

A Study of *Sukuk* Bond Market-Making at the London Stock Exchange, 2011-20

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Abstract

This paper has the objective of studying the Islamic bond market in the London Stock Exchange (LSE) which surprisingly is a latecomer, 21 years after the first Islamic bond that was listed in 1990. London took time to assess the market debut although it is the Bank of England that paved the way for the level-playing-field regulations to create Islamic banking. The Shariah-compliant Islamic bonds known as *sukuk* are traded in 23 plus markets and there are 2,340 such faith-based issues as at 2021. The total funds raised to-date in such exchange-traded Islamic bond exchanges over 31 years is worth US\$526 billion with an average issue size of US\$220 million each globally. London has raised US\$50 billion with some 125 issues during its ten-year history. With perhaps the fastest growth rate among all exchanges, LSE chalked a growth rate of 56% per year, an extraordinary achievement with an average issue size 2 times bigger than the world average. In contrast, the global *sukuk* market growth rate is about 8% to 12% per year. The growth rate of the much older and larger mainstream bond market in some 137 market places is in the range of 4% to 5% per year. That makes it interesting to study the London market to understand its institutional structure, market-making efforts, liquidity, issuance effect and other pertinent aspects.

Key words: Islamic bonds, *Sukuk* markets, Listed Islamic bonds, London Stock Exchange, Face value of market, Growth rate

JEL Classification: G14, G21, G24

1.0 Islamic bonds attracted worldwide interest since 1990

This paper focuses on the *sukuk* market listed on the London Stock Exchange (LSE) that is fast becoming a major big-ticket player in the development of *sukuk* in just over ten years and its first listing – *Wakala Global Sukuk* (ID: MSYUKGSAB86) – is dated 6 July 2011.¹ Specifically, this paper seeks to provide a description of how LSE came to be a key player in *sukuk* despite entering the primary market 21 years late. There are some 137 exchanges across the world where the mainstream spot financial securities such as bills, bonds, and stocks are actively traded. There are also about 60 futures securities trading derivative securities. Of these 137 markets for spot trading, 76 engage in market-making and transacting in Islamic financial securities. Additionally, there are money markets that actively trade Islamic Money Market (IMM) instruments to facilitate interbank activities. This paper is about LSE's Islamic bond market, *sukuk*.

Among the various Islamic financial securities, perhaps the most well-known to global markets is the Islamic bond or *sukuk*. The first *sukuk* in modern times was issued back in 1990 by ShellMDS in Malaysia. Since then, the global appetite for *sukuk* has grown. Over its 31-year short history, *sukuk* have been listed and traded in more than 23 global financial centers, raising more than USD0.562 trillion worth of funds for faith-based investors on the

¹ See Miller, Challoner, and Atta (2007) for a description of how the Bank of London worked over several years before the LSE started *sukuk* trading to establish a legal structure for Islamic securities to be traded in the United Kingdom. That effort paved the way for the building of legal foundations to attract Islamic Finance to come to London's financial center. Also Khan, and Mirakhor (1994) and Lim (1998) paved the way to provide a coherent theoretical basis for Islamic Finance as a specialized finance to be recognized long before the Bank of England started to recognize Islamic Finance as a niche market, just as the Bank did some 100 years earlier to recognize investment banking. Since then there is reduced opposition to the new contracting methods embodied in the design of Islamic securities. Wilson (2008) was the first publication to advance the Islamic bond trading, although that idea appeared in print in the journal *Islamic Economics Studies* in 1978. The theoretical literature was developed for Islamic banking in Ariff, Iqbal and Shamsheer (2012); for *sukuk*, Safari, Ariff & Shamsheer (2014).

open London market. OTC market transactions especially among international banks have also contributed to the proliferation of *sukuk* with an estimated additional USD550 billion worth of trades: total *sukuk* value is USD1.1 trillion. With all Islamic financial securities forecast to be worth USD3.8 trillion by 2023 (Cheong, 2018), further investigation into the largest contributing asset – *sukuk* – is necessary while examining in detail the LSE’s market.

LSE’s interest in this market started in 2011 with its first listing in July that year, some 21 years after the first *sukuk* was trading in 1990 elsewhere. To put things into perspective, there are 125 *sukuk* issues listed and traded on the LSE since 2011 with some USD50 billion faith-based capital raised to-date – an average of USD400 million per issue, so big-ticket fund-raising. This is approximately twice larger than the *sukuk* issued in the other 22 markets. In contrast, the *sukuk* issued by Shell MDS back in 1990 raised approximately USD33 million. Also since the first *sukuk* in 1990, a further 2,340 amounting to USD526 billion² have been issued and are trading across the *sukuk* markets, of which 9 per cent are traded on the LSE, a strong indication of its importance in the global *sukuk* market-making.

