition of debt trading.

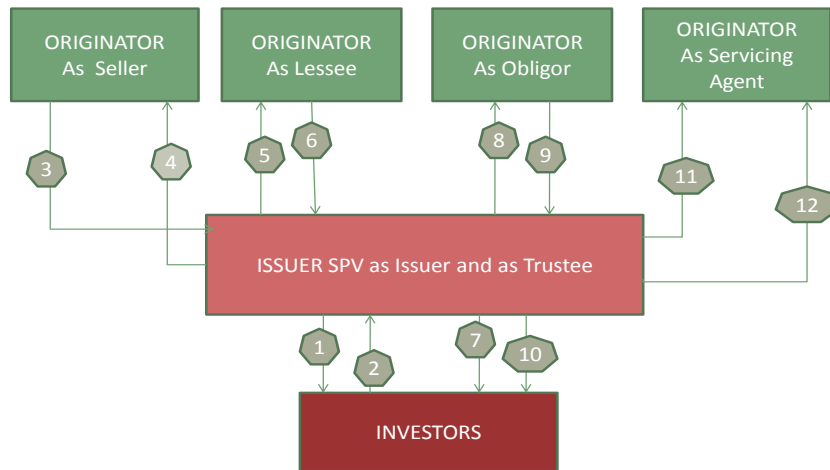
Sukuk can resemble conventional bonds by some of its features, but it has different underlying structure and provision. It is the trust certificate, which gives its holder an undivided proportion of ownership in the underlying project/asset and right to receive cash flows from this underlying. Returns on sukuk derive either from performance of an underlying asset or contractual agreement based on this asset. According to Wilson (2005) main principles underlying sukuk issuance can be defined as follows:

- all rights and obligation should be clearly defined ;
- the income from sukuk should be related to the project, which was financed by this issue;
- sukuk should be backed by a real asset.

Sukuk are issued through the Special Purpose Vehicle (SPV), which serves as an obligor of the sukuk issue. Return on sukuk should be calculated using expectation of profit from the project, rather than based on market interest rate. The parties, involved in sukuk issuance, include originator, lead manager, lawyers, SPV, investors, credit enhancers, rating agencies, trustee, auditors, regulators, stock exchange.

⁵ Van Duyn (2009)

Sukuk structure can be reviewed in case of sukuk *Ijarah* -- most popular and least arguable mode of Islamic bonds. The following scheme is based on the structure presented in the DIFC Sukuk Guide:



1. SPV issues sukuk
2. Investors purchase sukuk from SPV. SPV forms a Trust and act as a Trustee on behalf of Investors.
3. Originator enters to the purchase agreement with SPV. SPV purchase an asset from Originator.
4. SPV as a Trustee pays a purchased amount.
5. SPV leases asset back to the Trustee under *ijarah* (lease) agreement for the period defined by the maturity of sukuk.
6. Originator as a Lessee makes regular rental payments to the SPV, which are equal to the payments on sukuk.
7. SPV makes regular payments on sukuk to the Investors.
8. Upon default or maturity of sukuk SPV sells asset back to the Originator at the Exercised price.
9. Originator as an Obligor makes payment to the SPV.
10. SPV pays Dissolution Amount to Investors.

11. – 12. SPV and Originator enter into a service agency agreement in order to define certain obligations of the parties under the leasing agreement.

Each sukuk issuance, including sukuk *Ijarah*, should hold a list of requirements, including the conditions and ownership of the subject of *ijarah*, rental period and rental rates, liabilities of using the asset, procedures in case of default.

There are 4 types of sukuk structure:

- i. Debt-based sukuk is based on *Murabahah*, *Ijaraa* or *Istisnaa* contracts. This type of sukuk highly resembles conventional bonds. Unless the underlying asset is taken as collateral, rating of these bonds should be based on credit rating of an obligor.
- ii. Asset-based sukuk, in this case sukuk holder has some claims on assets, which were used to facilitate sukuk issuance. Rating of sukuk should be based on the credit rating of the issuer.
- iii. Project-based sukuk is a new form of sukuk structure, using real projects as a base. Sukuk holder gets paid according to the profitability of the project. In this case, rating of sukuk should be based more on risks of the project, rather than rating of the obligor.
- iv. Asset-backed sukuk is the type of sukuk where all payments are solely based on performance of an asset. Rating of such sukuk should be based on the rating of the back asset.

1.4 Modes of sukuk issues

As mentioned earlier, *Ijarah* is the most popular mode of sukuk issuance. Since *Ijarah* contract has a pre-determined time period and regular rent payments, it is very convenient to cover sukuk issuance. It remains the main type of sukuk since 2008 (33% of the total issues by value)⁶. *Ijarah* sukuk represents undivided ownership in leased assets. *Ijarah* sukuk can be traded freely in the market. There are different types of

⁶ Zawya, Collaborative Sukuk Report, 2009, p. 80

ijarah sukuk: ownership of the leased asset, ownership of usufruct of the asset, ownership of the services.

In case when underlying asset cannot be identified precisely, sukuk *Mudarabah* or *Musharakah* can be used. With *Mudarabah* sukuk each investor represents a partner under *Mudarabah* agreement. Returns of sukuk will represent predetermined ratio of profit divided between capital providers (sukuk holders) and management skill provider (originator of sukuk issue).

Until 2008, Sukuk *Musharakah* was the most popular mode of sukuk issuance. There are 2 types of *Musharakah* contracts, which are commonly used for the purpose of sukuk issuance: *Shirkat Al-Aqd* (business plan musharakah) and *Shirkat Al-Melk* (co-ownership musharakah). This sukuk structure represents partnership agreement between investors (sukuk holders) and originator of sukuk issue. *Musharakah* agreement is capable to produce regular payment during the life of the project, making it suitable for the sukuk issuance.

Under *Murabahah* sukuk conditions investors own *Murabahah* commodity. Deferred payments from the originator are distributed among investors as sukuk payments. This type of sukuk cannot be traded at the secondary market as it presents debt receivables.

Salam sukuk holders are the owners of *salam* goods, while originator of sukuk is a seller of *salam* goods. There is a controversial discussion on trading of *salam* sukuk. Some scholars allow selling *Salam* certificates as long as their new selling price does not exceed the original price⁷. Many argue that the contract cannot be traded since there is no existing commodity behind it⁸. Moreover, if *Salam* involves food products, re-selling of the contract can be considered as a speculation. Although there are some cases of sukuk *Salam* issuance, this mode remains largely unpopular.

Istisnaa sukuk also represents debt receivable, due to fact that underlying asset does not exist at the time of issuing certificates. IFSB's 2005 standards allow trading of *Istisnaa* sukuk, considering its underlying asset as a "work-in-progress inventory", rather than a

⁷ Islahi, A. (1988), pp.75-102

⁸ Homoud S., (1997), p. 223.

financial asset. But most of the scholars agree that *Istisnaa* sukuk represents a debt obligation and, therefore, it cannot be traded at the secondary market.

Other modes of sukuk issuance include hybrid sukuk, where different modes of Islamic financing are combined; sukuk *Muzara'a*, sukuk *Musaqa*, sukuk *Mugarasa* (please refer to AAOIFI “Exposure draft on Sahriah standard No 18”, 2002 for further details).

1.5 Objectives and outline of research paper

The main purpose of this paper is to challenge the skepticism towards Islamic bonds.

While there was a number of empirical research comparing the profitability of Islamic and conventional banks, sukuk area remains largely uncovered. The purpose of this paper is two-fold: first, the research defines sukuk-associated risks; second, this paper attempts to provide an empirical prove that sukuk are not riskier than conventional bonds. Considering that bond market is a familiar subject, this paper mainly focuses on sukuk market. It presents characteristics of sukuk, their risks and challenges in light of recent defaults and scholars’ criticism.

This paper consists of two parts. Part I presents a theoretical aspect of sukuk-associated risks:

- It provides a general information and data on sukuk and bond market development, examines existing literature on sukuk, and focuses in the areas of risk and challenges associated with sukuk.
- In addition, this part attempts to review the criticism of many sukuk issues, which followed Usmani’s (2008) comments and recent defaults.
- It defines risks associated with sukuk in light of their comparability with conventional bonds and offers a recommendation on how to improve sukuk market.
- This part should provide investors with complete picture of possible uncertainties associated with sukuk in order to facilitate their investment decisions. While there are some observations of bond risks, they are given

mostly for the comparative purposes, assuming that this area is broadly covered in existing academic literature and does not require additional attention.

The second part of the paper attempts to measure and analyze empirically sukuk associated risks. Methodology of the empirical analysis is presented in Chapter 3.1. Although nature of sukuk and conventional bonds are significantly different, we have to deal with sukuk risks in a way that is similar to conventional bonds, which is due to absence of any empirical research in sukuk area. This chapter revises existing academic literature on quantitative bond analysis. It discusses different methods of bond comparative analysis and ways of using VaR method for the purpose of risk appraisal. One of the main reasons behind choosing VaR as a measure of risk is its importance in light of new Basel II regulations adopted by many countries, including Middle East and other Muslim countries. In order to define the level of risk of holding the Islamic securities for a financial institution, risks of international sukuk and Eurobonds are examined and compared using VaR method. In doing so, the paper uses Monte Carlo simulation method.

Data analysis is presented in Chapter 3.2; calculations are described in Chapter 3.3. Results of the empirical analysis are presented and discussed in Chapter 3.4.

Chapter IV contains conclusion and future perspectives of sukuk market.

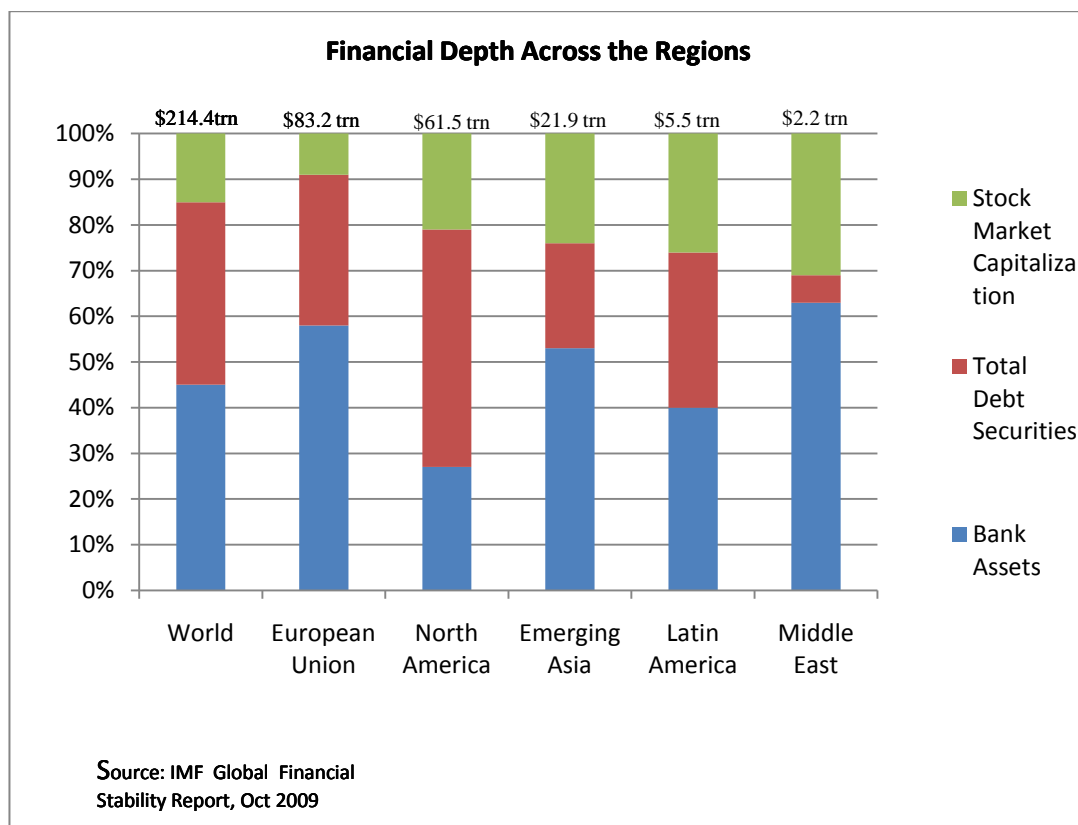
II. Theoretical aspects

2.1 Overview of debt market

2.1.1 Bond market overview

Being a mature financial instrument, bond, however does not get proper development in many regions of the world, including MENA and GCC. According to the IMF survey (see the graph below), banking loans remain the main source of borrowing in the Middle East, with debt securitization of only 5.6% in 2009, compared with 38.9% in the World and more than 52% in North America.

