RedFame

Applied Economics and Finance
Vol. 3, No. 4; November 2016
ISSN 2332-7294 E-ISSN 2332-7308
Published by Redfame Publishing
URL: http://aef.redfame.com

Sukūk Market Depth and Breadth Analysis: LAB (Liquid Assets Buffer) Portfolio Construction for a Non-Depository Megabank MDB

Abdullah Karatas[1,2]

[1] Islamic Development Bank, Jeddah, Kingdom of Saudi Arabia

[2] INCEIF, Kuala Lumpur, Malaysia

Correspondence: Abdullah Karatas, Islamic Development Bank, 19th Floor, P.O. Box 5925, Jeddah – 21432, Kingdom of Saudi Arabia.

Received: June 12, 2016 Accepted: June 27, 2016 Available online: July 20, 2016

doi:10.11114/aef.v3i4.1670 URL: http://dx.doi.org/10.11114/aef.v3i4.1670

Abstract

The objective of this paper is to empirically examine the depth of the sukūk market by determining whether the sukūk market, in its current form, is sufficient to cover the liquid assets buffer (LAB) balance sheet requirement for a hypothetical multilateral Islamic "megabank." The question is relevant as there has been much discussion in recent years amongst market practitioners on whether or not the sukūk market has sufficient breadth and depth to accommodate a "greenfield" Sharīʿah compliant megabank which would be structured as a Multilateral Development Bank (MDB) focusing on infrastructure finance. Given the strong need for infrastructure financing across much of the developing world, two new MDBs were launched just this year: the Asian Infrastructure Investment Bank and the Brics New Development Bank.

An MDB is an institution that is backed by governments and that typically operates under an exempt regulatory regime, while most other financial institutions are heavily regulated. An Islamic non-depository megabank MDB ("megabank MDB") would be markedly different from an Islamic commercial bank: MDBs do not accept retail deposits from the public; MDBs have no regulators or even an industry oversight body. However, since MDBs issue bonds and sukūk as part of their business models, they need to acquire credit ratings; while the big three credit rating agencies have different rating methodologies, they collectively serve as the de facto regulators for non-depository MDBs. In light of these constraints, we will construct a LAB portfolio for a megabank MDB utilizing only sukūk.

Keywords: sukūk, bonds, liquidity, portfolio, megabank, multilateral development bank, liquid assets buffer

1. Introduction

1.1 Introducing the LAB problem for a megabank MDB

We will examine in this paper, from an empirical perspective, whether a sukūk portfolio can be constructed in order to address the controversies marring the topic since the issue has mainly been discussed among practitioners but has not been covered sufficiently from an empirical perspective in academic literature. The hypothesis being developed and tested in this context is whether such a sukūk portfolio may be structured for a megabank MDB.

While MDBs are not formally required to conform to any regulatory requirements or constraints such as Basel III capital and liquidity requirements, MDBs nevertheless follow a prudent strategy to ensure that they maintain sufficient liquid funds to meet future contractual obligations and to maintain uninterrupted financial operations in the event of market stress or unattractive market conditions (Bessis, 2013). Per the big three credit rating agencies' (Standard & Poor's, Moody's, and Fitch) methodologies, a significant portion of this liquidity is maintained in fixed income securities such as conventional bonds or sukūk. For a commercial bank, the regulatory burden would increase in the form of Basel III requirements.

1.2 Importance of the LAB problem for a megabank MDB

There have been various approaches discussed for the establishment of an Islamic megabank, including the establishment of a new commercial bank (with private capital and some public funding), the merger of existing large Islamic commercial banks, or the establishment of a new MDB focusing on infrastructure financing similar in mandate to the Asian Infrastructure Investment Bank or the Brics New Development Bank (Abdul Alim, 2014). It is important to

differentiate between the "greenfield" and the "merger" approaches; in the former case, the new megabank would absorb a large volume of sukūk in addition to what is being held by existing banks. In the merger case, the emerging megabank would require less additional volume of sukūk to meet specific Basel III requirements for systemically relevant banks, but this additional volume of sukūk would be much smaller than in the greenfield case as the merging banks already hold sizable volumes of sukūk.

Our empirical feasibility study is focused on the greenfield MDB model for an Islamic megabank. For such an Islamic megabank, the rating agency standards and methodologies of the big three rating agencies would apply more so than Basel III or IFSB (Islamic Financial Services Board) standards. IFSB proposes a regulation of banks in line with Basel III for all banks but some Basel III stipulations are only relevant for banks with systemic importance. As these regulations are not as relevant for a megabank MDB, we will outline the rating agencies' standards in the analysis.

The discussion for an MDB is qualitatively different than the discussion for a commercial bank insofar as the supporting governments (and shareholders) of an MDB may be willing to supply additional liquidity instruments (i.e. a repo facility) to facilitate the MDB's smooth running, not least in order to avoid problems for the commercial sector of Islamic finance. Nevertheless, the challenge for a megabank MDB is very real regarding compliance with the big three rating agencies' methodologies, which would prove critical to the underlying business model of MDBs of using leverage by mobilizing funds from the capital markets, and therefore relevant to study from an empirical finance perspective. The analysis incorporates a comparison of the sukūk market, a subset of the broader fixed income market, with the conventional bond market. The analysis is relevant and timely in light of the relative slow-down in global sukūk issuance volumes (and conventional bond issuance volumes for that matter) that was witnessed in 2015.

The slow-down in sukūk issuance volumes is due to a variety of factors such as increased levels of broader market volatility (which has also caused a slowdown in conventional bond issuance volumes), a decrease in the availability of unencumbered assets (specific to asset-based sukūk), and decreasing oil prices. While the decrease in oil prices has led to decreases in the liquidity levels of some Islamic banks, thereby depressing the "demand-side" of the market for sukūk issuances, a number of observers expect an increase of sukūk issuances by sovereigns in the long-term as a reaction to decreasing oil income and the need to cover budget deficits; we have seen year-to-date 2016 sukūk issuance volumes increase to a record level compared to prior years, boosted particularly by issuances from the GCC (Gulf Cooperation Council) region (Sharif and Y-Sing, 2016). The latest IIFM Sukuk Report 2016 (5th edition, April 2016) explains the many reasons why the 2015 slow-down in sukūk issuance volumes should be considered an aberration as opposed to a new normal.

The 2015 slow-down of global sukūk issuance volumes is due in large part to a decision of Bank Negara Malaysia (the Malaysian Central Bank) to switch from short-term sukūk to other instruments for the liquidity management of Malaysian banks (IIFM Sukuk Report April 2016). While this decision implies that there are alternatives to sukūk (short-term sukūk in particular), it is not clear that these alternatives would be of benefit to a megabank MDB, as they would not suffice to meet the requirements of the rating agencies' methodologies.

1.3 Relevant Scholarship

The discussions related to the structuring of a Sharīʿah compliant liquidity asset buffer for a megabank MDB have focused on the concept of "liquidity"; an important component of liquidity is captured by the breadth and depth of the long-term sukūk market (in the case of Malaysia, Bank Negara Malaysia applies different criteria to govern the treatment of short-term liquidity instruments). The Bank for International Settlements (BIS) offers the following: "Markets are liquid when investors are able to buy or sell assets with little delay, at low cost and at a price close to the current market price" (BIS Quarterly March 2015). The level of liquidity is therefore strongly determined by the depth and breadth of a market.