In the past 5 years, new capital raising activities worldwide through *sukuk* issues have declined to about 8 per cent per year. Prior to 2014, the annual growth rate was 12 per cent. Despite the slowdown, market analysts in 2020 predict that fund-raising through *sukuk* in primary markets may surpass the current 8 per cent growth rate well into the 2020s. Despite being a latecomer to *sukuk*, the LSE is poised to be a major contributor to this growth, having added 125 large issues, and growing at high growth rate – roughly 7 times the average growth

²There is no consensus in the literature on Islamic Finance market reports as to the exact number of *sukuk* listed in 23 bond markets. For LSE, we have confirmed with our private access to the latest data with Thompson Reuters that there are 125 issues in London, including a small number of unrated bonds in the list. As for what is the total number, we could only find evidence by counting that there are 2,340 issues as at end of 2020. We also came across an exaggerated claim there are 8,000 over listed. We however could not find evidence to support that number.

of the other 22 worldwide *sukuk* markets. As London's global importance in *sukuk* continues to grow, a deeper understanding of the LSE's Islamic bond market will provide a record for readers to gain richer insights to the alternative of raising money through stocks for example in the case of sharia-compliant fund-raising for faith-based investors.³

The rest of the paper is divided into several more sections for the trading community to understand this market as a long-term market for fund provider for larger issues. Section 2 provides an overview of *sukuk*, its classifications, and characteristics besides a description of the infrastructure in place for the primary market-making as well as the issuance regime (the source for this is Safari et al. (2013)). In Section 3, the reader will find the structure of the market including information on the yield, maturity, and the risk ratings scores of the *sukuk* traded. In Section 4, we present a theoretically-backed research agenda to shed further light on the hurdles related to *sukuk* valuation (including ratings and yields) and the price effects of new *sukuk* issues. Section 5 concludes this paper.

2.0 *Sukuk* – An Overview

2.1 *Shariah* classifications of *sukuk*

The markets' 400 years of experience with conventional bonds has led to simplification of the regulations for their: (i) design; (ii) listing; (iii) servicing; and (iv) liquidation; which greatly reduces their cost of contracting. That is not the case with *sukuk*. While virtually all conventional bonds are built on a common structure, *sukuk*, as shown in Safari, Ariff and Shamsher (2013), can differ significantly from one issue to another as these are built upon

³ The first comprehensive book on the theory, classification and risk-return structure of *sukuk* was released as an Islamic Finance book series by John Wiley publisher (see Safari, Ariff, and Shamsher, 2014). That book provides a comprehensive analysis of *sukuk* financial behavior across 12 countries trading that class of bond at that time of publishing that book. The LSE then had just 5 *sukuk* bonds traded. This article is perhaps the first to analyze a single market-making a guide to investors in the hope that more country studies will follow soon for a carefully-analyzed finding for reference by analysts whose work is needed by faith-based investors.

and classified according to Islamic regulations. *Sukuk* typically differ from common bonds/notes in three ways. First, interest payment is strictly avoided by defining rewards of investments as profit-sharing. Since a bond issuer participates in the risk of the *sukuk*-funded project of an entrepreneur, the concept of asset-backing is devised to enshrine this by creating a method of payments (returns) through a company that holds the bonds and receives the payments by the borrower for distribution to investors as profit-shared returns.

Finally, the design and structure of *sukuk* vary, depending on the purpose of the investments. For example, if a true (meaning, tangible) asset does not yet exist for a project's financing i.e. the asset-to-be-created is now absent, the asset-backed principle requires a work around this principle to be devised by creating the assets-to-be-created for the use of the fund. These aspects make the contracting for *sukuk* a rather complex issue involving more than two parties. Figure 1 summarizes the design principles used for the three types of *sukuk*. The three principal forms of *sukuk* – asset-backed, equity-based, and pure-debt – as seen in Figure 1 can be further sub-classified according to the specific Islamic legal principles or financial characteristics that is governing a contract. These classifications are presented in Figure 2. The reader can see that to lump all three types as Islamic bonds will be a mistake so each class needs to be analyzed as separate bonds. There are valid differences across the six different principal issue names shown against the three types.

The primary modes of Islamic finance governing *sukuk* structure or design are *Mudarabah* and *Musharakah* (Chapra, 1998) because they are based on the profit-and-loss sharing (PLS) paradigm which is fully endorsed by the Shariah Boards across the world. Following the PLS paradigm, the outcome of investment (i.e. the actual amount of profit or loss) is completely dependent on the performance of the funded project. This is unlike the mainstream bonds where returns are predetermined just as the phrase “fixed-income” indicates demanded from

borrowers irrespective of the outcome (see Shakespeare's *Merchant of Venice* for an extreme interpretation of the mainstream bonds. It should also be noted that funds raised via *sukuk* are for a specific purpose (e.g. a project) and not intended for general use by the borrowers