Graph 1 – Global Financial Depth



⁹ DIFC Economic Note on Bonds, 2009, p.6

The reasons behind slow development of the bond market in the Middle East can be explained by recent easy access to the capital due to the high oil revenues in most of the Middle East countries. However, current economic crises significantly reduced the possible sources of financing, increasing necessity of bond market development.

According to BIS the total amount of international bonds and notes outstanding in the world has reached US\$26,078 billion by December 2009¹⁰, making it more than 200 times larger than current sukuk market (see the sukuk market overview below). More than 90% of this amount was issued in developed countries. 32% of all international bonds issues use floating rate, 66% -- fixed coupon rate. Financial institutions has the largest share in total international bonds issues – 77%, corporates occupies 12%, governments – 9%, remaining 3% are issued by international organizations.

UAE is the most active bond issuer in the Middle East and Africa. It shares 40.6% of the total bond market, followed by South Africa (19.2%) and Qatar (8.4%)¹¹.

Post-crisis bond market of MENA region is dominated by sovereign issuers. According to the DIFC Notes (2009), 79% of all bonds were issued by sovereigns in 2009. This fact can be explained by the relatively more stable nature of government-backed securities, compared with corporates.

Combined sukuk and bond market of Gulf countries represents the following structure (%of the total issued amount):

- sovereign conventional bonds - 72.4%;
- conventional corporate bonds – 21.6%;
- sovereign sukuk – 5.81%, and
- corporate
- sukuk – only 0.25% of the total market¹².

GCC bond market is still under development, with low activity on the secondary market, new development of CDS curves, absence of variability in maturity of securities,

¹⁰ BIS Statistics, 2009

¹¹ DIFC Economic Note on Bonds, 2009, p.7

¹² DIFC Economic Note on Bonds, 2009, p. 10

absence of standards in features of the issues. In general, conventional bond market in Gulf countries faces the same problems as sukuk markets worldwide.

2.1.2 Sukuk market overview

Compared with bonds, sukuk has a short history. The first sovereign sukuk was issued in Malaysia in 1995¹³. Since then, Malaysia remains an active player in Islamic capital market (46% of the total value of issues¹⁴). Although started later, GCC countries have reached Malaysia in terms of the value of issuance (49% of the total issue value by September 2009). Real growth of sukuk market started in 2003 when AAOIFI had issued a standard on “Investment sukuk”. According to the Ernst & Young, the period between December 1996 and September 2009 witnessed 747 sukuk issues with a total value of US\$106.6 billion¹⁵.

Ernst & Young analysts define 3 phases in sukuk development. The first phase, when issues were low, covers the period from 1996 to 2001, also known as the era of sukuk “birth”. 2002 to 2007 witnessed the biggest volume in sukuk issuance, both in number and size. This period coincided with the rapid growth of the oil prices and economic boom in GCC countries. Period since 2007 reflects slowdown in the sukuk market, due to global financial crisis and problems with Shariah compliance of sukuk issues.

With 47.1% of the issues having maturity of 1 to 3 years, sukuk remains a short-term financing instrument. Most of sukuk have a fixed-term pricing, while around 289 sukuk have unknown pricing formation¹⁶.

2008 was a very difficult year for the world economy and for sukuk market. According to Zawaya, sukuk issuance dropped by 55% to US\$15.4 billion in 2008. Sukuk issuance in the first quarter of 2009 declined by 33% compared with the same period of 2008¹⁷. In February 2009 HSBC/DIFX sukuk index spreads over LIBOR exceeded 1,200 basis points – the highest number in the history of sukuk¹⁸. 2009 demonstrates decrease in

¹³Zawaya, Collaborative Sukuk Report, 2009

¹⁴Zawaya, Collaborative Sukuk Report, 2009, p. 80

¹⁵Zawaya, Collaborative Sukuk Report, 2009, p. 80

¹⁶Zawaya, Collaborative Sukuk Report, 2009, p.88

¹⁷Zawaya, Collaborative Sukuk Report, 2009 (p. 18)

¹⁸ Cox (2009)

number of sukuk issues in GCC countries, while conventional bond market shows significant increase (84.4 issues in 2009 compared to 12.8 issues in 2008 and 31.4 – in 2006)¹⁹.

The following tables cover a period of 1996-September 2009 and list the largest issues of sukuk:

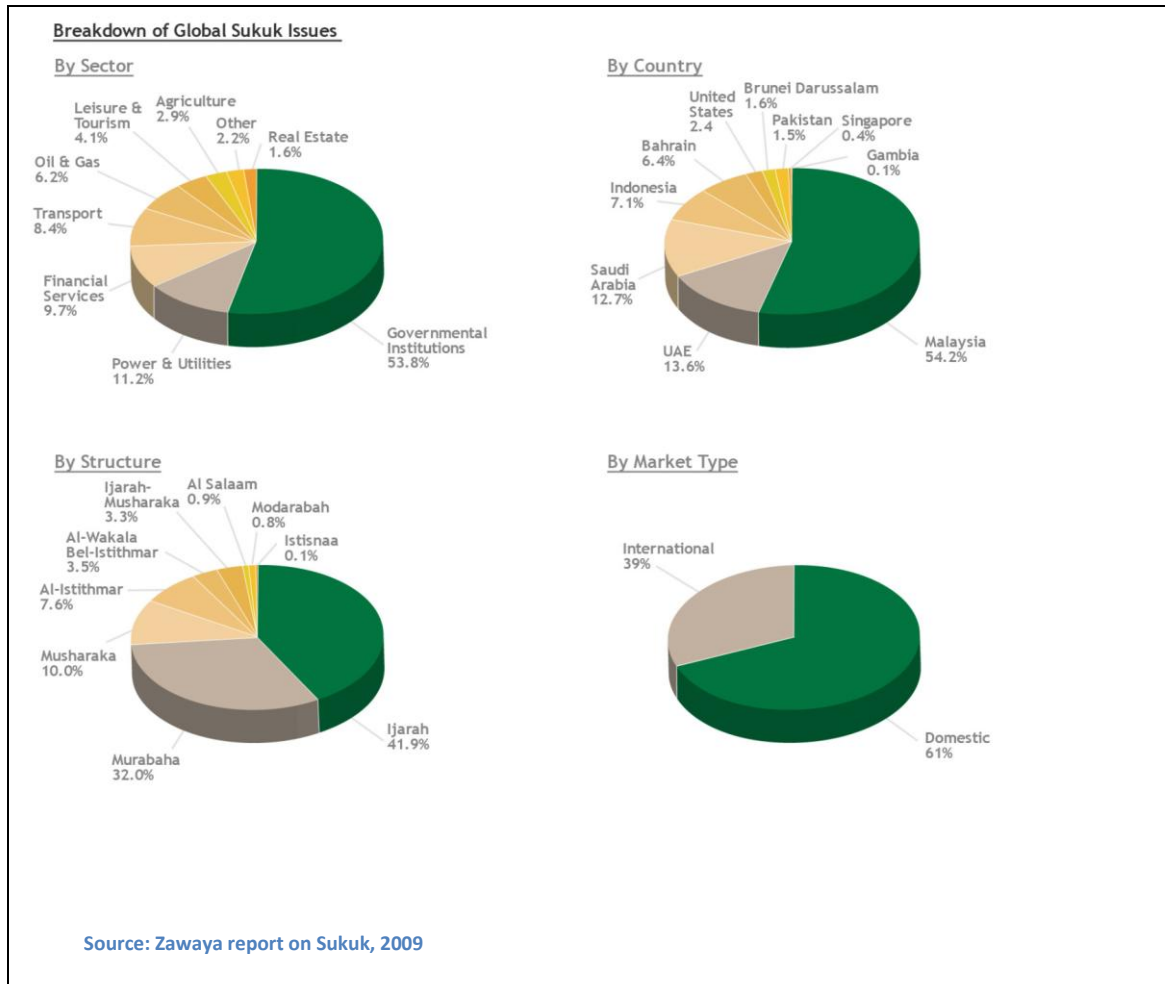
Table 2; Table 3 – Sukuk Largest Issues

Largest Issues (Single)(in US\$ billion)		Largest Issuers (by value)(in US\$ billions)	
Binariang GSMS dn. Berhad	3.56	Central Bank of Bahrain	6.58
Nakheel Development Limited	3.52	Nakheel Development Limited	5.25
Ports Customs and Free Zone Corporation	3.50	Binariang GSM Sdn. Berhad	4.55
Aldar Properties	2.53	Khazanah Nasional Berhad	4.59
Saudi Arabia Basic Industries Company	2.10	Cagamas Berhad	4.32
RantauAbang Capital Berhad	2.06	Saudi Arabia Basic Industries Company	4.27
Jabal Ali Free Zone	2.04	Government of Malaysia	3.70
Cagamas Berhad	1.90	Projek Lebuhraya Utara-Selatan Berhad	3.65
Saudi Electricity Company	1.86	Aldar Properties	3.55
Petroleum Nasional (Petronas)	1.50	Saudi Electricity Company	3.20
Department of Civil Aviation (Dubai)	1.00	Government of UAE	1.99
Central Bank of Bahrain	0.75	Government of Indonesia	1.93
Bank Negara Malaysia	0.74	Islamic Development Bank	1.75
Government of Qatar	0.70	Government of Pakistan	1.40
Government of Indonesia	0.65	Syarikat Prasarana Negara Berhad (SPNB)	0.61

Source: Zawaya 2009

¹⁹ DIFC Economic Note on Bonds, 2009, p. 9

Graph 2 – Breakdown of Sukuk Issues



The above chart shows that sukuk market is dominated by the sovereign issuers (54% of the total market), followed by the energy sector issuers. Malaysia remains the most active player in the market, holding more than half of all sukuk issues. UAE is the second largest issuer of sukuk (13.6% of the market). The most popular mode of sukuk issuance is *Ijarah* (42% of all issues), followed by *Murabahah* (32%).

2.1 Risks and challenges of sukuk market

There are various definitions of risk in modern economic literature. If generalizing, one can determine risk as an uncertainty or variation around some average value (Schroeck 2002). Risk is usually measured as a standard deviation or variation of outcomes.

Islamic financial market is a relatively new subject of research. Academic literature has few examples of empirical comparison of Islamic banks with conventional financial institutions. In 2009 Al-Ajmi, Hussain and Al-Saleh conducted a research on the clients' preferences in choosing Islamic or conventional bank in Bahrain and the reasons behind their choices. Their research findings demonstrated that clients of Islamic banks were mostly motivated by religious and/or socio-economic factors, although general reputation and profitability of IFIs also played a role. Olson and Zoibi (2008) conducted a research on profitability of Islamic and conventional banks using accounting ratios. Their study demonstrated that while having similar accounting ratios, Islamic banks are more profitable, while conventional banks – more effective.