This paper utilizes market data available via Bloomberg on both the sukūk and the conventional bond markets. Following an analysis of the market and each obligor type, we will construct a hypothetical portfolio based on prudent and practical rating and tenor limits that are typical of the risk management guidelines governing a highly rated MDB's liquidity investment activities; the portfolio constraints factor in the big three credit rating agencies' rating methodologies.

The relevance of the problem that I have addressed is enhanced by the relative lack of academic papers on an Islamic megabank. There are some journalistic articles that mentioned (rather vaguely) different ideas of setting up a megabank in different countries such as Malaysia, Indonesia or Turkey, and as a commercial or as a new intergovernmental venture. While it may initially appear to be difficult to produce a literature review in the usual sense, there is an extensive amount of literature produced by the rating agencies (Standard & Poor's, 2012). While the details for a megabank MDB were not worked out in detail in the media (Annuar, 2015), the issue of a LAB portfolio for a bank's ALM (asset-and-liability-management) purposes has been discussed extensively in the field of applied finance for

conventional commercial banks (Choudhry, 2007).

The relevance of this discussion for an Islamic megabank MDB stems from the expectations / methodologies of the rating agencies given their new rating methodologies for Multilateral Development Banks (Moody's, 2013). While there may be some overlap with commercial banks in areas such as the treatment for RAC (risk-adjusted capital), there are nevertheless significant differences to the methodology as it is applied to commercial banks (S&P, 2012). References to the importance of LAB portfolio construction in broader ALM literature is prominent (Choudhry, 2007) in addition to the methodologies of the rating agencies (Moody's, 2013; S&P, 2012).

1.4 Hypothesis

The hypothesis being developed and tested in this context is whether such a sukūk LAB portfolio may be structured for a megabank MDB. Given the size and structure of the sukūk market in 2015, a newly established megabank MDB that has to satisfy the requirements of the credit rating agencies' methodologies will be able to structure an appropriate LAB portfolio without "crowding out" other investors from the global sukūk market.

While the practical relevance of this approach is obvious, from an academic perspective it is also very interesting to discuss scenarios on how markets would respond to the structuring and use of this portfolio by a new megabank MDB. For example, will the megabank's additional demand lead to its own additional supply or will there be a crowding-out effect because the megabank (presumably with a better credit rating than the much smaller commercial Islamic banks) absorbs a major share of available liquid sukūk? How can the smaller commercial banks then meet their Basel III requirements? The paper will explore answers to these questions based on the analysis; reflecting briefly in the discussion on the implications of our solution for the market equilibrium and for the dynamic development of the sukūk market. This empirical finance analysis should enrich the academic literature dealing with the topic.

2. Method

We will limit our study to sukūk and bond securities denominated in the IMF's SDR (special drawing rights) basket of currencies. A megabank MDB would have a global focus, similar to the established MDBs. The official currency of most MDBs are USD or SDR of the IMF and their liquidity investment policies and guidelines typically only allow for investments denominated in SDR or other hard currencies, consequently this study is limited to sukūk and conventional bonds denominated in SDR basket currencies. The SDR basket currency is composed of the USD, EUR, GBP and JPY. The Chinese renminbi will be included in the SDR basket currency effective October 2016 (the decision on inclusion was taken in November 2015), and so the renminbi is not included in this analysis.

2.1 Country and Counterparty Exposure Limits

Country and counterparty exposure limits could pose a challenge for a megabank MDB. Introducing country and counterparty exposure limits into this analysis could complicate the analysis by introducing a variable element into the modeling; the mandate of the megabank MDB would significantly influence the degree and magnitude of the country and counterparty exposure limits. Recognizing the importance of country and counterparty exposure limits in the rating agencies' methodologies, however, we considered such limits for this study based on best practices and averaging across jurisdictions, with a caveat on the potential variability that it could inject into the analysis.

The relatively limited number of frequent sovereign sukūk issuers causes certain limitations for a megabank's Sharīʿah compliant LAB portfolio by leading to a concentration in certain sukūk papers considering the relative scarcity of frequent sovereign sukūk issuers in the market, partially due to the unavailability of unencumbered assets; however, this should change in the future as we see a greater diversity of frequent issuers given the need for sovereigns to finance budget deficits.

2.2 Layers of Filters Applied

As the data is filtered down to SDR denominated issuances that comply with tenor / maturity limits (the maturity limits vary based on the credit ratings as detailed starting in Table 2), the amount outstanding and the number of sukūk issuances decreases significantly. The maturity limits would typically be set by an MDB's risk-management department, in line with the credit rating agencies' MDB rating methodologies. The method applied in the paper is rather straightforward and mechanistic: we start with a large universe of sukūk. Then several layers of filters reflecting the requirements of a megabank MDB are defined and applied successively to the sukūk universe. In the end, i.e. after passing all filters, a sufficient number of sukūk are left so that a portfolio can be compiled.

3. Results

3.1 Sukūk Market

As of February 2016, there were 2,135 sukūk issuances outstanding in the market for a total outstanding notional exposure amount of USD 332 billion according to data obtained from Bloomberg.

Table 1. Sukūk Market by Currency

Currency	Issuance Quantity	Amount (USD)
MYR	1741	182,485,928,949.98
USD	125	82,315,432,200.00
IDR	81	16,038,893,380.51
GMD	62	10,145,657.95
SAR	41	29,572,099,901.80
QAR	18	7,937,423,400.00
TRY	17	3,120,361,935.40
SGD	12	1,808,974,660.50
BHD	9	2,734,459,830.00
BND	6	377,087,400.00
EUR	6	1,201,959,820.00
PKR	5	1,035,949,502.27
GBP	4	608,242,690.00
OMR	2	779,203,000.00
YER	2	394,179,787.50
XOF	1	205,233,000.00
BDT	1	43,645,800.00
AED	1	1,195,261,689.64
NGN	1	62,936,916.30
	2135	331,927,419,521.85

Data: Bloomberg data as of February 1, 2016

As is clear from Table 1, 54.5% of the total sukūk volumes issued are denominated in Malaysian Ringgit. The remaining sukūk were issued primarily in the currencies of the other major Islamic finance centers including Indonesia, Qatar, Saudi Arabia and Turkey. It should be noted that sukūk issuances by multilateral institutions such as the IILM and the IDB are typically attributed to the country of their headquarters in many data sources as demonstrated in Table 8 in the Appendix, when it would be more accurate to classify them as "supranational"; in terms of the currency of the issuances, most multilateral institutions issue sukūk in SDR currencies.

3.1.1 Sukūk Denominated in SDR Currencies

As shown in Table 1, the amount of sukūk outstanding in SDR denominated currencies is approximately USD 84 billion, representing 25% of the sukūk market while the number of SDR currency sukūk issuances outstanding is 135, or 6% of the total number of issuances outstanding (irrespective of the date of issuance). This implies that the average issue size of SDR currency issuances (i.e. international issuances) is much larger compared to the average issue size of local currency issuances.