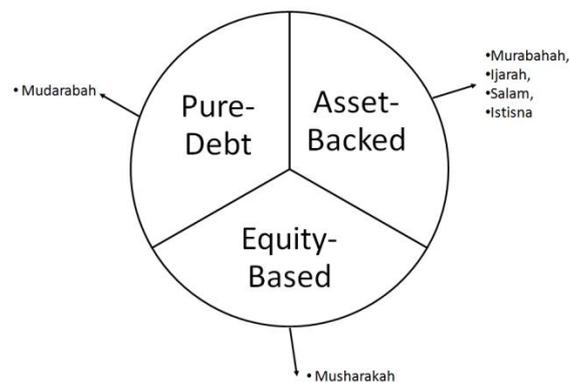


Figure 1: *Sukuk* based on their underlying contractual structure

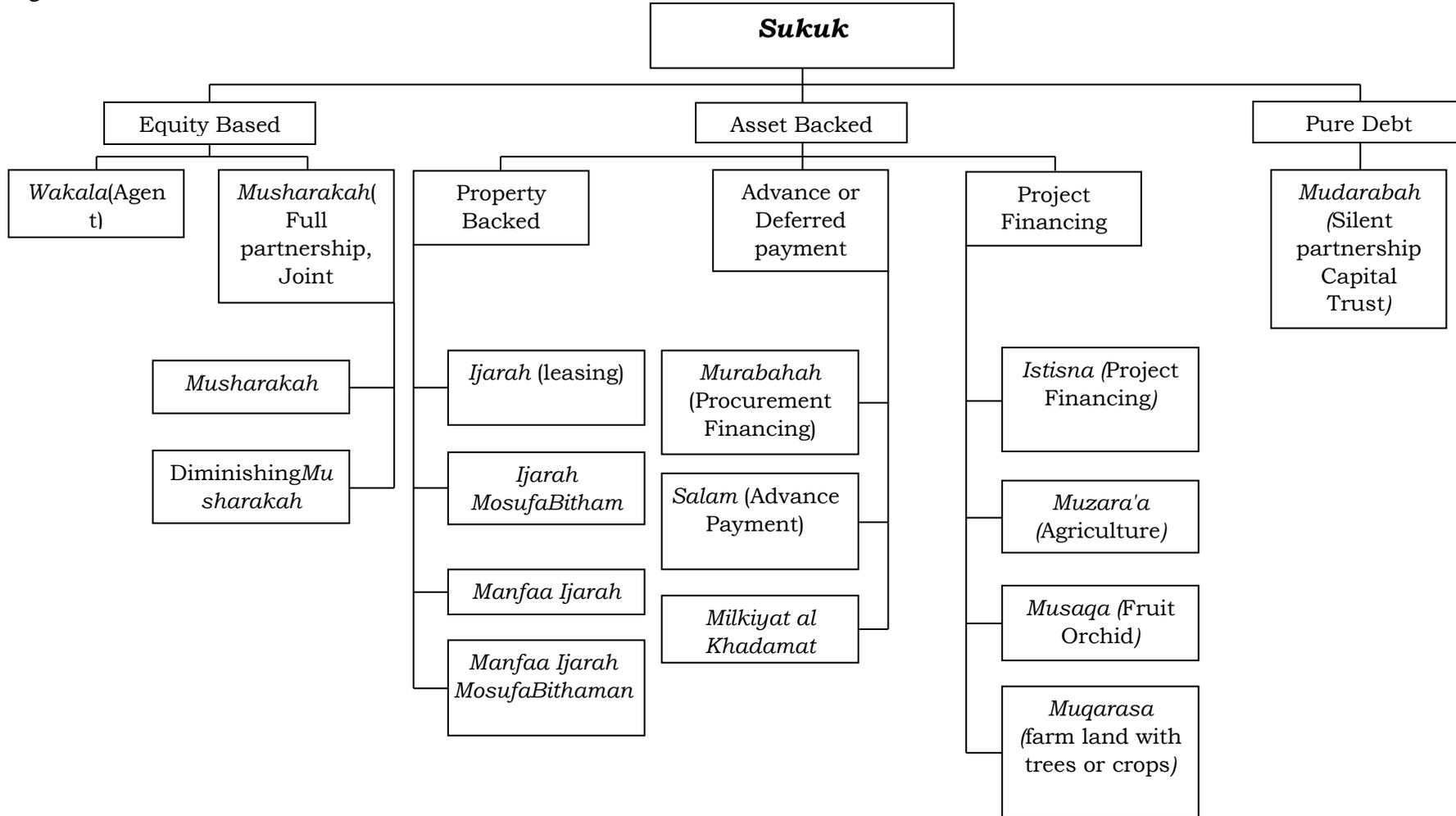
There are broadly three types of *sukuk*. First, by making a contract for an investor to be actively involved as the joint-manager on funded project or as active manager of the firm, he/she then funds a diminishing payment of the borrowed funds as the project comes to an end in n -periods. Thus, a common-stock-like *sukuk* with provisions for liquidating a bond at the end of n -period provides for participation in the project by the investors by sharing the risk, and then sharing the profits on a pre-agreed ratio. Such bond covenants are called equity-based (*Musharakah*) *sukuk*, something like the common stock with a finite life (such a security does not exist, although a preferred stock will be similar to this *sukuk*). Next is the pure debt-based (*Mudarabah*) *sukuk*, where the investor is a silent partner in the project so the investor agrees that he/she will benefit to the extent only at the pre-agreed rate of PLS in the profits. The third type is the asset-backed *sukuk*, where the assets of a firm that is known ahead of time with a market value as providing certain cash flows (e.g. the building owned by an enterprise earning rents) are to be transferred to fund-provider until the contract ends. The

fund-provider gets profits distribution from the cash flows generated from those escrowed assets.