In spite of their rapid growth and increasing public attention, sukuk and Islamic capital markets are still under-researched and lack empirical analysis. This contributed to the confusion among the industry players and may well be among the reasons behind sukuk being bought at a premium higher than conventional bonds (IMF working paper, 2007).

2.2.1 Bond associated risks

Although bearing certain risks, bond is considered to be relatively safe financial instrument. The most common risks associated with bond issue are presented below:

Interest rate risk (risk of return): As a fixed-income instrument, bond yield has an inverse relation with interest rate movement. When market interest rates grow, bond price decreases and vice versa. The longer is the maturity of the bond, the higher is the potential of interest rate growth and, therefore, the higher is its interest rate risk.

Risk of default: There is a risk that the issuer would not be able to make regular payments (coupons) or to repay the principal amount. While some financial institutions

have dedicated departments which evaluate credibility of the bond issuers, most of the investors rely on rating agencies.

Downgrade risk: In case when the issuer is downgraded the bond price can drop significantly. Thus, investor, who is willing to trade bonds on the secondary market, bears downgrade risk. In this regard, one should mention the role of rating agencies in bond's price formation as well as their failure to react appropriately during the recent financial crisis. Some rating agencies were very slow to downgrade companies facing serious financial problems until they announced themselves bankrupt.

Inflation risk: Due to its fixed-income nature, the investor bears the risk that inflation can be higher than the coupon payment.

Liquidity risk: Bonds are considered to be less liquid instruments than stocks. Bond investors face the risk of not been able to trade their securities due to lack of potential buyers.

Foreign exchange risk: This risk can affect bond issued in a foreign currency (e.g. Eurobonds) when the unfavorable currency fluctuation can decrease the initial value of investments.

2.2.2 Sukuk associated risks

2.2.2.1 Rate of return risk (interest rate risk)

Rate of return risk for sukuk is similar to fixed- rate conventional bond's risk due to the fact that most of the modern sukuk issues have a fixed payment. Thus, when the market interest rate rises, sukuk value drops. The same is applicable for *the risk of reinvestment*: fixed-income sukuk bear this risk similar to the conventional debt certificates.

If sukuk is structured as appropriate Shariah-compliant instrument, when returns are calculated based on real profits from underlying asset, these types of risk can be significantly reduced or even avoided.

This point was addressed in famous fatwah issued by Usmani (2008). Sheikh Muhammad Taqi Usmani, Chairman of the Shariah Council of AAOIFI, is a leading scholar in the area of Islamic Finance. His recent criticism of modern sukuk issuance provoked confusion and instability in the Islamic capital market. According to this prominent scholar, most of sukuk issuances resemble conventional bonds to the extent that they do not comply with Shariah rulings and cannot be considered as Islamic instruments.

Conventional bondholders receive regular interest payments on their investments, which is determined as a percentage from the principal amount. According to Usmani (2008) sukuk structure cannot use fixed interest rate or market index, such as LIBOR, as a return for the initial sukuk investment. Rather, sukuk payments should reflect actual returns of underlying asset/s. Thus, when issuing sukuk, the manager can only announce expected returns on the project as well as the ratio of distribution of returns between sukuk holders and managers of sukuk. However, most of sukuk issues promise returns equal to the market interest rate in order to attract more investors.

The problems can arise when the actual returns on sukuk exceed the promised returns. Hassan Hussein (2008) mentions that in case when the actual returns exceed the expected ones, the manager can get a higher percentage of profits as a bonus for better performance. Usmani (2008) argues that such incentive should work only when the

actual returns exceed the expected return on the project. But in case of modern sukuk it will be a difference between actual return and market interest rate, which in no way reflects the performance of underlying asset. Thus, if current market interest rate is low, the managers may receive premiums even if they underperform. Again, in order to prevent such kind of “false incentives”, sukuk should promise returns based on actual expected performance of underlying asset and not on market interest rate. The other solution to this problem, as proposed by Usmani (2008), is to distribute any surplus among sukuk holders.

It is understandable that estimating the returns from underlying asset, as required by Shariah, may be complicated and inaccurate at the stage of sukuk issuance. This reinforces the importance of having the feasibility study of sukuk issuance. It should be done professionally and comprehensively, taking into account market conditions and expected risks. Again, some Shariah scholars argue that the manager is fully responsible for any failure of proposed project, while others highlight the responsibility of the manager only for initial capital invested by sukuk holders.

Extensive usage of conventional benchmarks, such as LIBOR, increases sukuk exposure to the *benchmark risk*. Interest rate or market index, such as LIBOR, can be used as a benchmark while preparing feasibility study or calculating rent fees. But according to Hassan Hussein (2008) and many other scholars, proper Islamic index should be developed in future as a benchmark for Islamic financial institutions. Discussion group on Islamic finance and banking on LinkedIn suggests using CPI as a possible benchmark until more appropriate Islamic index is established. Another participant on the same forum proposed to use GDP growth rate for the sovereign issues, since most of sovereign receipt and expenditures are linked to GDP. Inflation-adjusted indexes would help maintain real value of investments and their returns.

Development of the above-mentioned Islamic benchmark is one of the most important factors affecting further development of sukuk market. Currently, Islamic Development Bank facilitates creation and promotion of such benchmark for IFIs.

2.2.2.2 Risk of default

Due to fact that Shariah prohibits debt trading, any rescheduling of debt for higher markup is forbidden under sukuk. This prohibition makes *risk of default* higher for sukuk compared with conventional bonds, since sukuk issuers “would be more inclined to default” (Tariq 2007).

Moreover, while conventional bond represents a debt obligation, sukuk is a certificate of ownership, so in case of default sukuk holders have a very limited possibility to retrieve their initial investment. The managers of sukuk can bear responsibility for any sukuk default only within the limits of their control and capabilities. Therefore, in case if default occurs due to external factors, such as “force major” or global financial crisis, all losses under sukuk will be borne by sukuk holders. However, some issues of sukuk do not provide for legal ownership of underlying assets, but rather right of return, which is not Shariah-compliant (Usmani 2008). In the same way, some types of hybrid sukuk can be non-compliant with Shariah due to presence of debt-based instruments within their structure.

With regard to the risk of default, one should mention the question of guarantee of return of principal amount. Prior to the AAOIFI statement (2008), sukuk managers were promising to buy back underlying asset at the price equal to the face value of sukuk. It can also be done by the third party, the government for example. Some scholars think that such purchase undertaking can be permissible, and until recently sukuk Mudarabah and Musharakah were issued using this kind of guarantee. According to Usmani (2008) any guarantee of the principal amount is unlawful in Shariah, whether the originator of sukuk acts as mudarib (manager of the capital), wakalah (agent) or partner. AAOIFI statement has classified such type of guarantee as non-compliant with Shariah. Under the new statement, underlying sukuk assets should be bought at the end of sukuk life either by the third party or manager of sukuk at a market value of underlying asset. Thus, sukuk holders bear a market risk when underlying asset can be sold at a price lower than their initial investment.

Since there is no possibility to define the market value of underlying asset at the time of sukuk issuance, the set of procedures to define its fair market value can be agreed upon. The parties should also clarify the ways of defining the market value as well as procedures and valuation techniques. According to Hassan Hussein (2008) sukuk manager can pay the difference between the market value of underlying asset and face value of sukuk, if the loss was occurred due to the manager's poor performance. But then again the question is how to define the quality of sukuk management? What are the criteria of poor performance versus good one? Hassan Hussein (2008) mentioned the following actions as the manager's misconduct and reasons for him/her to compensate face value of sukuk to investors: embezzlement and mismanagement of the capital; negligence in protecting the capital; committing gross errors in taking investment decisions; breach of the terms of contract. All these reasons need further clarification in every individual case. The author claims that in situation when loss occurs due to circumstances beyond manager's control, investors (sukuk holders) bear a full risk of possibility to lose the face value of sukuk.

Credit risk assessment can be complicated by an absence of proper international rating of most of sukuk issues. Conventional bonds need to be rated by one of the major international rating agencies in order to obtain access to the financial markets. Sukuk issues are often lack this requirement. According to the Ernst & Young (2009) only half of all sukuk issues have been rated. Malaysian regulation requires rating of the new issues by the local agencies, while most of GCC issues remain unrated²⁰. Due to this fact, most of the recent issues were sovereign or quasi-sovereign. The government back-up was used as a guarantee and a substitute to adequate rating. These sovereign guarantees can explain the large size of recent issues in spite of the absence of issues' ratings.

The other problem with rating of sukuk is the absence of Islamic rating agencies. Today sukuk issues are rated by conventional rating agencies using conventional rating methodologies. This is done in spite of the fact that rating agencies are fully aware about the differences in structures of traditional and Islamic bonds (Al-Amine 2008). Such

²⁰Zawya, Collaborative Sukuk Report, 2009, p. 80

kind of attitude can lead to incorrect rating results. For example, when rating Sukuk, the rating agency evaluates the guarantor's credibility, rather than the risk of underlying asset (Al-Amine 2008). In light of recent AAOIFI statements relating to guarantees of sukuk, such rating can be highly inappropriate. An organization that deals with Islamic ratings - Islamic International Rating Agency, is established in Bahrain. It rates both credit risks and Shariah compliance of sukuk. At this stage, both investors and regulators should coordinate their efforts to enforce use of Islamic ratings as a necessary pre-requisite for sukuk issuance.

2.2.2.3 Foreign exchange risk

Foreign exchange rate risk is applicable to sukuk with an underlying asset denominated in one currency and sukuk certificates issued in another currency. As suggested by Tariq (2007) in this case exchange-rate fluctuations can lead to a loss by investor or issuer. Since sukuk became international financial instrument it is difficult to avoid this type of risk. In some issues, like IDB sukuk issue, originator can guarantee investors protection from foreign exchange risk (Tariq 2004). The originator of sukuk can avoid this risk, by using several currencies in their issues. Tariq (2004) brings an example of Chinese sukuk issue, where one part of sukuk was issued in US Dollars and the remaining – in Euro.

One should also mention that sukuk can be used as an instrument to manage foreign exchange risk. Sukuk helps to diversify investment portfolios of Islamic financial institutions and can be used by foreign investors as a hedging instrument to manage exchange rate risk when issued in a domestic currency.

2.2.2.4 Shariah compliance risk

Shariah compliance risk is a risk applicable only to Islamic instruments. It is described by Tariq (2007) as a risk of loss of asset value due to sukuk incompliance with Shariah principles. Each issue of sukuk should be approved by Shariah board as compliant to Islamic rulings. This type of risk became very important in light of recent criticism by some Shariah scholars about non-Islamic nature of most of the modern sukuk. Consequences of issuing financial instruments non-compliant with Shariah can be very

damaging to the reputation of issuer and may require extensive efforts to re-gain investors' confidence.

It is also worth mentioning that some Shariah scholars impede development of sukuk market. One of the problems with Shariah boards, as mentioned by Usmani (2008), is the fact that some scholars are active only at the first stage of sukuk structuring process. They issue fatwa on permissibility of issue in accordance with proposed structure and ignore remaining stages of sukuk performance. According to new AAOIFI standards (2008), Shariah boards should be active during all stages of sukuk operation, ensuring Shariah compliance of entire life span of sukuk.

Taking into account the fast growing sukuk market, Shariah scholars are often not prompt enough with their comments on new Islamic products. There are some sukuk issues that do not get appropriate attention from the OIC Fiqh Academy and AAOIFI. Here appears the situation when products are circulated in the market without proper Shariah approval. However, later some scholars start to criticize the issue, provoking uncertainty and confusion among investors and damaging general image of Islamic finance. This was the situation with Sheikh Taqi Usmani's comments on Shariah compliance of modern sukuk issues (2008). His comments as well as the AAOIFI standards (2008) on sukuk market, destabilized sukuk market, including investors and issuers. They were one of the reasons behind slowdown of sukuk issuance during the last 2 years.