Figures 1 and 2 illustrate the breakdown of SDR currency denominated sukūk by credit rating and obligor type. The Bloomberg Composite Rating is used to analyze the credit profile of the sukūk. In the rare cases where there are no ratings assigned / provided in the data feed (but an actual rating exists), or the sukūk are non-rated by the Bloomberg Composite, the ratings are modified using the following criteria:

- If the sukūk is rated by only two of the three rating agencies, the lower of the two ratings is used
- If the sukūk is rated by only one of the three rating agencies, that rating is used
- If the sukūk is not rated by any of the rating agencies, the rating is changed to NR (not rated)

The obligor is classified based on Bloomberg's sector classification and the sectors besides Government and Financial have been consolidated into Corporate.

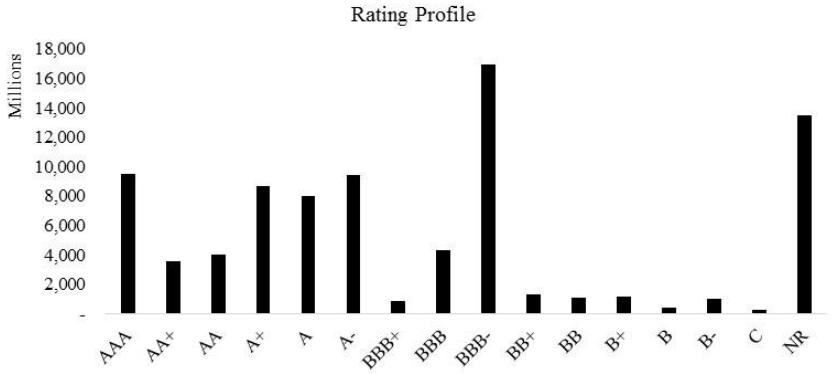

Figure 1. SDR Sukūk Market by Rating

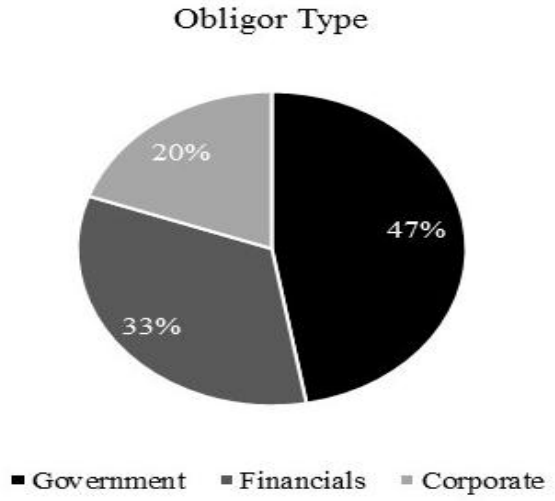

Figure 2. SDR Sukūk Market by Obligor Type

Data: Bloomberg data as of February 1, 2016

As shown in Figure 1, sukūk outstanding is the highest in the BBB- rated bucket. Similarly, the amount outstanding in the below investment grade (speculative rating) buckets is much lower, suggesting limitations in issuing international sukūk. This limitation can be explained by the typically robust investment policies and guidelines, guided by Basel III and rating agency considerations, of institutional investors that would invest in international sukūk, thereby depressing the "demand-side" of the equation for sub investment-grade rated sukūk; essentially, there is no supply because potential issuers are discouraged by the anticipated lack of demand from institutional investors.

While the sukūk market, as shown in Figure 2, is well diversified across different types of obligors, the proportionate representation of corporate obligors in the overall mix is lower relative to the conventional bond markets. Government related issuances account for nearly half of the total outstanding amount of sukūk. The Government sector also includes government related entities / agencies and supranational issuers (which are separated later in the analysis for portfolio construction purposes). The following sections will analyze each obligor type and construct a portfolio based on prudent and practical rating and tenor limits.

3.1.2 Government

The data for Government sukūk are filtered based on rating and tenor limits outlined in Table 2. At MDBs, these rating and tenor limits are typically determined by the risk-management departments in order to maintain compliance with the big three rating agencies' methodologies. We derive the limits used for our portfolio construction purposes based on best practices across established MDBs. The minimum rating and the maximum tenor for government issuances are BB+ and 15 years, respectively. It should be noted that in the interests of space conservation, rating categories for all tables contained in this analysis are shown only where issuances have been found and reported. For example, in the below table, the following rating buckets: AA-, A+, BBB+, BBB, and BB+ are not shown as there were no sukūk matching those criteria. However, for modeling purposes, we nevertheless assigned maximum tenor limits for all rating buckets (i.e. while not shown in the table below, the AA- rating bucket has a maximum tenor of 15 years assigned,

while the A+ rating bucket has a maximum tenor of 10 years assigned, and the BB+ rating bucket has a maximum tenor of 5 years assigned etc.).

Table 2. Filtered Government Sukūk Market

Rating	Tenor	Amount Outstanding	Sukūk Quantity	Duration	Years to Maturity
AAA	15	253,042,000.00	1	3.81	5.00
AA+	15	2,343,220,000.00	3	3.79	5.02
AA	15	4,000,000,000.00	2	4.17	8.00
A	10	1,900,000,000.00	3	3.61	6.71
A-	10	3,800,000,000.00	5	5.00	8.00
BBB-	10	12,000,000,000.00	10	4.55	7.57
		24,296,262,000.00	24	4.40	7.37

Data: Bloomberg data as of February 1, 2016

Post filtering, as can be seen in Table 2, the total government sukūk amounts to approximately USD 24.3 billion across 24 issuances with the BBB- rated bucket accounting for 50% of the total outstanding amount. Columns 5 and 6 in Table 2 displays the average modified duration and the average tenor of the sukūk in the relevant rating bucket. Although, the tenor limit of high investment grade sukūk is 15 years, the sukūk issued usually have a tenor of 5 years at the time of issuance. Conversely, the table indicates that the issuances of lower rated investment grade sukūk (i.e. BBB- rated sukūk) are more in line with the 10-year tenor limit. The weighted average modified duration and tenor of the filtered government sukūk market are 4.4 and 7.37 years, respectively.

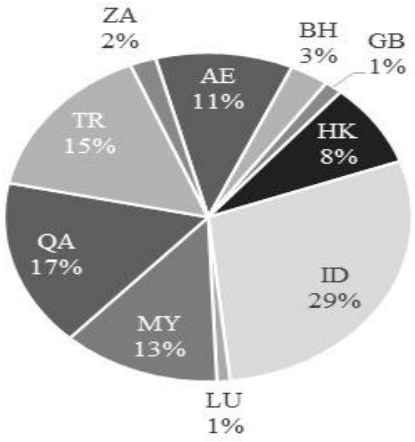

Figure 3. Government Sukūk Country Profile

Data: Bloomberg data as of February 1, 2016

Per Figure 3, government (sovereign) sukūk are only issued by 10 countries with Indonesia and Qatar being the largest issuers accounting for approximately 46% of total sovereign issuances in terms of volume. In terms of geographical diversification, the issuers in the GCC and South-East Asian countries account for 73% of the outstanding amount. Hence, constructing the liquid portfolio given the limited number of sovereign sukūk issuers may be challenging when country, counterparty and obligor type exposure limits are taken into further consideration.