Under each of these main types of *sukuk*, there are different legal principles that can be used for contracting, introducing further sub-types. We show several such principles in the branches under each of the three main types in Figure 2. For example, on the LSE, there is at least one *sukuk* based on the *Wakala*-principle. While determining a *sukuk*'s form (equity, debt or asset-backed) is relatively simple, the various legal principles and subsequent contracting rules are much more complex at this stage of the development of the markets. There are already calls for simplifying the standard contracts, though that will take time to achieve.

What principle a given borrower will use may also depend upon the peculiar practices of the market where the contract is made. In Malaysia for example, a commonly used principle for *sukuk* is *ijara* – a lease-type security where the fund is getting a “rent” for plant and equipment financed by a *sukuk* issue. In other markets, the regulators may prefer the *Wakala* principle. It is expected that some time in future, simplification of contracting terms will occur as the market gains depth and the cost of contracting so many variety of contracting terms will fall off by the wayside to make the market more attractive, a thing that happened to mainstream bonds over 250 years.

Figure 2: Classification of *Sukuk* Contracts Based on Their Financial Characteristic



2.2 Sukuk on the London Stock Exchange

Investors seeking capital funds for investment to earn a decent return typically consider four sets of information when considering which market to list: (1) currency of the issue; (2) the cost of issuance; (3) liquidity of trading; and (4) the dispute settlement mechanisms in the event of default by the issuer. Choosing a currency in which to make the issue is important. A market that permits issuance in major currencies is desired where issuance in several stable currencies are unavailable. LSE, as the world's most sought-after fund-raising venue offers this convenience thereby ensuring a reasonable likelihood for the bond to be fully subscribed in the most common currencies such as the sterling pound, the US\$ or any number of other currencies, besides keeping transaction costs low. Our analysis on the degree of over-subscription and the number of currencies for *sukuk* issues reveal LSE is a suitable venue for seeking Shariah-compliant funds with lowest cost an highest benefits.

The institutional arrangement in a market place that produces orderly price formation with lower cost of issuing an issue is a key economic consideration. The fact that the average size of the issue in LSE is 3.5 times larger than the size of issues in the global market suggests that investors would have lower cost per issuance in London than in other markets. Investment banks making the primary markets are known to charge anywhere from 0.5 to 4 per cent in fees on the size of issue. Analyzing the cost of issue in the LSE would reveal how low is the cost per unit of issue, which may in fact be an advantage for large issuers to favor LSE for listing. Only further analysis would reveal the economics of the issues in London.

Liquidity or the speediness of transaction of a given bond means investors will be able to get rid of troubled bonds quickly. In a market such as LSE with a reputation for high liquidity, this will be an important consideration. Prior studies have shown that the number of non-trading days of a typical *sukuk* in Malaysia, as an example, the world's second largest *sukuk*

market, is high, so liquidity will be low. More than 50 per cent of the issues trade only on 30 per cent of the trading days the market is open for trading. This together with the volatility of the Malaysian Ringgit makes for poor liquidity which turns away many potential issuers. By analyzing the non-traded days of a *sukuk* in the LSE, one could make a judgment about the liquidity as could also be made by looking at the volume of trade relative to the total issuances. The LSE is known to have high liquidity because of its depth and breadth and the huge expectation that one should be able to sell a bad investment much faster in London than elsewhere.

Besides costs and liquidity problems, a major concern especially for investors is the quality and integrity of the dispute resolution and settlement mechanism and processes. After Dubai World defaulted on the Nakheel *sukuk* in 2009, the subsequent legal complications and proceedings have led many investors to prefer matured and relatively transparent markets such as the LSE.⁴ With clear rules and regulations governing defaults and disputes in place, the LSE is well-positioned to provide satisfactory recourse and a fair dispute settlement process. This perhaps, is a strong pull factor for *sukuk* fund raisers. Further investigation into the number of dispute settlements will shed more light into this, as our future analysis will reveal.

There is a whole list of other conceptual issues regarding *sukuk* that needs further investigation. Common bond issues for example, normally spell bad news for stockholders since stock prices decline at the time the bond is issued. This phenomenon, however, has yet to be studied in the context of *sukuk*. Through an event window analysis, the effect of *sukuk* issuance on the stock price of a public-listed issuing firm can be examined. An investigation

⁴ The Dubai World case was finally settled in London after almost 2 years of delay: see BBC news summary from Ben Johnson (2010). "Dubai World agrees deal with key banks". BBC News/news.bbc.co.uk that appeared on 23 April 2015.

on the yield structure of *sukuk* issued on the LSE will also provide insights on the rewards rate attainable for different classes of *sukuk* according to their respective credit ratings. As most LSE *sukuk* are rated A and B with just a handful falling in C or “unrated”, further investigation will shed more light on the price behavior of *sukuk*.

These are but a few examples of primary analyses we hope to complete and report in the future research with our existing database once extended. Given the remaining time to complete the analyses,

3.0 Characteristics of *sukuk* listed on the LSE

3.1 Growth of *sukuk* listings on the LSE

The first *sukuk* in the LSE was listed on July 2011. In the 3 years following the first listing, only 5 *sukuk* were issued – a rather lukewarm response considering the growth in listings across the other 22 markets during the same period. As *sukuk* market participants began to see value in the LSE, the number of listings began to rise, growing by three-fold over the next two years to 17 issues. Recognizing the opportunity to attract greater foreign investments into the UK, the then Prime Minister David Cameron launched a series of reforms to make the market more accessible besides abolishing double-taxation policies so as to create a level playing field for faith-based investors and the larger mainstream bond market. As a result of these measures, 19 *sukuk* were issued in 2016, more than double the number in 2015. The number of *sukuk* issued continued to grow in 2017 (24 issues) and 2018 (30 issues).