Shariah law is based on Quran and Sunnah, but since not all situations are covered in these sources, some fatwas are built on *ijtihad* – personal reasoning. Thus, many scholars' comments are based on their personal abilities to generalize the situation and draw a conclusion. As a result, conclusions differ significantly from one Shariah board to another. Here we can also add the discrepancies between different schools of Islamic thought, resulting in approval of some Islamic products in one part of the world, and rejecting them elsewhere. This problem is particularly important in case of global issues of sukuk, when the capital market products should have access to the international markets. According to many finance experts, including Al-Amine (2008), the only way to resolve this problem is to activate functioning of such international organizations as

AAOIFI and OIC Fiqh Academy. The rapidly growing Islamic financial market requires convergence of opinion and ruling among Shariah scholars.

Moreover, there are no established standards in appointing members of Shariah boards. Limited number of experts, familiar both with Shariah ruling and financial principles, lead to an awkward situation when a scholar may sit in Shariah boards of several IFIs. In April 2010 Funds at Work has published a research based on analysis of more than 200 Shariah scholars in 300 companies from 24 countries. According to this document, top 10 Shariah scholars occupy 67% of all chairmanship positions, while top 2 scholars hold 21 chairmanship positions each; Sheikh Nedham Yacoubi holds 78 positions in various Shariah boards. Reputation of some Shariah boards has been damaged by the ease with which they can change their fatwas. As one of the bankers mentioned to the press, they develop conventional product and keep applying for the approval to different Shariah boards. Sooner or later they can find a board that can issue a necessary fatwah and product can be distributed as Islamic (Foster, 2009). El Diwani (cited in Foster 2009) mentioned that "...the most creative scholars are the one in the most demand". This kind of reputation of Shariah scholars is further damaging already fragile sukuk market.

2.2.2.5 Liquidity risk

Liquidity risk is vital for Islamic finance in general and sukuk in particular. IFIs have limited instruments to manage their liquidity, due to Shariah restriction on trade of debt and other securities. Short-term interbank lending as well as "last resort" lending from the Central bank are not available for Islamic banks due to prohibition of riba. While Malaysia has developed inter-bank lending based on profit-and-loss sharing, all other countries have no such instrument.

Conventional bond market, while more liquid than sukuk market, is still considered less liquid than equity market. Most of the trading in bond market is done "over-the-counter" rather than in organized exchanges. While traditional financial institutions have various instruments to manage their liquidity, sukuk remains one of very few options available to IFIs. Thus, development of appropriate secondary market is crucial for sukuk more

than for conventional bonds. First of all, secondary market progress is highly dependent on development of primary market. High demand for sukuk should meet appropriate supply. According to Saidi (2009) in order to develop liquid secondary market, governments should be more active in issuing sukuk with issues representing variety of maturity, types and risk-bearing. Good initiative in this field was presented by the government of Bahrain, which has issued three- and six-month maturity sukuk. Similar initiatives from other governments may stimulate development of the secondary market. Governments should also provide appropriate regulatory standards for transparent and sound secondary market with easy access for any potential investor.

On September, 2009 only 14% of total issuance of sukuk was listed on exchanges (Ernst & Young analysis 2009). The amount of sukuk actually traded is even lower, due to the preference of sukuk holders to keep papers until maturity. Some Shariah scholars do not approve trading of debt on the secondary market at a price different from its face value. Moreover, some modes of sukuk issuance, such as *istisnaa*, are forbidden from trading on the secondary market due to their debt-based nature. These are the main factors behind slow development of sukuk secondary market. Currently Indonesia stock exchange holds the largest number of listed sukuk issues; Nasdaq Dubai holds the biggest value of sukuk listings; Bahrain and London are competing to become centers of Islamic finance. Development of local and international financial markets in the Middle East and South-East Asia can promote further growth of sukuk secondary market. Introduction of Islamic Dow Jones Index can also be considered as a positive sign.

Most of sukuk issues have a short-term maturity, while Islamic financial institutions are in great need of long-term investment instruments. There is a serious mismatch between long-term loans, provided by Islamic banks, and their short-term assets, mainly through deposits. The same can be applied to the growing market of Islamic insurance, *takaful*, which also requires long-term investments. Sukuk with longer maturity can help resolve this problem. One of the reasons behind prevalence of short-term sukuk issues is the relatively new nature of Islamic banks. Most of IFIs have been established during the last few years. They are relatively small and cannot support large, long-term sukuk. The process can change as the banks grow stronger and more experienced.

2.2.2.6 Asset related risks

All sukuk issues should be backed by tangible assets, but there are some difficulties in identifying the appropriate underlying asset. The asset should meet Shariah requirements and be able to provide attractive returns. These principles can be difficult to apply in Non-Muslim societies, where differentiation between Haram (forbidden by Shariah rules) and Halal (permissible by Shariah rules) activities is often misunderstood and more complex than in countries with established Shariah principles. Until recently, the main underlying asset used for sukuk issuance was a real estate, but recent developments in the real estate market made such assets very unstable for underlying. Other types of underlying can be commodities or movable assets, e.g. aircraft and ships. As mentioned by Al-Amine (2008), number of assets that can be used as underlying is limited and the issuer of sukuk should wait until its maturity in order to use the same underlying asset for a new issue. In order to manage this problem, some innovative structures were implemented for the recent issues of ijarah sukuk. Under the new structure the originator of sukuk, while being a lessee of an asset, has an option to substitute part or entire pool of assets with another asset of similar value. This will allow the originator to reduce asset related risk and obtain additional resources by selling substitute assets, and use resources for the next phase of the project.

There is a risk of loss of an asset, which is minimal in case of sukuk ijarah, but can be significant in case of construction, as appeared during the last real estate market crisis.

2.2.2.7 Legislative risk

According to Khaleq and Grosby (cited in Zawya report 2009) one of the problems facing sukuk market is absence of proper legislative base, especially for cases of possible default. Therefore, sukuk, as a Shariah instrument, has to exist under non-Shariah compliant legislation. Hence, legal procedures following possible cases of default can be very confusing. The problem is how to document sukuk-related contracts so that they do not contradict both Shariah rulings as well as governing laws. Currently, most of the issues prefer to use Commonwealth law as a basis of sukuk contracts. There are two main reasons behind this choice: Commonwealth law is more established than

the local legislation in many countries and rating agencies prefer using it as a governing law (Al-Amine 2008). Thus, in order to obtain higher grading, sukuk issuers chose Commonwealth law as a basis for their documentation. Usually the contract states that the agreement is governed under the Commonwealth law as long as it does not contradict with Shariah rulings. But in case of disputes, parties should apply to the conventional court, which is not familiar with Shariah principles and cannot judge adequately. The bankruptcy of East Cameron Gaz Company, which has issued sukuk in 2006, had failed in Louisiana court. The court is still struggling to define the rights of sukuk holders and the question of assets' sale (O'Neill 2009). According to Al-Amine (2008), solution for the problem can be achieved through standardization of Islamic financial contracts. In the long run, proper internationally recognized Islamic commercial law should be created and implemented both at local as well international levels. And, finally, with development of sukuk market there will be more cases of default and/or disputes. Hence, more precedents would be created and more advanced legislative rulings and procedures would become.

Sukuk, being a Shariah-compliant instrument, have to operate not only in conventional legislative system, but also within conventional regulatory and financial systems. According to a survey conducted by a Task Group in 2006, most of the market professionals believe that IFIs can exist in conventional market. But there are great differences between Islamic and conventional systems, which are covered in the following Chapters. Such differences can only add to the instability of sukuk market and increase its riskiness. Therefore, additional regulations should be introduced by the governments in order to provide an adequate base for IFIs. Malaysia, which has developed regulations for IFIs, can be used as a benchmark.

2.2.2.8 Regulatory risk

Lack of standardized regulations governing the Islamic finance is a major impediment to further development of the whole market, including sukuk. Several international institutions have been established to produce the standards and regulations, including AAOIFI and IFSB. AAOIFI was registered in Bahrain in March 1991. Its objective is to prepare accounting, auditing and governmental standards for successful functioning of

IFIs. IFSB was established in Kuala Lumpur, Malaysia, in November 2002 with a purpose to develop international prudential and supervisory standards for IFIs.

Some market commentators mentioned that standardization may also have its negative consequences. According to the authors of the recent DIFC Sukuk guide, AAOIFI statement on modern sukuk issuance (2008) had a dramatic effect on development of Islamic bonds. AAOIFI's statement was issued in February 2008 following the criticism of sukuk issuance by Sheikh Usmani (2008).

The statement is based on 6 principles. It discusses sukuk tradability, responsibilities of sukuk managers, reserve accounts and their permissibility, purchase of assets under musharakah, mudarabah and wakalah structures, duties of Shariah scholars. Investors should be legal holders of an underlying asset and not holders of a nominal security. Investors cannot guarantee principal amount of sukuk by promising to buy an underlying asset at its face value. The asset can be bought back but only at its current market price, thus the face value of sukuk should not be secured. Investors cannot be offered a loan when earnings from an underlying asset fall below expected value. Issuer can create special reserve accounts to cover such unexpected falls. Responsibility of Shariah scholars should not be limited to issuing of fatwah at initial stage of structuring sukuk but also include proper supervision of all stages of sukuk issuance. All these requirements increase initial expenses for sukuk issuance and make the process more complicated. According to the DIFC Sukuk guide, during 2008, share of musharakah and mudarabah structured sukuk in the total issue had reduced by 83% and 68%, respectively. It claims that AAOIFI statement was the main reason behind these changes.

Another crucial aspect of regulation and standardization is importance of cooperation among different regulatory bodies. Although creation of proper Islamic financial regulatory bodies in every country with functioning IFIs (like in case of Malaysia) may be problematic, there is a need to establish a dedicated department within existing government structures. And, once the international standards relating to Islamic finance are properly developed, regulation at the local level will be much easier.

2.2.2.9 Staff related risk

There is a serious lack of specialists in the area of Islamic finance. Since sukuk circulate in conventional markets, such specialists should have a dual expertise in conventional instruments as well as basic Shariah rulings. There are opinions that since Islamic principles are very transparent and easy to understand, experts with knowledge of traditional market can be educated into Islamic finance experts. So far, according to the Ernst &Young report (2009), eight out of top ten sukuk arrangers were conventional banks or Islamic branches of conventional banks. This fact can be explained by the bigger size of conventional banks, their greater market experience and professional staff. All this factors help to build reputation of a financial institution. Islamic banks need further development both in terms of their asset size as well as education of their employees. According to the Ernst &Young only one Islamic bank can compete with well-established conventional banks in sukuk arrangements – Dubai Islamic Bank (see table below).

Table below lists leading sukuk arrangers during 1996 -September 2009 (Islamic banks are highlighted in green):

Table 3 – Leading Sukuk Arrangers

Lead Arranger	Number of Arrangements	Country
CIMB Investment Bank Berhard	88	Malaysia
HSBC Bank Middle East	77	UAE
Maybank (Aseambankers)	47	Malaysia
Am Investment Bank (AmMerchant)	46	Malaysia
OCBC Bank	44	Malaysia
Standard Chartered Bank (Middle East and N. Africa)	34	UAE
Citibank	29	UAE
Dubai Islamic Bank	28	UAE
Amanah Capital Partners	29	Malaysia
AAA Sekuritas	16	Indonesia

Source: ZawyaSukuk Monitor

Currently, there is an ongoing criticism of sukuk structures, but most comments are random and uncoordinated. Scholars and regulators can criticize sukuk, but until recently markets observed oversubscription to all sukuk issues. Therefore, until the real investors remain silent, the issuers will not bother to implement any changes. Better understanding of sukuk structure and challenges by potential investors can build a new class of sukuk buyers with more defined demand. Therefore, educated investors can help in developing strong and sound sukuk market.