3.1.3 Supranational

The data for sukūk issued by supranational institutions such as the IDB or the IILM are filtered based on rating and tenor limits shown in Table 3. The minimum rating and the maximum tenor for supranational issuances are BBB- and 15 years, respectively. According to the Bloomberg Sector classification supranationals fall under the government sector, however, we segregate them in this study due to the different risk / return profile and the (typically) higher credit ratings afforded to supranational institutions.

Table 3. Filtered Supranational Sukūk Market

Rating	Tenor	Amount Outstanding	Sukūk Quantity	Duration	Years to Maturity
AAA	15	9,255,160,000.00	14	4.81	4.93
AA+	15	1,200,000,000.00	3	4.57	3.67
		10,455,160,000.00	17	4.79	4.78

Data: Bloomberg data as of February 1, 2016

Per Table 3, the sukūk outstanding in the supranational sub-sector amounts to USD 10.5 billion across 17 issuances. Analogous to the findings of government sukūk, the tenor of supranational institutions' sukūk are much lower than the specified limit for the respective credit profiles. Frequent issuers tend to have longer maturities on their issued paper as their greater visibility affords them the ability to issue longer-dated papers while one-time issuers tend to issue only at the 5 year tenor or at shorter maturities.

3.1.4 Banks

The data for Bank sukūk are filtered based on rating and tenor limits outlined in Table 4. The minimum rating and the maximum tenor for Bank issuances are BBB- and 10 years, respectively. The financial sector classification in Bloomberg includes Real Estate and Life Insurance among different types of banks; since these institutions may not be appropriate under this category, we exclude them from the Bank dataset. Additionally, supranational financial / bank issuers such as the IDB would not fall under this category but instead in the previous "supranational" category.

Table 4. Filtered Bank Sukūk Market

Rating	Tenor	Amount Outstanding	Sukūk Quantity	Duration	Tenor
A+	5	2,441,655,000.00	4	2.38	5.00
A	5	3,600,000,000.00	6	1.15	5.00
A-	5	4,750,000,000.00	10	2.65	5.05
BBB+	5	900,000,000.00	2	1.37	5.00
BBB	5	1,850,000,000.00	4	2.34	5.00
		13,541,655,000.00	26	2.07	5.02

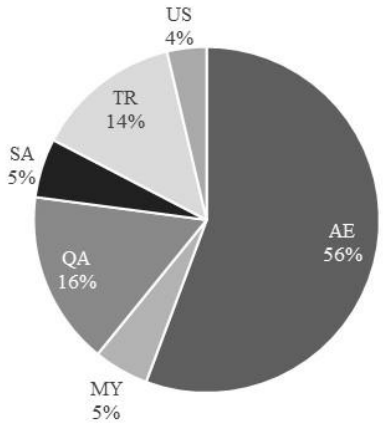

Figure 4. Bank Sukūk Market by Country

Data: Bloomberg data as of February 1, 2016

As is clear from Table 4, there are no bank sukūk rated above A+. The issuances categorized as Banks total USD 13.5 billion among 26 sukūk rated between A+ and BBB. Per Figure 4, more than half of the outstanding Bank sukūk are issued in the UAE and 77% of the sukūk are issued in GCC countries. The lack of sukūk rated higher than A+ may be due to the rating cap on institutions due to the country rating.

3.1.5 Corporates

We consolidate all Bloomberg sectors, with the exception of Government and Financial, as corporate. In addition, the industries excluded from the financial sector classification for the Bank sukūk analysis (i.e. Real Estate and Life Insurance) are included in this dataset. Sukūk issued by GREs (government related entities) are included under the functional category. For example, Emaar, which is 29% owned by the Dubai government, is captured under the Corporates category based on the rating agencies' classification methodology which downplays implicit government guarantees in favor of explicit government guarantees, which are often lacking for GREs. The data for corporate sukūk are filtered based on rating and tenor limits outlined in Table 5. The minimum rating and the maximum tenor for corporate issuances are BBB- and 10 years, respectively.

Table 5. Filtered Corporate Sukūk Market

Rating	Tenor	Amount (USD)	Sukūk Quantity	Duration	Tenor
A+	5	500,000,000.00	1	1.29	5.00
A	5	2,500,000,000.00	2	3.42	5.00
BBB	5	1,942,241,700.00	5	2.60	5.00
BBB-	5	2,900,000,000.00	3	2.45	7.33
		7,842,241,700.00	11	2.73	5.86

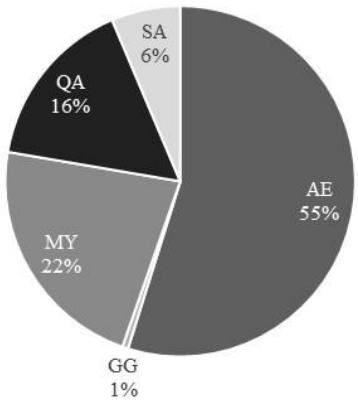

Figure 5. Corporate Sukūk Market by Country

Data: Bloomberg data as of February 1, 2016

Although, there are many corporate sukūk issuances in non-SDR currencies, especially MYR, when the data is filtered down to SDR denominated issuances along with the appropriate tenor limits for the respective rating buckets, the amount outstanding and the number of sukūk decreases significantly. The outstanding corporate sukūk is the lowest in terms of notional amount outstanding and the number of sukūk compared to the aforementioned sectors, despite a consolidated dataset of many sectors. A likely reason for the low number of issuances may be the high cost associated with issuing corporate sukūk relative to other modes of financing available to corporates. Additionally, the lower amount of corporate SDR denominated sukūk can also be explained by the greater likelihood that corporate issuers would choose to issue in non-SDR local currencies, targeting retail investors as opposed to SDR "hard currency" focused institutional investors. Moreover most investment policies and guidelines of SDR currency focused institutional investors consider corporate sukūk to be riskier relative to sovereign guaranteed sukūk, with commensurately higher haircuts, irrespective of the credit rating.

3.2 Sukūk Market vs. the Conventional Bond Market

Given that the conventional bond market is substantially larger in size than the global sukūk market, we used the Bloomberg Global Bond indices as proxies for the overall bond markets in this study as demonstrated in Table 6. The Sovereign bond market is captured by the Global Developed Markets and Global Emerging Markets indices. Similarly, the Global Investment Grade Corporate Index captures the Corporate and Bank conventional bond markets. The data did not include any High Yield Sovereign / Corporate indices due to the credit rating constraints of a typical LAB portfolio for a highly rated MDB.