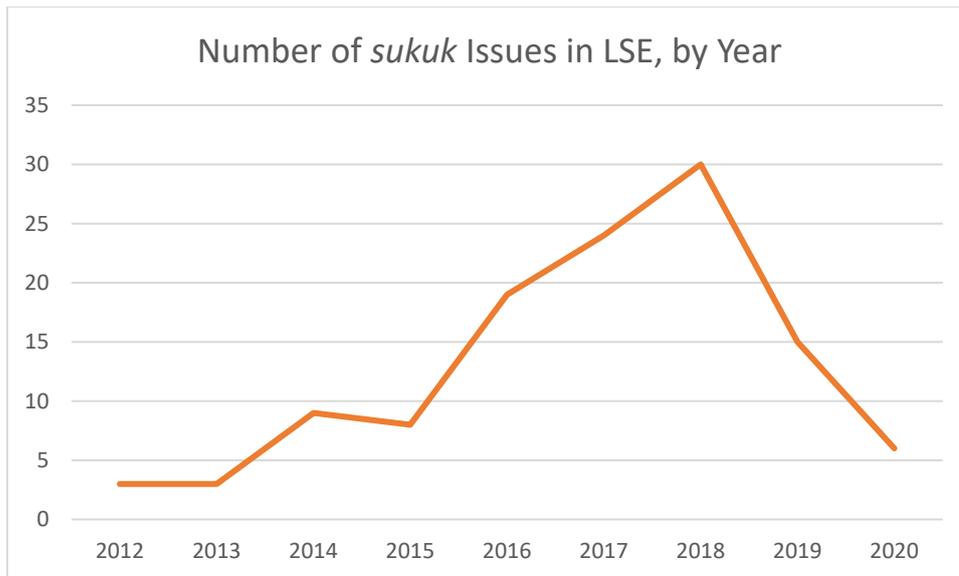


Figure 3: Number of *sukuk* issues listed on the LSE, 2011-2020

Despite the tremendous opportunity afforded by the LSE, *sukuk* issues declined in 2019 (15 issues) and fell further in 2020 (6 issues) due to the worldwide economic slowdown caused by the COVID-19 pandemic. Since the first *sukuk* was listed in July 2011, there has been a total of 125 *sukuk* issued which are actively traded. This is a strong indication of confidence and liquidity in the market. With an estimated 56 per cent growth in *sukuk* issues per year over a 10-year period, the LSE is poised to continue playing a major role in the future growth of the *sukuk* market, which itself is estimated to grow at about 50 per cent per year. Going forward post-COVID-19, the LSE has plenty of untapped potential to support a far larger number of issues.

3.2 Risk ratings of *sukuk* listed on the LSE

We identified the *sukuk* that have been issued since 2011, sorted by their respective credit ratings. As can be seen in Figure 4 below, most of the *sukuk* issued in the LSE are of investment grade, rated A or B while only 5 issues were rated C or un-rated. This is largely because most *sukuk* are sovereign issues or by agencies of the governments.

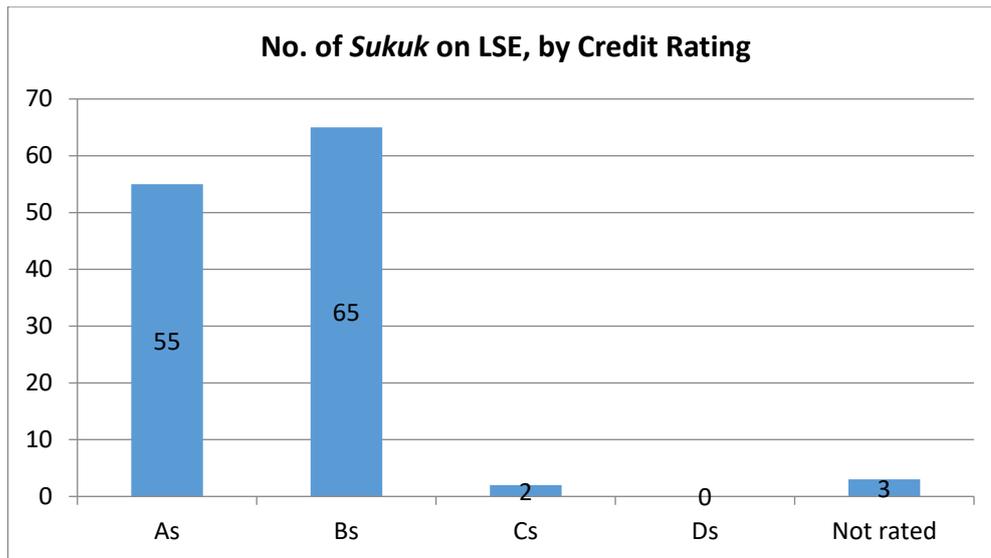


Figure 4: Investment grade *Sukuk* fund-raising dominates London market

Thus, it appears that LSE is catering to sovereign issuers or agencies of the sovereigns as well as transnational issuers. The large number of investment-grade *sukuk* is a strong vote of confidence by market participants as a valuable venue for faith-based fund raising. However, to further cement its position as a global *sukuk* powerhouse, it would have to widen the variety of *sukuk* issued. Specifically, it should take full advantage of its liquid market place reputation and the well-developed pricing mechanisms to encourage a greater number of corporate-issued *sukuk*, giving the LSE the depth needed to cater to the growing needs of private sector funding. As Safari, et al. (2018) shows, the other 22 *sukuk* markets are heavily involved in private sector fund-raising. In fact, in Bursa Malaysia, private issues far outnumber sovereign issues.