2.2.2.10 Other sukuk related problems

- Limited historical data on sukuk performance, lack of research and absence of empirical studies are among the most serious bottlenecks in the area of sukuk development. Lack of transparency among IFIs and their unwillingness to disclose enough information create additional obstacles. Problem with access to empirical data can be solved partially through adopting and implementing AAOIFI and IFSB accounting and reporting standards. Auditing standards represent another problematic area, which requires proper development and standardization.
- Heavy reliance of sukuk issues on real estate market: Recent boom of real estate sector in GCC and ease of using ijarah as a basis for sukuk issuance have resulted in high share of issues linked to property construction and leasing. Collapse of the property market lead to the problems with sukuk payments and was among key reasons behind the first sukuk default (Kuwait's Investment Dar Co) (Cox 2009).
- The question of sukuk taxation can be quite complicated, since the assets can be located in one country, investors in another and SPV – in the third one. Unlike conventional bonds, sukuk miss “tax shield” of interest payment, thus sukuk cannot avoid the problem of double taxation. While Malaysia provides tax holidays for certain modes of sukuk, other markets overlook this problem. Sukuk taxation requires close cooperation of tax attorneys, accountants and regulators (Abdel-Khaleq 2007).
- Initial expenses for the issue can be higher than those associated with conventional bonds due to specific Shariah requirements towards sukuk issuance and lack of

standardization. Recent IFC Al Hilal sukuk, for example, took three years to be issued. But, as IFC hopes, this can be a precedent for further issues by the Corporation.

- Diversification is another problem for sukuk market. Most of the issues are concentrating in the real estate sector and in two main geographical locations, i.e. GCC and Malaysia. For Islamic financial institution, with its limited investment opportunities, it can significantly increase riskiness of portfolio due to absence of any kind of diversification of risks. Lack of expertise in Islamic banks is one of the reasons behind concentration of sukuk in certain areas. Due to absence of proper knowledge, they have to focus in areas that are familiar the most.

2.3 Managing sukuk associated risks

Islamic financial instruments are based on the principles, which, when applied properly, allow avoiding many risks associated with traditional financial instruments (as discussed above). However, since IFIs have to function in traditional financial markets and due to imperfection of modern Islamic instruments, avoidance of many risks is impossible. IFIs should be able to access and manage risks associated with their activity. This can be applied to Islamic financial markets in general and to sukuk, in particular. While conventional bond holders have a variety of instruments to manage their risks, IFIs lack this opportunity. For example, there is an on-going discussion in academic literature about permissibility of using options in Islamic finance. While most of derivatives are clearly prohibited by Shariah scholars, there are some options that can be attached to certain Islamic financial instruments. For example Smolarski (2006) argues that call and put options can be used for hedging purposes. Obaidullah (2004) analyses *option by stipulation* and *option of determination* as possible risk management instruments in Islamic finance. Tariq (2007) suggests using embedded options as a tool for sukuk risk reduction. He argues that Shariah, while prohibiting debt trade, allows its exchange for real goods, assets and services. Thus, sukuk holder can have an option to exchange his zero-coupon istisnaa sukuk, for example, to an apartment (after certain period) instead of waiting for sukuk's maturity. The same author (Tariq 2007) discusses a possibility of

using swaps of floating-rate sukuk with zero-coupon-fixed-rate-embedded sukuk as a Shariah compliant instrument. Most of the authors argue that options allow decreasing excessive risk (gharar), which should be avoided under Shariah ruling, but are present at the current highly volatile market. And while most of academics agree that such kind of detachable and non-trading options should be permitted in Islamic finance and urge Shariah scholars to come with collective fatwah on this point, the latter are very reluctant to give such permission.

In 2007 Dubai's Ports Customs and Free Zone Corporation issued world's first *convertible sukuk* allowing to convert initial sukuk into common shares of the originator. In 2007 Khazanah Nasional (Malaysia) issued *exchangeable sukuk* with an option to exchange them to existing shares of one of subsidiaries of the originator. These issues attracted high interest both from investors as well as potential issuers of sukuk as examples of risk reduction alternatives. While financial experts discussed possibility of further innovation in sukuk, such as mandatory exchangeable/convertibles, contingent-convertible sukuk, reserve convertible sukuk, etc., most of the scholars have forbidden these kind of innovations (see Abdullah and Ismail 2008), due to their similarity with derivatives and excessive uncertainty.

Another on-going discussion among scholars is about permissibility of third party guarantees in some sukuk issues. Proponents of such guarantees, usually issued by the governments, claim that there is no clear prohibition of such action in any Islamic source. Thus, according to this group, as long as guarantor is financially and legally independent from both contracting parties, involved in sukuk transaction, he can guarantee the entire investment or part of it without obtaining any fees for this operation. Opponents of such guarantee argue that it can open a possibility for riba and highlight the Shariah prohibition of any kind of guarantee of the capital (see Al-Amine 2008). Thus, there is no common opinion on whether such guarantees can be used as a risk management instrument.

In conclusion, it is worth noting Sheikh Taqi Usmani, who mentioned that the system of Islamic finance should be based on principles of justice and equal distribution of financial resources in society – the functions which were failed by conventional

financial system. However, keeping in mind that IFIs function in the interest-based financial system, scholars had allowed some flexibility in structuring Islamic financial instruments, provided that the banks will gradually develop and adopt full Shariah compliance. Unfortunately, the recent trend shows that the new modes of financing introduced by IFIs imitate conventional instruments further distancing them from core Islamic principles. In case of sukuk, justification for principal guarantee and fixed returns was given by the fact that international rating agencies would otherwise not rate sukuk properly. This reinforces the pressing need to develop and promote Islamic rating agencies.

After more than 15 years since introduction of first sukuk, there is a valid question whether sukuk structuring should go back to its basics and follow the approved modes of financing or whether the market should go after the growing demand for Islamic financial instruments and engineer the new forms and structures.

III. Empirical analysis

3.1 Methodology

As mentioned above, the purpose of this analysis is to compare risks associated with sukuk and conventional bonds. Using empirical data, this paper attempts to prove that sukuk are not riskier than conventional debt instruments and can be used both by Islamic and non-Islamic investors.

While academic literature presents several methods of evaluating bonds' performance, such as geometric rate of return, risk-adjusted performance evaluations, Alpha-analysis, etc. (Martellini 2005), this paper examines the riskiness of sukuk and therefore utilizes risk estimating methods, namely Value-at-Risk (VaR).

There are number of risk analysis techniques, which are used by IFIs. The most common are GAP analysis, Duration analysis, VaR and RAROC (see Khan and Ahmed 2001). Research by Ariffin et al (2008) indicates that Gap analysis method is applied in 68% of Islamic banks, Duration analysis – in 43%, VaR – in 29%, and RAROC – in 14%. The most popular risk measurement method, according to the research, is Maturity matching, which is used in 82% of analyzed Islamic banks.

GAP analysis focuses on net interest income over the different time intervals. Balance-sheet items are rearranged according to their maturity or re-pricing periods in order to find the difference between rate-sensitive assets (RSA) and rate-sensitive liabilities (RSL). $GAP = RSA - RSL$. Negative or positive GAP helps the management to choose the right hedging procedure to protect the bank form interest rate fluctuations.

Duration analysis represents calculation of average time period required to recover the invested funds. Duration of instrument demonstrates its elasticity to interest rate. Some

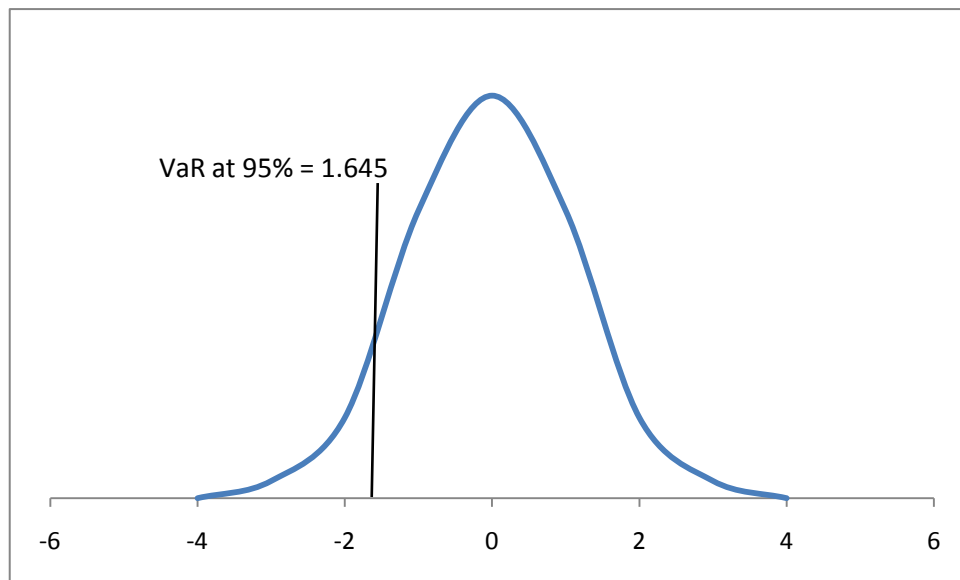
empirical studies demonstrate that duration provides an accurate risk measurement for option-free corporate bonds (Ilmanen 1992 and Ilmanen 1994).

RAROC (Risk Adjusted Rate of Return) defines relation between the risk and reward associated with this risk. Using this methodology the management can determine economic capital required for its activity.

$$\text{RAROC} = \text{Risk-adjusted Return} / \text{Risk Capital}$$

According to many authors, VaR approach is considered to be among the best methods in risk assessment (see for example Yadav (2008)). VaR defines with certain probability the maximum value that a company can lose if it holds an asset during a specific period of time. We can explain VaR using the following figure of common probability density function. The figure demonstrates profits and losses over a period of time. Chosen confidence level determines VaR on a horizontal axis. At 95% confidence level VaR is 1.645, at 99% -- 2.326.

Graph 3 - VaR



Source: Dowd (2005), p. 28

Although new, VaR is a very popular risk measuring technique. Its popularity can be explained by the relative simplicity in presentation and understanding of results of risk

calculation. All possible losses from analyzed instrument are presented by a single number.

According to Dowd (2002), the attractiveness of VaR can be explained, first of all, by its applicability towards different positions. Moreover, it gives an opportunity to combine all market risks and illustrate them in one number. It also takes into account correlation between different financial instruments/ positions, making portfolio management “meaningful”.

In spite of its popularity, the method has its opponents. Most of the critics argue that VaR is too imprecise, because it ignores economic agents’ behavioral characteristics; implementation of different VaR models can provide vary broad range of results. If the users rely on the model and at the same time under- or overestimate risks, they can seriously damage their economic position. These can even lead to destabilization of financial system (Taleb 1997). While above mentioned shortages can be applied to a vast majority of risk measuring methods, VaR has its own “unique” limitations. The most serious one is that the method provides a maximum value, which a company may lose in 99% (95%) of cases, but gives no information about possible losses behind this level. One can expect to lose more than calculated VaR, but has no indication of the amount that can be lost. Another serious limitation of VaR is that it is not sub-additive; meaning that combination of individual risks can increase overall risk. This feature of VaR can seriously affect decision of risk managers and regulators (see Dowd 2002) for further reading).

Dowd (2002) highlighted specific characteristics of fixed-income securities, namely their strong dependence on interest rate fluctuations. Due to this feature, he proposed to use Cox-Ingersoll-Ross (CIR) process to determine stochastic processes for interest rates. Another important feature of calculating VaR for bonds is determination of term structure of interest rate. To do so, we need prospective term structure at the end of holding period. These conditions make calculation of special VaR for bonds a complicated and time consuming procedure.