Table 6. Filtered SDR Sukūk Market vs. the Conventional Bond Market

Obligor type	Rating	Tenor	Sukūk		Conventional	
			Amount (USD mm)	Quantity	Amount (USD mm)	Quantity
Sovereign	AAA	15	253.04	1	6,648,121.08	278
	AA+	15	2,343.22	3	1,120,634.88	51
	AA	15	4,000.00	2	1,171,097.89	47
	AA-	15	-		139,364.73	13
	A+	10	-		5,020.63	7
	A	10	1,900.00	3	4,078,081.80	156
	A-	10	3,800.00	5	108,407.58	22
	BBB+	10	-		1,479,462.61	82
	BBB	10	-		49,536.99	27
	BBB-	10	12,000.00	10	62,323.26	41
	BB+	5	-		69,730.12	19
Sub Total			24,296.26	24.00	14,931,781.55	743
Supranational	AAA	15	9,255.16	14		
	AA+	15	1,200.00	3		
Sub Total			10,455.16	17	-	-
Banks	AAA	10	-		5,494.70	4
	AA+	10	-		2,000.00	2
	AA	10	-		8,560.00	8
	AA-	10	-		1,337,870.74	197
	A+	5	2,441.66	4	226,550.00	60
	A	5	3,600.00	6	664,241.89	177
	A-	5	4,750.00	10	401,325.09	110
	BBB+	5	900.00	2	137,098.90	94
	BBB	5	1,850.00	4	64,289.47	60
	BBB-	5	-		10,950.00	13
Sub Total			13,541.66	26	2,858,380.79	725
Corporates	AAA	10	-		17,650.00	17
	AA+	10	-		302,850.00	32
	AA	10	-		65,850.00	51
	AA-	10	-		976,128.77	120
	A+	5	500.00	1	359,543.78	94
	A	5	2,500.00	2	127,733.92	133
	A-	5	-		154,709.37	155
	BBB+	5	-		664,731.69	212
	BBB	5	1,942.24	5	176,655.83	209
	BBB-	5	2,900.00	3	111,765.83	124
Sub Total			7,842.24	11	2,957,619.19	1147
TOTAL			56,135.32	78	20,747,781.53	2615

Data: Bloomberg data as of February 1, 2016

The credit rating for the bonds and sukūk in the dataset are based on the Bloomberg composite ratings. However, bonds and sukūk issued by some countries (e.g. the United Kingdom) are non-rated even though the credit rating agencies have an unsolicited rating for the country. In such cases the credit rating for the sovereign bonds and sukūk are adjusted to match the unsolicited credit rating for the country. This is driven by the rationale that such sukūk are asset-based, and not asset-backed, which is the case for most sovereign sukūk.

Subsequently, the data collected is filtered down to the SDR basket currencies and to the maximum tenor limits specified for the relevant obligor type and credit rating bucket. As is clear from Table 6, the conventional bond market offers significant depth and breadth to investors compared to the relatively less mature sukūk market. The conventional bond market across the selected obligor types amounts to USD 20.7 trillion across 2,615 issuances i.e. roughly USD 8 billion per average issuance. Sovereign issuances account for approximately 70% of the total amount outstanding in the conventional bond markets. Furthermore, the average issue size of conventional sovereign bonds are much larger than the average issue size of sovereign sukūk. In some cases, a single sovereign bond obligor issues a larger amount than the amount of total sovereign sukūk outstanding, especially for bonds issued by developed countries such as the United States of America.

3.3 Liquid Assets Buffer (LAB) Portfolio

We have adjusted our model by introducing several filters for maximum exposures. The empirical analysis provides academic weight to the megabank MDB deliberations by proving that a LAB portfolio can be constructed using both short-term and long-term sukūk. The structuring process for the portfolio can be replicated using different parameters. There are limitations, however, considering the relatively smaller size of the sukūk markets vis-à-vis the conventional bond markets. The critical parameters (e.g. the most restrictive filters) that allow or prevent the portfolio construction are the credit rating and the maximum tenor requirements. The critical threshold levels for the value of these parameters are BBB- for the credit rating (considering the high concentration of BBB- rated sovereign sukūk issuances) and 10 year for the maximum tenor limit (considering the relatively high concentration of 10 year maturity sovereign sukūk issuances). These two critical thresholds coincide as there is a relatively high concentration of 10 year maturity BBB- sovereign sukūk issuances.

The financial statements of three MDBs were closely examined and best practices were studied for MDBs given rating agency methodology requirements in order to obtain a proxy for the proportion of liquid assets as a percentage of total assets. For each example that was studied, the liquidity ratio as a percentage of total assets was calculated over the last five fiscal years and a simple arithmetic average was taken (the arithmetic average of all three of the MDBs' ratios that were studied over the past 5 years). Thereafter, the derived average across all three MDBs was used to calculate the proxy for the liquidity ratio, which was determined to be in conformity with the rating agencies' requirements for MDBs.

Based on the average of the liquidity ratios, the proxy assumed in this study for the liquidity ratio is 25%. Therefore, assuming a total balance sheet size of USD 20 billion the liquid assets portfolio will consist of USD 5 billion of liquidity instruments in the form of sukūk that are acceptable per the rating agencies' methodology for MDBs. We assume a balance sheet size of USD 20 billion in order to ensure that the megabank MDB is globally relevant (Annuar, 2015). All sukūk are certainly not considered to be high-quality liquid assets (HQLA). The IFSB Standard 12 (2012) has a long list of criteria for sukūk to be considered HQLA: "low credit risk; low market risk; low volatility in prices; high credit rating; ease and certainty of valuation; listed on a recognised exchange; the presence of committed market makers; low market concentration; large trading volumes; low risk weight according to the standardised approach for credit risk; not an obligation of a financial institution or any of its affiliated entities; Sukuk issued by multilateral bodies / high-rated sovereigns / high-rated corporate bodies or public sector enterprises…" (IFSB Guidance Note 6 2015). For the most part, our LAB portfolio matches the IFSB standards for HQLA with the exception that we include the sukūk obligations of investment grade-rated financial institutions in line with the big three credit rating agencies' rating methodologies for MDBs. It is important to note, however, that HQLA typically only comprise one-tenth or less of a LAB portfolio (i.e. a LAB portfolio does not have to be comprised of only HQLA; HQLA are simply a sub-set of a LAB portfolio).