3.3 The Maturities of LSE-listed *sukuk* bonds

Sukuk are normally issued for a specific purpose, a project (e.g. funding a limited-term project) rather than as general-purpose of all operational uses. As a result, many *sukuk* issues have short- to medium-term maturities ranging anywhere between 3 to 10 years.

At the level of development, liquidity, and depth of the LSE, however, there is improved accessibility to issuers seeking greater flexibility in *sukuk* maturity structures. As we show in Figure 5, LSE-listed *sukuk* have varying degrees of maturity, from 3 years up to the typical 30 years.

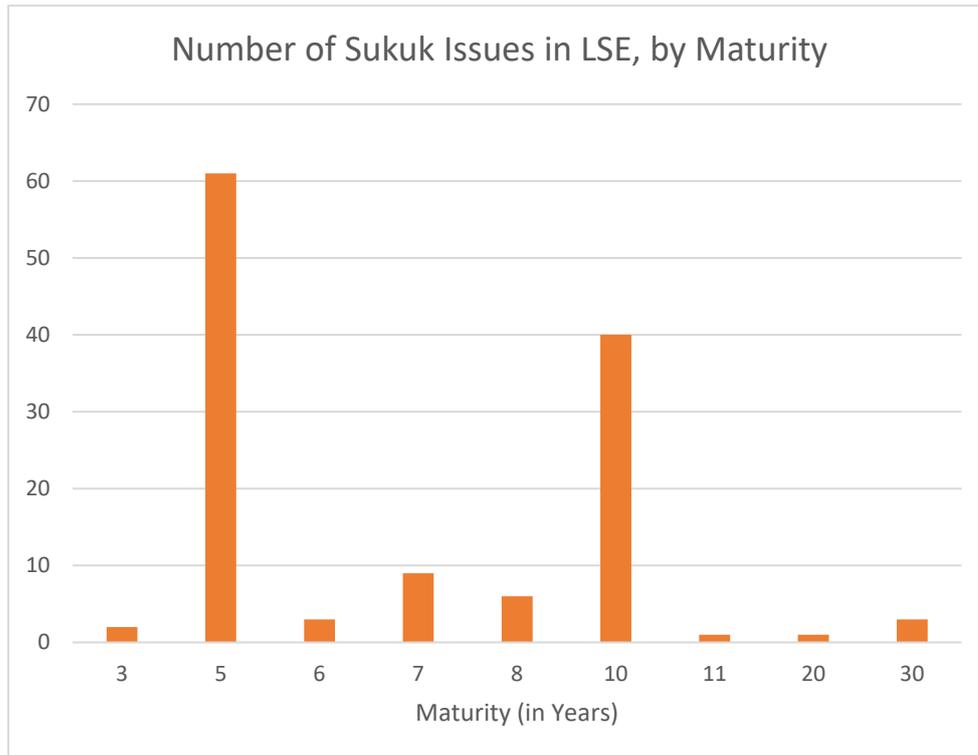


Figure 5: The maturity structure of the sukuk issues listed on the LSE, 2011-2020

The most common maturity structure is the 5-year term with 61 issues or about 50 per cent of the 125 issues over a 10-year period. The next most common maturity structure is the 10-year term with 40 issues or 32 per cent of all issues while issues with maturity structures of less than 10 years (3-, 6-, 7-, and 8-year) account for 16 per cent of all issues. Surprisingly for a relatively small *sukuk* market, there are 4 issues with 20- to 30-year maturities. The breadth of *sukuk* maturity structures listed is a good sign of the market’s ability to cater to various issuer requirements, which bodes well for the future development of the *sukuk* market.

4.0 An agenda for further applied research using LSE data

There are several gaps in knowledge about the behavior of the *sukuk* market on the LSE (see Ariff et al., 2018) for a detailed discussion. Some of these research issues are relevant for practitioners and students of Islamic Finance and are discussed in this section as an important continuation to relevant studies. We present the first set of results on the yields on the LSE.

4.1 Yield and risk

The analyses and interpretations of market statistics from LSE presented above were completed with limited access to all the *sukuk* traded over the past 10 years. A key analysis in understanding the economic behavior of the *sukuk* market is the analysis of yield structure. Our existing knowledge of bond (as well as stock) market efficiency allows us to differentiate bonds (or in this case, *sukuk*) according to risk levels of issuers' creditworthiness as reported by any of the three world's top credit rating firms: the S&P; Fitch; and Moody's.