Similar difficulties in calculation of VaR, which is based on the yield data, were mentioned by Smith (2007). According to Smith, even the process of VaR estimation for a zero-coupon bond can be quite complex. In case of coupon bonds, each cash flow should be treated as a separate zero-coupon bond, thus VaR calculation requires appropriate software and equipment. These difficulties, as well as the Shariah nature of sukuk (which should not depend on interest rate movements, but rather resemble equity share) are the main reasons behind applying lognormal price based VaR in the paper.

Estimation of VaR can be done by using the following methods: historical method, parametric method, and Monte Carlo simulation. Choosing appropriate VaR method is a difficult task. According to Perignon and Smith (2008) 73% of banks in 2005 used Historical simulation or a related technique to calculate VaR. Monte Carlo simulation was used by 21.6% of banks. Using different methods of VaR calculation can affect the results of empirical analysis. Bader (1995, cited in Christoffersen 2001) found that parametric and simulation models for portfolio of options can provide significantly different outcomes.

In his paper Vlaar (2000) argues that a combined variance-covariance Monte Carlo method is the best solution for determining dynamics of Dutch interest rates VaR. Historical simulation, according to the author, has its own limitations, e.g. very short period data can be affected by accidental outcomes, while a very long period of observation may include a data, which cannot be appropriate for current situation. Moreover, historical simulation method cannot be extended over the observed period. The same conclusion – Monte Carlo method is more appropriate for VaR calculation than historical – is made by Lambadiaris et al. (2003) as cited in Angelidis et al. (2004).

Cakir and Raei (2007) compared VaR of portfolios of conventional bonds with portfolios of bonds diversified by sukuk. They used both delta-gamma approach and Monte Carlo simulation methods in order to measure portfolios VaR. The authors found that risks of portfolios, containing both sukuk and conventional bonds, are smaller than those containing only conventional bonds. Correlation between sukuk and conventional bonds is much smaller than correlation among bonds. Thus, according to authors, sukuk can be used as a good source of portfolio diversification for conventional investors.

Being the only paper which used empirical data for sukuk analysis, it presents serious establishment for much needed research in the area.

VaR calculations are based on a choice of two main parameters: holding period and confidence level. This paper estimates 10 days VaR at 99% confidence level, as per recommendations of Basel Committee. Another reason behind 10 days time horizon is the fact that sukuk are not very liquid products and require a time to be traded.

Due to limited information available both for sukuk and Eurobonds on the secondary market and following recommendations of mentioned earlier academic literature, Monte Carlo simulation method was selected as the most appropriate to calculate VaR. The method, though is more complicated in calculation, requires less strong assumptions. It's easy to implement once the functions are set up. The method can be easily modified and it accommodates path dependency, fat tails, etc (Dowd 2005). Monte Carlo simulation method repeatedly simulates prices of financial instruments in the risk neutral world using random processes. We assume that prices are distributed lognormally. The price path is generated using stochastic information of daily prices.

We assume that price S follows geometric Brownian motion (Dowd 2005):

$dS/S = \mu dt + \sigma dx$, where μ is expected return and σ is volatility of returns

According to Dowd (2005) "... for most MCS procedures, accuracy will vary with square root of number of trial". Therefore, in order to increase accuracy of calculations 10,000 simulations of the sukuk/bond prices were run.

Histogram of simulated lognormal returns provides VaR values for sukuk and bonds.

Exact procedures of simulation process are presented in Chapter 3.3.

3.2 Data

As mentioned above, sukuk secondary market is underdeveloped. Most of the issues are traded only on a primary market. Only limited number of international issues is listed on exchanges. Domestic market issues are usually not covered in publicly available sources.

All data on sukuk and bonds was obtained through Thomson Reuters. Daily prices of sukuk and bonds are available for a limited time period, mostly for the last two years, even though their issuance date can exceed two years. Unfortunately, analysis of securities cannot be restricted to one particular market due to the limited information on sukuk. In future, with new issues being listed on a secondary market, more segmented analysis of sukuk may be conducted. Sukuk can be grouped according to the industry, region or maturity. This type of analysis can provide more accurate results. This paper deals with sukuk issues across the regions and industries due to the shortages of traded information. Moreover, some issues do not provide any price information in spite of the fact that their names are listed on the Reuters database. This is the main explanation of the number of analyzed sukuk in this paper, e.g. 15 international sukuk issues shown in table below:

Table 4 – List of Sukuk

Name of sukuk	Amount	Domicle of issuer	Industry	Issue date	Duration	Coupon type	Coupon	Sukuk type	Rating agency/rating
ADIB Sukuk Co LTD	USD 800 mln	UAE (AE)	Finance	12-Dec-06	5 years	Floating: Fixed Margin over the index/Quarterly	0.6543	Other	Fitch's /A+ (Moody's/A2)
Aldar Funding LTD	USD 2,530 mln	Jersey (JE)	Finance	8-Mar-07	4 years	Fixed/Quarterly	5.767	Mudabah	N/A
Daar International Sukuk Co	USD 1,000 mln	Caiman Islands (KY)	Finance	14-Jul-07	5 years	Floating: Fixed Margin over the index/Quarterly	2.5013	Other	N/A
DIB Sukuk LLC	USD 750 mln	Caiman Islands (KY)	Finance	22-Mar-07	5 years	Floating: Fixed Margin over Index/Quarterly	0.5813	Other	Moody's/Baa1 (Standard&Poor's/BBB-)
Dubai Sukuk Centre LTD	USD 1,250 mln	UAE (AE)	Finance	13-Jun-07	5 years	Floating: Fixed Margin over Index/Quarterly	0.6293	Mudabah	Moody's B2/Standard&Poor's/B+
GFH Sukuk LTD	USD 200 mln	Caiman Islands (KY)	Finance	26-Jul-07	5 years	Floating: Fixed Margin over the index/Quarterly	1.4991	Other	Standard&Poor's/CC
IDB Trust Services LTD	USD 500 mln	Jersey (JE)	Finance	22-Jun-05	5 years	Floating: Fixed Margin over the index/Annually	0.5554	Other	Standard&Poor's/AAA
IIG Funding LTD	USD 200 mln	Kuwait (KW)	Finance	6-Jun-07	5 years	Fixed/Quarterly	6.75	Other	N/A
Nakheel Development LTD	USD 750 mln	UAE (AE)	Trust - Real estate	15-Jan-08	3 years	Fixed/Semiannually	2.75	Ijarah	N/A
National Industries Co Building Material Sukuk LTD	USD 100 mln	Caiman Islands (KY)	Finance	18-Oct-06	5 years	Floating: Fixed Margin over the index/Semiannually	1.59	Other	N/A
National Industries Group Holding SAK	USD 475 mln	Kuwait (KW)	Conglomerate/diversified	16-Aug-07	5 years	Floating: Fixed Margin over Index/Quarterly	1.3225	Other	Moody's /B1
Qatar Global Sukuk QSC	USD 700 mln	Qatar (QA)	Finance	9-Oct-03	7 years	Floating: Fixed Margin over the index/Semiannually	1	Other	Standard&Poor's/AA-
Rafflesia Capital LTD	USD 750 mln	Malaysia (MY)	Finance	4-Oct-06	5 years	Fixed/Annually	1.25	Other	N/A
Sharjah Islamic Bank Sukuk Co LTD	USD 225 mln	UAE (AE)	Finance	12-Oct-06	5 years	Floating: Fixed Margin over the index/Quarterly	0.9013	Other	N/A
Tabreed 08 Financing Corp	AED 1,500 mln	Caiman Islands (KY)	Finance	19-May-08	3 years	Fixed/Annually	7.25	Other	Standard&Poor's/CCC+

Data source: Thomson Reuters

Since there is no available information on companies issuing both sukuk and conventional bonds, attempts were made to find the bond issues from the same geographic region, in order to provide more adequate comparison and eliminate country and industry risks. Unfortunately, secondary market for Eurobonds in MENA and Malaysia has the same limited information as a sukuk market. Number of Eurobond issues analyzed in this paper is also restricted to 15 and presented in the following table:

Table 5 – List of Bonds

Name of bond	Amount	Domicile of issuer	Industry	Issue date	Duration	Coupon type	Coupon	Rating agency/rating
CBQ Finance Ltd	USD 1,000 mln	United Kingdom	Finance	18-Nov-09	5 years	Fixed	5	S&P/A-, Moody's/A1
Cherating Cptil LTD	USD 850 mln	Malaysia	Finance	5-Jul-07	5 years	Fixed	2	N/A
Commercial Bank of Qatar QSC	USD 500 mln	Qatar	Banking	12-Oct-06	5 years	Fixed	0.6513	S&P/A-, Moody's/A1
Emirates Airlines	USD 500 mln	UAE	Transport	24-Mar-04	7 years	Floating:Fixed Margin over Index	1.2366	N/A
Gulf International Bank BSC	USD 400 mln	Bahrain	Banking	29-Sep-05	10 years	Floating:Step-Up Margin over Index	0.9506	Fitch/A-, S&P/BBB, Moody's/Baa1
Kuwait projects Co	USD 350 mln	Cayman Islands	Finance	12-Apr-06	5 years	Floating:Fixed Margin over Index	1.1513	S&P/BBB+
Mashreqbank PSC	USD 300 mln	UAE	Banking	6-Apr-06	5 years	Fixed	0.6344	Moody's/Baa1, Fitch/A, S&P/BBB
National Industries Group Holding SAK	USD 475 mln	Kuwait	Conglomerate/diversified	16-Aug-07	5 years	Floating:Fixed Margin over Index	1.3	Moody's/B1
Petroliam Nasional BHD	USD 625 mln	Malaysia	Oil and Gaz International	17-Aug-95	20 years	Fixed	7.75	Fitch/A, S&P/A-, Moody's/A1
Public Bank BHD	USD 200 mln	Malaysia	Banking	22-Aug-06	perpetual	Floating:Fixed then Floating	6.84	Moody's/Baa2
Qatar Petroleum	USD 650 mln	Qatar	Oil producer	26-May-06	5 years	Fixed	5.579	S&P/AA-, Moody's/Aa2
QTEL International Finance Ltd	USD 900 mln	Bermuda	Finance	10-Jun-09	5 years	Fixed	6.5	Fitch/A+, Moody's/A1, S&P/A-
Ras Laffan Liquefied Natural Gas Co Ltd	USD 1,115 mln	Qatar	Oil and Gas	23-Jul-09	5 years	Fixed	5.5	S&P/A, Fitch/A+, Moody's/Aa2
Sarawak International Inc	USD 800 mln	Malaysia	Finance	3-Aug-05	10 years	Fixed	5.5	Moody's/Baa1, S&P/A-

YTL Power Finance	USD 250 mln	Cayman Islands	Finance	9- May -05	5 year s	Fixed:Zero Coupon	N/A
--------------------------	-------------------	-------------------	---------	------------------	----------------	----------------------	-----

Data source: Thomson Reuters

As demonstrated in the table above, the range of sukuk amount varies between US\$100 million and US\$ 2.53 billion. The range of observable bonds is between US\$300 million and US\$1.115 billion.

Most of the sukuk analyzed in this paper are issued by financial institutions (86%), whereas the real estate share is 7% only. Bonds reflect a broader presentation and include finance (40%), banking (26%), transport (7%), conglomerate (7%), and energy sectors of the economy (20%).

As mentioned above, sukuk have a limited range of maturity: from 3 to 7 years. Maturity of bonds shown in Table 5 above varies between 5 years to perpetuity. Sukuk and bonds markets in Muslim countries are still developing and require further diversification.

33% of sukuk carry a fixed coupon, while the remaining 67% - floating rate: fixed margin over the index, which is also a type of a fixed payment and consider not Shariah-compliant. Bonds proportion is opposite: 67% of total issues carry a fixed coupon, while 33% -- floating.