Table 7 displays a USD 5 billion LAB portfolio comprised of only sukūk investments. In addition to the aforementioned assumptions and the previous filters applied to narrow the eligible sukūk universe, the following assumptions are made when constructing the portfolio:

- A minimum investment-grade credit rating is used
- The sukūk is publicly listed and traded
- The maximum country exposure is 20% of the liquid portfolio

- The maximum counterparty exposure limit is assumed to be 10% for a single Sovereign or Supranational and 5% for a single Bank or Corporate in the liquidity portfolio
- The maximum participation amount for each sukūk is 15% of the total issuance size
- The minimum exposure to sovereigns overall is 50% of the total liquidity portfolio

Table 7. Model Sukūk Portfolio for a megabank MDB

Obligor type	Rating	Issuer	Sukūk ISIN	Amount (USD)	Coupon (%)
Sovereign	AAA	Luxembourg Treasury Securities SA	LU1113955196	37,956,300.00	0.44
	AA+	HM Treasury UK Sovereign Sukuk Plc	XS1079249816	51,483,000.00	2.04
		Hong Kong Sukuk 2014 Ltd	USY35527AA11	150,000,000.00	2.01
		Hong Kong Sukuk 2015 Ltd	XS1226268735	150,000,000.00	1.89
	AA	SoQ Sukuk AQSC	XS0801656256	200,000,000.00	2.10
			XS0801656330	300,000,000.00	3.24
	A	RAK Capital	XS0981184541	75,000,000.00	3.30
			XS1210507650	150,000,000.00	3.09
	A-	EXIM Sukuk Malaysia Bhd	XS1243124341	7,500,000.00	2.70
		Malaysia Sovereign Sukuk Bhd	USY5749LAA99	150,000,000.00	3.04
		Sharjah Sukuk Ltd	XS1106137687	112,500,000.00	3.76
		Wakala Global Sukuk Bhd	USY9485PAA04	180,000,000.00	2.99
			USY9485PAB86	120,000,000.00	4.65
	BBB-	CBB International Sukuk Co SPC	XS0708899272	112,500,000.00	6.27
		Hazine Mustesarligi Varlik Kiralama AS	XS0831353361	162,500,000.00	2.80
			XS0975124180	187,500,000.00	4.56
			XS1141043296	150,000,000.00	4.49
		Perusahaan Penerbit SBSN Indonesia II	USY68616AA22	150,000,000.00	4.00
		Perusahaan Penerbit SBSN Indonesia III	US71567RAA41	50,000,000.00	3.30
			US71567RAD89	300,000,000.00	4.33
		ZAR Sovereign Capital Fund Propriety Ltd	XS1113141441	75,000,000.00	3.90
Sub-total				2,871,939,300.00	
Banks	A+	QIB Sukuk Ltd	XS0841096497	112,500,000.00	2.50
			XS1310192031	112,500,000.00	2.75
	A	ADCB Islamic Finance Cayman Ltd	XS0708308845	75,000,000.00	4.07
		ADIB Sukuk Co Ltd	XS0711035286	75,000,000.00	3.78
		BSF Sukuk Ltd	XS0784910431	112,500,000.00	2.95
		FGB Sukuk Co Ltd	XS0654587996	97,500,000.00	3.80
			XS0731930797	75,000,000.00	4.05
		QIIB Sukuk Funding Ltd	XS0843912808	105,000,000.00	2.69
	A-	DIB Sukuk Ltd	XS1241110300	75,000,000.00	2.92

		EIB Sukuk Co Ltd	XS0731642491	75,000,000.00	4.72
			XS0803231827	75,000,000.00	4.15
		EXIM Sukuk Malaysia Bhd	XS0981802738	45,000,000.00	2.87
		SIB Sukuk Co III LTD	XS1202089428	55,000,000.00	2.84
		Sime Darby Global Bhd	XS0879646395	60,000,000.00	2.05
	BBB+	SIB Sukuk Co II Ltd	XS0625554836	60,000,000.00	4.72
	BBB	KT Kira Sertifikalari Varlik Kiralama AS	XS1079236169	75,000,000.00	5.16
		KT Sukuk Varlk Kiralama A.S.	XS0698260758	52,500,000.00	5.88
		TF Varlik Kiralama AS	XS0922143382	75,000,000.00	3.95
			XS1057852912	75,000,000.00	5.38
Sub-total				1,487,500,000.00	
Corporates	A+	Saudi Electricity Global Sukuk Co	XS0764883806	75,000,000.00	2.67
	A	Axiata SPV2 Bhd	XS1316202255	75,000,000.00	3.47
		Ooredoo Tamweel Ltd	XS0999501538	108,060,700.00	3.04
		Petronas Global Sukuk Ltd	USY68868AA92	187,500,000.00	2.71
Sub-total				445,560,700.00	
Supranational	AAA	IFC Sukuk Co	XS1284574297	15,000,000.00	0.44
	AA+	APICORP Sukuk Ltd	XS1310991424	75,000,000.00	2.38
		Iffim Sukuk Co II Ltd	XS1294598088	30,000,000.00	0.47
		Iffim Sukuk Co Ltd	XS1143356654	75,000,000.00	0.57
Sub-total				195,000,000.00	3.86
Total				5,000,000,000.00	

Data: Bloomberg data as of February 1, 2016

As is clear from Table 7, a greenfield megabank MDB with a balance sheet size of USD 20 billion can achieve a liquidity portfolio of USD 5 billion using only sukūk investments while also generating an impressive weighted average coupon return of 3.86%, which is well above the benchmark Dow Jones Sukuk Investment Grade Index weighted average coupon return of 3.44% (as of December 2015 per Bloomberg data). Not only is the sukūk market deep enough to support a megabank MDB's LAB portfolio construction, but the yields generated by the LAB sukūk portfolio would generate returns that beat the sukūk market benchmark index. We will discuss the potential ramifications for the broader sukūk market of the additional demand for USD 5 billion of sukūk introduced to the market by the presence of a megabank MDB.