By averaging the yields of the *sukuk* across different credit rating grades, we are able to construct the risk-return profile of the LSE-listed *sukuk*. These are presented in Table 1 and Figure 6 below. Our analysis shows that the listings are predominantly by sovereign issuers and agencies of governments. There were 3 C-rated issues, which indicates very few corporate listings on the LSE, so a meaningful conclusion cannot be made about the credit rating of the corporations. That can be done if for example the *sukuk* market is analyzed in a future study. Strictly, the yield data presented in this paper is to understand the behavior of the LSE on A and B-rated yields.

The average yield of A-rated *sukuk* is 1.00 per cent per annum with maturities ranging from 3 to 30 years (see earlier section for maturity statistics). The average yield for B-rated *sukuk* is 2.06 per cent per annum. Strangely, the "unrated" sample, which were just 5 *sukuk* in our sample, has almost the same yield as that of A-rated bonds.

Table 1: Average Yield of Sukuk Bonds traded on the LSE

Rating	Yield (Mean)	Spread
AAA	0.53 %	0.2 %
AA	1.11 %	0.18 %
A	1.35 %	0.28 %
B	1.81 %	0.29 %
BB	2.19 %	0.27 %
BBB	2.17 %	0.28 %
C-grade (Not Rated)	0.99 %	0.11 %

That is, the LSE risk-return analysis shows that the higher risk B-rated bonds yield twice the average yield of A-rated bonds except the C-rated. One could see this as rational behavior of pricing the *sukuk*, which is not anomalous to a large number of published articles/books (including Ariff, et al. *op cit*) on the *sukuk* yield behavior. We should note that the data we used spans 2011 to 2020, a period of low interest rates, which resulted from monetary interventions in the bond markets of major countries as part of international economic recovery measures following the aftermath of the 2007-2009 Global Financial Crisis (see Ariff, Farrar, and Khalid, 2015).

Nevertheless, it is evidence of the market's ability to differentiate risk classes in this study of 6 different risk classes and price the credit risk accordingly: this is especially important. The evidence from our analyses is strong enough to suggest rational price formation in the LSE. To-date no other study has analyzed the risk-return behavior of *sukuk* in any of the other 22 markets except perhaps that of Malaysia. There is, therefore, a need to conduct further analysis of markets to determine if rational pricing is found in all 22 *sukuk* markets.

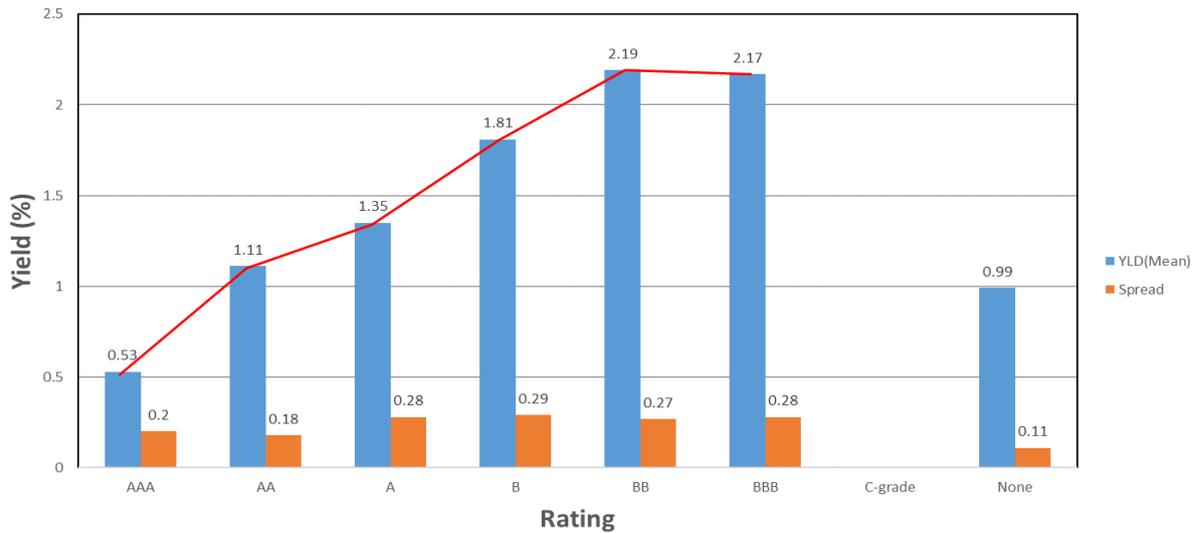


Figure 6: Yield and spread of *sukuk* listed on the LSE, by credit rating

Reference to statistics in Figure 6 and in Table 1 confirms a valid conclusion reached above. The small vertical bars in orange indicate the bid-ask difference (“spread”) between the yield at bid and the yield at ask prices. If averaged across the different ratings, we can make two inferences about the behavior of the spread. First, the yield spread widens as the *sukuk*’s rating falls, but only slightly, a testament to the issuer’s resilience (Cheong, 2021). For example, the spread (i.e. the profit on the trade for the traders) on A-grade is 0.22 per cent or 22 basis points of the price of the *sukuk*. That is, the trader stands to make a profit of USD2.20 on a *sukuk* with a face value of USD1,000 (bonds in UK markets trade in USD terms). In the case of B-grade bonds, the profit per trade per *sukuk* is higher at 0.28 per cent or USD2.80 per *sukuk*.