Interestingly, most of sukuk issues do not mention exact type of their mode of financing: 80% indicated their mode of financing as “others”, 7% -- ijarah and 13% -- mudarabah. One of the possible reasons behind preferring “others” may be due to fact that many of sukuk modes were criticized as non-Shariah compliant. This can be especially important in case of the secondary market, as most of the Islamic modes of finance are prohibited to be traded on the market due to their debt nature.

Only 53% of sukuk issues are rated, while the same number for bonds is 80%.

3.3 Calculations

Historical data on international sukuk/Eurobonds price were used in order to determine their log normal daily returns, average returns, variance and standard deviation of returns.

Lognormal returns of sukuk/bonds were calculated using Excel formula: =LN(X₁/X₀), where X is the price of securities. Average return was calculated using AVERAGE function, Variance – VARP function, and standard deviation – STDEVP function.

For lognormal random walk we can determine exact algorithm:

$$S_t = S_0 * \exp(r - \sigma^2/2) * t + \sigma * \text{sqrt}(t) * Z,$$

where Z is the random sample from standard normal distribution N (0,1) generated using Excel function of NOMRSINV(RAND()),

S₀ is the last observed price of sukuk (bond),

r is the average return,

σ is the standard deviation of return,

and t is the time period. Time period, t, is one day, calculated as 1/365. Since the chosen holding period is 10 days, we run each simulation for that period as described below.

To simulate the path taken by S we split time into 10 intervals of length t. The path algorithm for the 10 days VaR is set as following:

$$S_t = S_0 * \exp(r - \sigma^2/2) * t + \sigma * \text{sqrt}(t) * Z$$

$$S_{t+1} = S_t * \exp(r - \sigma^2/2) * t + \sigma * \text{sqrt}(t) * Z$$

$$S_{t+2} = S_{t+1} * \exp(r - \sigma^2/2) * t + \sigma * \text{sqrt}(t) * Z$$

.

$$S_n = S_{n-1} * \exp(r - \sigma^2/2)*t + \sigma*\sqrt{t}*Z$$

Future prices were simulated using the above algorithm. Simulated prices for the last two days were used to calculate 10th day lognormal return on security. This procedure was repeated 10,000 times for each security. Histogram was run for resulting simulated returns (Data Analysis/Histogram). Histogram was treated as a probability density function and determined VaR at 99% confidence level, as 1% lowest return.

All histograms are presented in the appendices.

3.4 Results of analysis

First of all, I would like to mention that most of calculated returns were negative. This fact can be explained by capital market slowdown during the observed period. Broader information was not available publicly due to the novelty of analyzed financial instruments.

Bonds results

Table 6 – Bonds VaR

Name of bond	Average return	Variance	Standard deviation of return	VaR
CBQ Finance Ltd	9.43967E-05	1.49736E-05	0.00386958	-0.00063
Cherating Capital LTD	0.000172228	0.000327862	0.018106968	-0.00279
Commercial Bank of Qatar QSC	6.08702E-05	4.12805E-05	0.006424992	-0.00105
Emirates Airline	-6.63E-05	0.000232936	0.015262243	-0.00263
Gulf International Bank BSC	-0.000367323	0.001556164	0.039448239	-0.00621
Kuwait projects Co	6.06007E-05	6.17626E-05	0.007858922	-0.00127
Mashreqbank PSC	6.73622E-06	0.000160661	0.012675217	-0.00205
National Industries Group Holding SAK	-0.001667586	0.00318981	0.056478405	-0.00916
Petroliam National BHD	-4.20809E-05	0.000100878	0.010043786	-0.00167
Public Bank BHD	0.000774333	0.000663574	0.025904246	-0.00422
Qatar Petroleum	-1.23547E-05	2.05171E-05	0.004529585	-0.00074
QTEL International Finance Ltd	0.000228623	1.16229E-05	0.003492225	-0.00056
Ras Laffan Liquefied Natural Gas Co Ltd	9.5056E-05	6.487E-06	0.002546958	-0.00098
Sarawak International Inc	0.000147846	4.02683E-05	0.006345729	-0.001
YTL Power Finance	6.10935E-05	0.000354934	0.018839695	-0.00287
Average	-3.02574E-05	0.000452249	0.015455119	-0.00252

Average return of bonds is a negative number (-3.02574E-05), the highest return is 0.000774 (Public Bank BHD) and the lowest is (-0.00167) (National Industries Group Holding SAK).

Average VaR on bonds for the 10-days holding period at 99% confidence level is 0.00252, VaR numbers vary between 0.00056 (QTEL International Finance Ltd) and 0.00916 (National Industries Group Holding SAK).

Sukuk results

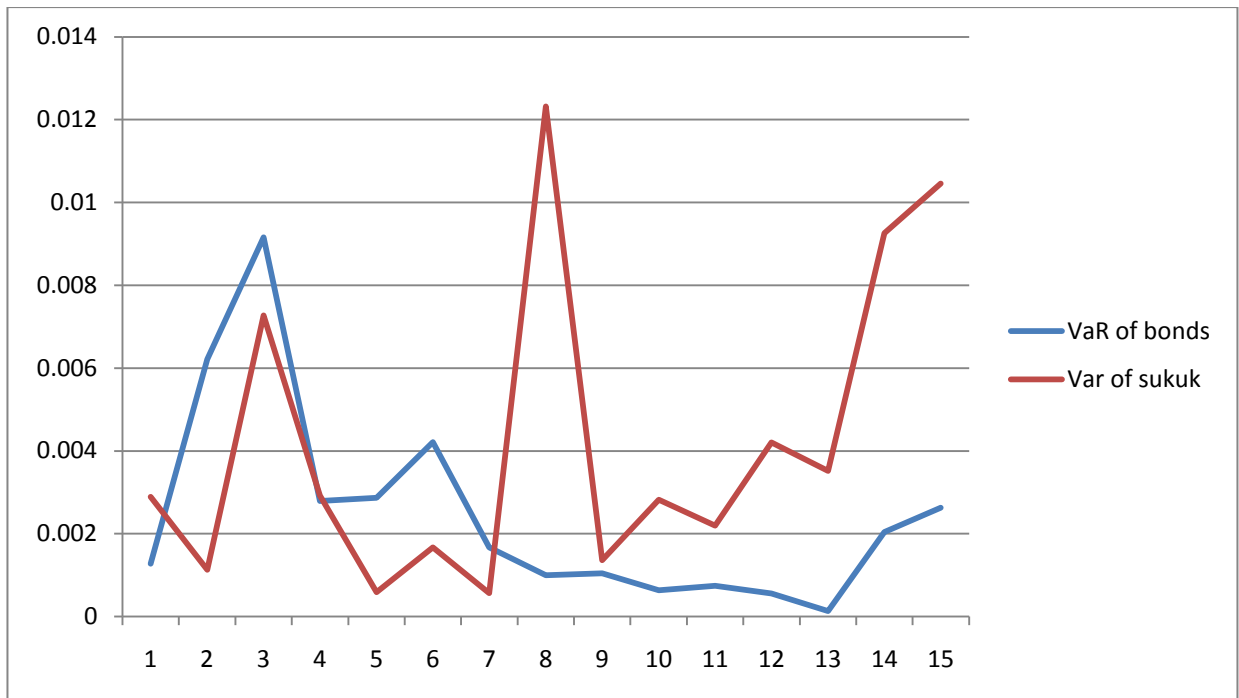
Table 7 – Sukuk VaR

Name of sukuk	Average return	Variance of return	Standard deviation of return	VaR
ADIB Sukuk Co LTD	0.001082436	7.13018E-05	0.008444038	-0.00136
Aldar Funding LTD	-0.001106874	0.005532116	0.074378198	-0.01232
Daar International Sukuk Co	-0.000173568	0.000350157	0.018712476	-0.00289
DIB Sukuk LLC	-0.000240714	0.000331132	0.018197045	-0.00283
Dubai Sukuk Centre LTD	-0.000472302	0.00070438	0.026540155	-0.00421
EIB Sukuk Co LTD	-0.00023203	0.000183709	0.013553928	-0.0022
GFH Sukuk LTD	-0.001727642	0.000434818	0.020852301	-0.00352
IDB Trust Services LTD	2.7979E-06	1.39415E-05	0.003733837	-0.00059
Nakheel Development LTD	4.63408E-05	0.004267622	0.065327038	-0.01045
National Industries Co Building Material Sukuk LTD	-0.000554825	1.30597E-05	0.003627286	-0.00056
National Industries Group Holding SAK	-0.001667586	0.00318981	0.056478405	-0.00926
Qatar Global Sukuk QSC	-2.42831E-06	5.06199E-05	0.007114767	-0.00113
Rafflesia Capital LTD	7.1255E-05	0.000327798	0.018105184	-0.00292
Sharjah Islamic Bank Sukuk Co LTD	-8.41091E-05	0.00010873	0.010427372	-0.00167
Tabreed 08 Financing Corp	-0.001654769	0.002017476	0.044916317	-0.00727
Average	-0.000447601	0.001173111	0.026027223	-0.00421

Average return on sukuk is (-0.00045). The highest return is provided on ADIB sukuk (0.001802), while the smallest is a negative return of (-.00173) on GFH sukuk.

Average VaR on sukuk for a 10-days holding period at 99% confidence level is 0.00421, the riskiest are sukuk of Aldar Funding (VaR of 0.01232), while the lowest VaR is of the National Industries Co Building Material sukuk (0.000564).

Graph 4 – VaR for Sukuk/VaR for Bonds



Unfortunately, our predictions that sukuk and bonds should have similar level of risk were incorrect. As revealed above average VaR of sukuk is almost twice higher than average VaR of conventional bonds. And although the lowest VaR is similar both for bond and sukuk (0.00056), at its maximum level VaR of sukuk is 10 times higher than VaR of bond.

It is to be noted that more detailed analysis is required to compare VaR of similar issues of bond and sukuk. More segregated analysis should be conducted, taking into account different maturities, industries, premiums of the securities. Portfolio analysis can be used as the next step in sukuk risk appraisal. Other methods of sukuk risk evaluation can be applied in presence of appropriate software. This kind of more detailed analysis

requires additional information, which will be hopefully available with further development of Islamic financial market.

IV. Conclusion

Sukuk are valuable instruments of Islamic financial system. They allow mobilizing resources for businesses and projects, which cannot be financed by a singular lender. Sukuk allow Islamic financial institutions to match their assets and liabilities, e.g. long-term investments and long-term loans. Sukuk give an opportunity for small investors to participate in Islamic financing and earn profits. In this way, they allow broad circulation of wealth, without concentration of latter exclusively in the hands of a small group of rich members of society (Usmani 2008). With further development of the secondary market, sukuk can manage a problem of liquidity for Islamic financial institutions.

Unlike prior assumptions, calculations made in this paper demonstrate that an average 10 days sukuk VaR at 99% confidence level is higher than VaR of conventional bonds. In spite of the fact that most of sukuk investors hold Islamic securities until their maturity (not bearing everyday market risks), the analysis should be a warning sign for sukuk issuers. Widespread mismanagement in recent issuance of sukuk can be a reason behind high risks associated with Islamic securities.

One should take into account that most of sukuk issues are originating from emerging markets with inefficient capital markets and immature risk management mechanisms. Moreover, being a Shariah-compliant instrument, sukuk operate in environment of conventional finance. They should provide halal returns compatible with those offered by conventional financial institutions. At the same time, most of conventional risk management instruments are prohibited in Islamic finance.

As most of Islamic experts insist on introduction of innovative products and stimulation of new mechanisms in Islamic finance, majority of Shariah scholars warn about necessity to return to basics of Islamic finance. Many scholars, including Sheikh T. Usmani, maintain an opinion that current Islamic financial products are already very innovative and their divergence from Shariah rules makes them inappropriate for use by IFIs. They are of opinion that most of current innovations represent an adaptation of

conventional products, while Islamic finance requires properly developed, purely Islamic financial instruments that satisfy Shariah requirements as well as financial market regulations.