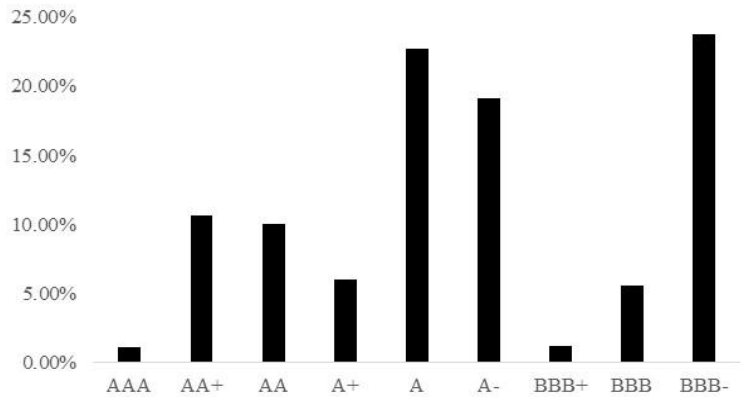

Figure 6. LAB Sukūk Portfolio by Rating

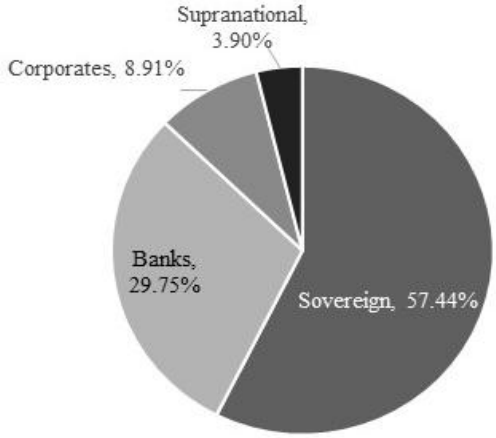

Figure 7. LAB Sukūk Portfolio by Obligor Type

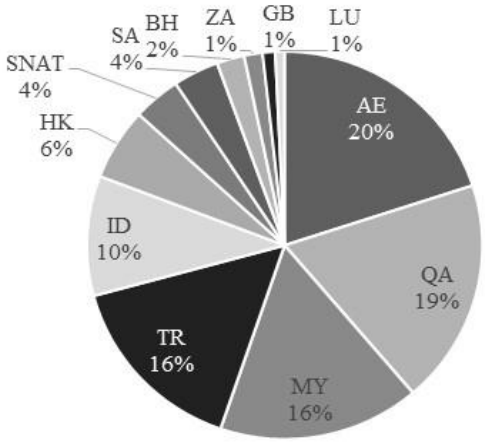

Figure 8. LAB Sukūk Portfolio by Country

Data: Bloomberg data as of February 1, 2016

As shown in Figure 7, 57% of the sukūk in the LAB portfolio are sovereign, while 29% of the sukūk are Bank issuances. While the country exposure of the portfolio is relatively concentrated in the main Islamic finance centers, accounting for more than 80% of the sukūk per Figure 8, the credit rating profile indicates a more diversified portfolio from a credit quality perspective per Figure 6, although there is somewhat of a "bar-belled" distribution with a concentration in the BBB- and the A / A- rating buckets.

It should be noted that according to the eligible sukūk market portfolio construction above, if the liquid assets portfolio consisted of only sukūk, a hypothetical megabank MDB would potentially have to choose from just 9% of the total outstanding amount of sukūk in the markets (i.e. from a reduced pool of USD 56 billion). Since it is unlikely that an institution's liquid assets will only comprise of sukūk, particularly a megabank MDB that will have to comply with the rating agencies' liquidity requirements, other short-term liquidity instruments such as commodity murabaha placements (similar to short-term money-market instruments) and short-term trade finance investments could potentially be included in the liquid assets portfolio.

4. Discussion

The development of the sukūk market is a relatively recent phenomenon. Although, the sukūk market has grown at an astonishing rate, its market size is still small compared to the conventional bond market. This partly explains the lower liquidity and tradability of sukūk compared to conventional bonds, insofar as liquidity and tradability are determined by the depth and breadth of a given market. One of the main challenges for sukūk market liquidity is the supply-demand

disequilibrium. The sukūk market has to continue growing at a reasonable growth rate in the coming years in order to improve liquidity. While a market driven by (or primarily dependent on) governments is sub-optimal, the example of the large role that U.S. Treasury bond issuances play in the conventional bond markets (i.e. serving as a benchmark for pricing, providing a safe harbor to investors in times of uncertainty etc.) provides some ideas to broaden the depth of the sukūk markets. Governments or relevant authorities could organize programs of regular issues of financing instruments in standard maturities with adequate volume to provide a platform for a liquid, deep and active sukūk market; the example of Indonesia stands out in this regard. The limitation is obvious; there is a limited number of highly-rated sovereign issuers that would be willing to issue sukūk.

An additional challenge to growing the size of the supply of sukūk is that markedly lower oil prices could ultimately decrease the available liquidity of Sharīʿah compliant banks based in the GCC region that have been large buyers of sukūk in the past, thereby potentially diminishing demand for additional supply. On the flip side, however, lower oil prices may spur more sovereign sukūk issuances by GCC countries, which would help to broaden and deepen the sukūk markets. As liquidity becomes more scarce globally as the U.S. Federal Reserve contemplates raising interest rates and oil-and-gas generated income decreases for the GCC region and Malaysia, sukūk yields would increase commensurately, potentially rendering sukūk as attractive eligible investments for a greater number of conventional investors so that the aggregate demand for sukūk does not shrink substantially, and potentially even increases.

One potential limitation in this regard is that with each sukūk issuance, there may be a decrease in the availability of unencumbered assets, which has led to many sukūk issuers issuing once, and then not tapping the markets again. This is not necessarily the case, however, because the example of the IILM has demonstrated how a continuous re-issuing of liquidity sukūk referencing the same assets is feasible without a commensurate decrease in the pool of assets (although some market participants have objected to this method from a Sharīʿah perspective). However, recurrent short-term liquidity sukūk do not mobilize funds for long-term infrastructure projects and so this would be of marginal use to many sovereign or MDB issuers. But potentially innovative project financing sukūk structures could be found for the production of future public assets to overcome the shortage of existing assets.

Importantly, lower oil prices led to a wave of sovereign credit rating downgrades of some GCC countries by the credit rating agencies in February 2016 (the data used in this paper's analysis was pre-downgrade data). If oil prices remain depressed for an extended period of time combined with volatility in the global markets, any further sovereign credit rating downgrades could complicate the portfolio construction of a LAB for a megabank MDB. This would particularly be the case if the sovereign downgrades were to affect sukūk issuers that were rated at the cusp of investment-grade (i.e. BBB-); sub investment-grade rated sukūk would not be eligible for a LAB portfolio. Fortunately, most GCC issuers still have a significant buffer and would require several notches of downgrades before falling below investment-grade status.

While conventional bonds face similar challenges on the issue of liquidity and potential sovereign credit downgrades, the issue is more striking for the sukūk markets. Given the relatively smaller size of the sukūk market, and the commensurate difficulty in constructing a LAB portfolio for a megabank MDB, the task of constructing such a LAB portfolio would become that much more difficult if frequent sukūk issuers had their credit ratings downgraded, or if the maximum tenor limits acceptable for a LAB portfolio were constricted by more stringent rating agency methodologies for MDBs.

Aside from the market for U.S. Treasury bonds, one could argue that liquidity is an issue confounding conventional bonds as well, and not only the sukūk market. Additionally, many sovereign conventional bond issuers that are heavily reliant on oil and natural gas income such as Norway face the risk of credit rating pressures as well. However, the substantially smaller size of the sukūk market means that a megabank MDB would have less room to maneuver if the decisive parameters for a successful LAB sukūk portfolio were to come under increased pressure.

In general, the global intermediary banks that facilitate bond and sukūk trading by committing their own balance sheets now face stringent capital requirements under Basel III and other regulatory changes such as the Dodd-Frank Act. These "market-making" intermediary banks are therefore gradually moving away from warehousing bonds and sukūk as part of the bond trading business; as a result, liquidity suffers further.

The implications of our megabank MDB sukūk LAB solution for the market equilibrium and for the dynamic development of the sukūk market could be significant. Our portfolio for a hypothetical megabank would only be able to choose from 9% of the total outstanding sukūk (and potentially an even more limited pool if we were to look at only the top quality segment i.e. sukūk that are rated A- and higher in terms of credit ratings). This will certainly have an impact on prices and supply conditions, but it may also trigger reactions from competitors, and it may have some regulatory implications such as greater haircuts by the rating agencies.

In general, regulators (whether outright regulators or de facto regulators, in the case of the credit rating agencies) are not keen on a financial institution holding an outsized position in any given liquidity instrument, and the regulatory haircuts

increase commensurately with the size of the position. For example, if a megabank MDB were to hold 50% of a given sukūk issuance as part of its LAB portfolio, the haircut applied to that liquidity position (i.e. the need to hold a cash balance to offset the position) would be much higher than if the megabank MDB held 15%, or less, of a given sukūk issuance. Incidentally, we assumed 15% of a given sukūk issuance as the maximum threshold for our LAB portfolio construction in line with best practices that are driven by rating agency MDB rating methodology considerations.