Therefore, proper application of Shariah principles should be used as a main instrument in sukuk risk management, implying that:

- Returns on sukuk should be based on actual performance of an underlying asset and not on existing market rate;
- Proper Islamic index should be developed and applied as a benchmark for feasibility studies; the issuers should avoid using conventional benchmarks such as LIBOR;
- The ownership of an underlying asset or usufruct should legally belong to sukuk holders, which is not the case in many modern sukuk issues;
- Compulsory rating of sukuk issues should be introduced; appropriate Islamic rating agencies should be further developed;
- Shariah boards should play an active role at all stages of sukuk issuance and trading; Shariah boards and practicing scholars should be regulated/licensed by an independent authority.

Additionally the following measures can help improve sukuk market efficiency and reduce its risks:

- Standardization of the sukuk issuance;
- Active collaboration among different Islamic regulatory organizations and governmental institutions;
- Further development of sukuk secondary market;
- Diversification of sukuk issues in terms of their maturities, geographical locations and sectors of industry;
- Creation of appropriate legislative basis to handle the disputes, including possible default.

In spite of its shortages and risks, sukuk market has a great potential for further growth. While significantly smaller than conventional bond market, sukuk market is developing rapidly and expanding to new areas of international capital market. According to Zawya Sukuk Report (2009), \$31 billion worth of sukuk issues have been announced, and \$3.1 billion were rumored to be issued. Geography and economic development of potential issuers are quite diversified. According to the Ernst and Young (2009) potential issuers of sukuk market include China, Hong Kong, South Korea, Russia, India and Kazakhstan. Islamic Development Bank plays an active role in establishment of Islamic interbank market through promoting an idea of a dedicated investment bank. Underdeveloped capital debt market in emerging markets, including UAE, leaves an additional space for creation and expansion of sukuk market. Dow Jones developed a wide range of Islamic financial indexes, such as Dow Jones Citigroup Sukuk Index and Dow Jones Islamic Market Index, which can be used as a performance benchmark for Islamic securities. DIFC is working on setting template for sukuk issuance.

Islamic finance and sukuk market in particular are relatively new areas of finance and present a unique opportunity for academic research. Empirical research, however, requires availability of publicly available information. Proper development of Islamic financial instruments and transparency of IFIs would be a good base for future analysis.

References/Bibliography:

A New World for Islamic banking, (2009), Booz and Co on-line article,
Available from:
http://www.booz.com/global/home/what_we_think/reports_and_white_papers/article_copy/44203466

AAOIFI Sukuk Shariah Standards, 2008, available from AAOIFI web-site :
www.aaofi.com

Abdel-Khaleq A., Richardson C., (2007), *New Horizons for Islamic Securities: Emerging Trends in Sukuk Offerings*, Chicago Journal of International Law, Vol 7, No 2

Abdullah H., Ismail R., *Sukuk under development*, available on-line from the Cass University Library website

Al-Ajmi J., Hussain H., Al-Saleh N., (2009), *Clients of Conventional and Islamic Banks in Bahrain. How to Choose which Bank to Patronize?*, International Journal of Social Economics, vol. 36, No 11

Al-Amine, (2008), *Sukuk market: Innovations and challenges, "Islamic capital markets. Products, Regulation and Developments."*, Proceedings of International Conferences, IRTI, IDB, Chapter 3

Angelidis T., Benos A., Degiannakis S. (2004), *The use of GARCH Models in VaR Estimation*, Statistical Methodology 1, pp. 105-128

Ariffin N., Archer S., Abdel Karim R., (2008), *Risks in Islamic banks: Evidence from empirical research*, Journal of Banking Regulation, Vol. 10, 2

Ayub M., (2005), *Securization, Sukuk and Fund Management Potential to be Realized by Islamic Financial Institutions*, State Bank of Pakistan, Karachi

Berg A. (2006), *Want to buy a sukuk?*, Futures, Wilson Company

BIS (2009), *Statistical Annex*, available on-line from:
http://www.bis.org/publ/qtrpdf/r_qa1003.pdf#page=109

Cakir S., Raei F., (2007), *Sukuk versus Eurobonds: Is there a Difference in Value-at-Risk?*, IMF working paper

Capital Adequacy Requirements for Sukuk, Securitization and Real Estate Investments, (2009), IFSB regulation guideline. Available on organization's web-site:
www.ifsb.org

Capital Adequacy Standard for the Institutions (other than Insurance Institutions) Offering Only Islamic Financial Services, (2005), IFSB standard. Available on organization's web-site: www.ifsb.org

Christoffersen P., Hahn J., Inoue A., (2001), *Testing and Comparing Value-at-Risk measures*, Journal of Empirical Finance 8, pp. 325-342

Cox H., *Can Islamic finance profit from the crisis?* available on-line from the Cass University Library website,

Dowd (2005), *Measuring Market Risk*, Wiley and Sons, Ltd, Second edition

Dowd K., (2002), *An Introduction to Market Risk Measurement*, John Wiley and Sons, Ltd

Dubai Crisis: Islamic Bonds the Problem, on-line article from Sukuk.me,
<http://www.sukuk.me/news/articles/72/Sukukme-Dubai-Crisis-Islamic-Bonds-the-Problem-.html>

El Waleed A., (2007), *Sukuk – A Sharia Advisory Perspective*, Islamic Finance News, Vol. 4

Foster J., (2009) , *How Shariah-compliant is Islamic Banking?*, (BBC, December 11)

Gassner M., (2008), *Revisiting Islamic bonds. Are 85% of Sukuk Haram?*, www.islamica-me.com

Ghoul W., (2008), *Risk Management and Islamic Finance: Never the Twain Shall Meet?*, The Journal of Investing

Golder, P., Haimari, G., Vayanos, P., Wackerbeck, P., (2008), *Competing Successfully in Islamic Banking*, October, Available on-line from: http://www.booz.com/global/home/what_we_think/reports_and_white_papers/ic-display/42794319

Hancock M., *Sukuk face crisis of confidence*, MEED, Vol 53 No50, (pp. 26-27)

Haron S., Nursofiza W., (2008), *Creating a Dynamic Islamic Capital Market: The Essential Role of Innovation, Islamic capital markets. Products, Regulation and Developments*, Proceedings of International Conferences, IRTI, IDB, Chapter 2

Homoud, Sami, (1997), *Islamic financial instruments based on intermediary contracts, Islamic Financial Instruments for Public Resource Mobilisation*, Ahmad, Ausaf, and Tariqullah Khan (eds) (Jeddah:Islamic Research and Training Institute, Islamic Development Bank, Seminar Proceedings,Number 39

Hull (2009), *Options, Futures, and other Derivatives*, Pearson, Seventh Edition

Hussein Hassan, (2008), *Comments on Discussion Papers and Notes, submitted to the Harvard-LSE workshop on Sukuk*

IFC – Al Hilal Sukuk Co, available from www.euromoneyplc.com

Introducing the Dow Jones Citigroup Sukuk Index (2006), Index Guide, Citigroup

Islahi, Abdul Azim, (1988), *Economic Concepts of Ibn Taimiyah* , Leicester: The Islamic Foundation,

Islamic banker group on Linked.in, discussion on sukuk future,
http://www.linkedin.com/groupAnswers?viewQuestionAndAnswers=&discussionID=11215671&gid=1781384&trk=EML_anet_qa_ttle-0Nt79xs2RVr6JBpnsJt7dBpSBA

Islamic banking: Big interest in interest-free banking, (2008), Morgan Stanley's report

Islamic Capital Market - Fact Finding Report, (2004), OISU-IOSCO, Report of the Islamic Capital Market Task Force of the International Organization of Securities Commissions

Islamic Finance, (2007), edited by Hassan K. and Mervyn L., An Elgar Reference Collection

Islamic Finance: The Regulatory Challenge, (2007), edited by Archer S. and Rifaat A., Wiley & Sons

Jabeen Z., Khan M., (2008), *An Inquiry into Usage of Real Assets In Islamic Transaction and Their Benchmarking: the Implication towards Islamic Capital Markets, Islamic capital markets. Products, Regulation and Developments*, Proceedings of International Conferences, IRTI, IDB, Chapter 5

Jobst A., Kunsel P., Mills P., Sy A., (2008), *Islamic Bond Issuance – What Sovereign Debt Managers Need to Know?*, IMF Policy Discussion Paper, July

Karim Z. (2008), *Empirical Case Study of Tabreed 06 Sukuk*, Global Portfolio Diversified

Khan T., Ahmed H., (2001), *Risk Management. An Analysis of Issues in Islamic Financial Industry*, Occasional Paper No 5, Jeddah

Local Bond Markets as a Cornerstone of the Development Strategy, (2009), DIFC Economic Note No 7

Malaysian Debt Securities and Sukuk Market (2009), A Guide for Issuers and Investors, Bank Negara Malaysia and Securities Commission Malaysia

Martellini L., Priaulet P., Priaulet S., (2003), *Fixed-income Securities. Valuation, Risk Management and Portfolio Strategies*, Wiley

Mohammed S., Yusoff M., (2008), *Key Shariah Ruling on the Sukuk Issuance in the Malaysian Islamic Capital Market, Islamic Capital Markets. Products, Regulation and Developments*, Proceedings of International Conferences, IRTI, IDB, Chapter 4

Morgan Stanley report, (2008), *Islamic banking. Big interest in interest-free banking*, September

O'Neill D., *Sukuk Market on Trial as Islamic Bonds Default*, available on-line from the Cass University Library website

Obaidullah M., *Islamic Risk Management: Towards Greater Ethics and Efficiency*, International Journal of Islamic Financial Services, Volume 3, Number 4

Perignon C., Smith D. (2008), *A New Approach to Comparing VaR Estimation Methods*, Electronic copy available at: <http://ssrn.com/abstract=981207>

Risk Management. An Analysis of Issues in Islamic Financial Industry (2001), Occasional paper, IDB, IRTI

Shariah Scholars – A Network Analytic Perspective (2010), Funds at Work, The Investment Industry's Strategy Consultant

Smith D. (2007), *A Primer on Bond Portfolio Value at Risk*, Boston University Press

Smolarski J., Schapek M., Tahir M., (2006), *Permissibility and Use of Options in for Hedging Purposes in Islamic Finance*, Thunderbird International Business Review, Vol 48, May-June

Sukuk guidebook, DIFC, 2009

Sukuk, (2009), Securities Commission Malaysia, Sweet & Maxwell Asia

Sukuk.me – website

Taleb N., (1997), *The world according to Nassim Taleb*, , Derivatives Strategy
2 (December/January)

Tariq A., (2004), *Managing Financial Risks of Sukuk Structures*, A dissertation
paper, Loughborough University, UK

Tariq A., Dar H., (2007), *Risks of sukuk structures: Implication for resource
mobilization*, Thunderbird International Business Review, Vol 49, March-April

The Future of Islamic Finance, (2009), FT Special report

Usmani M., I., (2006), *Fixed Income Securities: Shariah perspective*, December
State Bank of Pakistan, Karachi

Usmani T., (2008), *Sukuk and their contemporary application*

Van Duyn, (2009), *Supply shocks in store after switch to bonds*, FT, Decemeber
24

Vayanos P., Wackerbeck P., Golder P., Haimari G. (2008), *Competing
Successfully in Islamic Banking*, Booz and Co

Vishwanath S., Azmi S., (2009), *An Overview of Islamic Sukuk Bonds*, The
Journal of Structured Finance

Wilson R., “*Overview of the Sukuk market*”, (2005), Euromoney Institutional
Investors

Yadav V. (2008), *Risk in International finance*, Routledge

Zawya (2009), *Collaborative Sukuk Report*