On the supply side of the equation, the presence of a megabank MDB would impact the pricing of sukūk issuances in a positive way. The existence of an additional ready buyer of relatively high quality international sukūk would encourage potential sukūk issuers, particularly sovereign obligors, to tap the markets at tighter yield levels. Essentially, the additional demand would facilitate cheaper funding for high-quality sovereign sukūk issuers. The benefit for corporate sukūk issuers would be somewhat limited due to credit rating and maturity constraints on the LAB portfolio construction. There is also the potential of a "crowding-out" effect as the megabank MDB would absorb the supply of high-quality international sukūk, however, this risk is mitigated by the likelihood that the supply would adjust upwards to reflect the increased demand.

5. Conclusion

While MDBs are not formally required to conform to any regulatory requirements or constraints, MDBs nevertheless follow a prudent strategy to ensure that they maintain sufficient liquid funds to meet future contractual obligations and to maintain uninterrupted financial operations in the event of market stress or unattractive market conditions (Bessis, 2013). Per the credit rating agencies' (Standard & Poor's, Moody's, and Fitch) methodologies, a significant portion of this liquidity is maintained in sukūk for an Islamic MDB.

As we have demonstrated in Figure 7, more than half of the sukūk in the LAB portfolio are sovereign in nature. While the country exposure of the LAB portfolio exhibits some geographic concentration, the credit rating profile indicates a more diversified portfolio from a credit quality perspective per Figure 6.

If the liquid assets portfolio of a megabank MDB consisted of only sukūk, a hypothetical megabank MDB would potentially have to choose from roughly one-tenth of the total outstanding amount of sukūk in the markets. Since it is unlikely that an institution's liquid assets will only comprise of sukūk, particularly a megabank MDB that will have to comply with the rating agencies' liquidity requirements, other short-term liquidity instruments such as commodity murabaha placements (similar to short-term money-market instruments) and short-term trade finance investments could also be included in the liquid assets portfolio.

Table 7 demonstrates how a USD 5 billion LAB portfolio could be structured for an Islamic MDB, comprised of only sukūk investments based on the following assumptions governing the sukūk:

- A minimum investment-grade credit rating is used
- The sukūk is publicly listed and traded
- The maximum country exposure is 20% of the liquid portfolio
- The maximum counterparty exposure limit is assumed to be 10% for a single Sovereign or Supranational and 5% for a single Bank or Corporate in the liquidity portfolio
- The maximum participation amount for each sukūk is 15% of the total issuance size
- The minimum exposure to sovereigns overall is 50% of the total liquidity portfolio.

Our megabank MDB LAB portfolio matches most of the standards for HQLA with a few exceptions, since we include sukūk obligations in line with the credit rating agencies' rating methodologies for MDBs. This is impressive when we consider that HQLA are simply a sub-set of a LAB portfolio.

We have demonstrated that the structuring of a relatively high-quality LAB portfolio comprised only of sukūk is possible for a megabank MDB. In conclusion, the analysis of the sukūk market demonstrates that although the sukūk market is not as deep when compared to the overall size of the conventional bond markets, the sukūk market is nevertheless sufficiently large for a megabank MDB with a balance sheet size of USD 20 billion to maintain its liquidity in a Sharīʿah compliant format using sukūk to construct a LAB portfolio of USD 5 billion.

References

Annuar, N. (2015). *Islamic megabank: A redundancy or a need?* Dubai and Kuala Lumpur, Malaysia: Islamic Finance news.

Bank for International Settlements (2015). Quarterly Review, Basel, Switzerland: BIS. http://www.bis.org/publ/qtrpdf/r_qt1503.htm

Bessis, J. (2013). *Risk Management In Banking (third edition)*. West Sussex, United Kingdom: John Wiley & Sons Ltd.

Choudhry, M. (2007). *Bank Asset and Liability Management: Strategy, Trading, Analysis*. Singapore: John Wiley & Sons Ltd.

Emmy, A. A. (2014). *Global Leaders in Islamic Finance – Industry Milestones and Reflections*. Singapore: Wiley.

International Islamic Financial Market (2016). IIFM Sukuk Report 2016 (5th ed.), Bahrain: IIFM. http://www.iifm.net/system/files/private/en/IIFM%20Sukuk%20Report%20%285th%20Edition%29%20A%20Comprehensive%20study%20of%20the%20Global%20Sukuk%20Market.pdf

Islamic Financial Services Board (2015). Guidance Note 6, Kuala Lumpur, Malaysia: IFSB. http://www.ifsb.org/standard/GN6%20GN%20on%20LRM%20%28December%202015%29%20%28final%29.pdf

Moody's Investors Service (2013). Methodology for Multilateral Development Banks, New York, NY: Moody's Investors Service.
https://www.moodys.com/research/Multilateral-Development-Banks-and-Other-Supranational-Entities--PBC_161372

Moody's Investors Service (2013). Multilateral Development Banks and Other Supranational Entities, New York, NY: Moody's Investors Service. https://www.moodys.com/research/

Sharif, A., & Y-Sing, L. (Reporters). (2016). *Investors Seldom Had It So Good as Sukuk Sales Rise to Record*. Dubai and Kuala Lumpur, Malaysia: Bloomberg.

Standard and Poor's Rating Services (2010). Bank Capital Methodology And Assumptions, New York, NY: S&P Ratings.
http://www.standardandpoors.com

Standard and Poor's Rating Services (2012). Supranationals Special Edition, New York, NY: S&P Sovereign Ratings Group.
http://www.standardandpoors.com

Standard and Poor's Rating Services (2012).Multilateral Lending Institutions And Other Supranational Institutions Ratings Methodology, New York, NY: S&P RatingsDirect.
http://www.standardandpoors.com/ratingsdirect

Appendix

Table 8. Sukūk Market by Country

Country	Quantity of Issuances	Amount (USD)
MY	1730	187,066,617,925.48
ID	89	23,848,599,880.51
GM	62	10,145,657.95
AE	54	30,957,861,689.64
SA	50	37,287,739,801.80
TR	34	10,335,180,045.40
QA	26	15,627,735,900.00
SNAT	21	11,152,116,500.00
SG	17	2,033,394,860.00
BH	14	4,346,635,680.00
PK	6	2,035,949,502.27
BN	6	377,087,400.00
KW	4	553,317,325.00
HK	3	2,096,556,200.00
US	2	600,115,000.00
OM	2	779,203,000.00
YE	2	394,179,787.50
GB	2	1,220,980,000.00
GG	2	42,241,700.00
LU	1	253,042,000.00
JE	1	11,178,690.00
FR	1	617,820.00
BD	1	43,645,800.00
ZA	1	500,000,000.00
NG	1	62,936,916.30
CH	1	7,994,000.00
SN	1	205,233,000.00
KZ	1	77,113,440.00
	2135	331,927,419,521.85

Data: Bloomberg data as of February 1, 2016