This is obviously a very small cost for a financial transaction especially when the transaction cost in most stock markets is set at 0.5 to 2.5 per cent of the value traded, or about USD5.00 to USD25.00 for a transaction value of US\$1,000.00. It would appear then, in an efficient market such as the LSE, transaction costs are kept low. In fact, our yield data recorded spreads are no greater than 0.29 per cent across all grades of *sukuk*.

Another aspect of *sukuk* yield structure would be a test if the yields in *sukuk* bonds are different from the yields on common bonds. This is a work to be done soon if a matched sample of common bonds could speedily be set up. Ariff et al. (2017) and Safari et al. (2013) provided strong evidence to suggest: (i) Treasury-issued *sukuk* yields are significantly higher than a matched sample of similar Treasury-issued common bonds; and (ii) corporate *sukuk* yield is significantly lower than the average yield of a matched sample of common corporate bonds. A comparative study of *sukuk* and conventional bonds is an extension of this analysis that needs to be done as a separate study.

4.2 Is there an appropriate valuation model for sukuk?

This research question is perhaps the most important one to be answered in the light of: (1) the 3 principles of *sukuk* that govern their primary forms; and (2) the contractual arrangements and obligations based on Islamic rules and regulations underlying their design giving rise to several unique features not found in the common fixed-income bond markets. That is to say, in analyzing a price behavior of *sukuk*, there are still a number of unknown *x*-factors that need to be considered besides the four known from Williams (1938) used in the market place—time to maturity, *N*; current market interest rate, *i*; coupon, *C*; and face value, the term *M* is face value - already enshrined in conventional bond theory and widely used in bond analyses

$$P_t = \frac{M}{(1 + r)^N} + \sum_{t=1}^N \frac{C_t}{(1 + r)^t} \quad (1)$$

where, *P* is the market price of a bond, *C* is the amount of pre-fixed periodic coupon payments; *M* is the amount of payment on maturity (*i.e.* the face value of a bond certificate);

I or r is the discount rate (*i.e.* market required yield at the time of pricing), and N is the issue tenure (*i.e.* number of payments).

Another key element that needs consideration is the Yield-To-Maturity (YTM). YTM is the internal rate of return earned by a bondholder who buys a bond certificate today, at market price, and holds it until maturity, entitling the bondholder to all coupon payments as well as maturity payment (Cox, Ingersoll *et al.*, 1985; Bodie *et al.*, 2007; Ariff *et al.*, 2009). It is to be noted that the use of this Formula (1) is widespread in *sukuk* market places simply because that is all there is at the moment. If the anomalous behavior of (i) Treasury; and (ii) corporate *sukuk* as remarked in an earlier section are due to the use of this formula, it could be argued that there is a fifth factor such as profit-sharing or asset-backing, etc. that may in fact be the reason for the anomalous behavior. That makes the Eq. (1) invalid for valuing the *sukuk*! Since the LSE listings are not issued by the British government, there is no incentive for them to price the Treasury *sukuk* of other countries to yield a surplus yield compared to conventional Treasury bonds. Testing this and other valuation propositions using the LSE data may potentially provide answers to how to value *sukuk*.

Another aspect of our analyses is to map the cash flow patterns of *sukuk* (see Safari, 2013). Unlike conventional coupon bonds, *sukuk* cash flow patterns may vary depending on the underlying principle governing its issuance. To illustrate, the self-liquidating Diminishing *Musharakah sukuk* contains periodic repayments that vary in amount throughout the life time of the *sukuk*. Valuing this *sukuk* would therefore require modifications to be made to the Gordon-Shapiro Dividend Discount model for example. By doing so, we would make great strides towards introducing a tailor-made valuation model for specific forms of *sukuk*. This remains one of our key research priorities.

Prior studies have also shown that the stock prices of firms issuing common bonds generally experience price decline (Godlewski, Turk-Ariss, and Weill, 2013) at the time the bond is listed for trading. The reason for this behavior is that the issuance of a bond is likely to increase the cost of capital to the firm, so the value of the common stock ought to go down as a result of increased debt-taking of the firm. There is an opportunity in the LSE to examine if the stock prices of the *sukuk*-issuing firms suffer a decline in stock prices in the markets where the issuing firm's stocks are traded. Arguably, the same effect may be observed especially in the case of *Mudarabah* or debt-based *sukuk*. However, the effects may vary in the case of *Musharakah* or equity-based *sukuk* as its true nature takes the form of a partnership instead of a debtor/creditor relationship. Although this investigation will require a lot of effort to collect the necessary data, we are confident that it is a worthwhile endeavor that will provide rich insights on the price effects of *sukuk* issues.

By investigating these and several other market-making issues such as its relation to foreign exchange and the rise of cryptocurrencies (Cheong, 2019) through the 125 *sukuk* listed on the LSE, we will be better able to understand their behaviors and the effects they may have on markets, allowing us to make better assessments/recommendations to analysts and faith-based investors alike. From a theoretical point of view, we would also make great strides in the development of future studies on Islamic financial securities through the introduction of tailor-made *sukuk* valuation models. Only then will we be able to develop a good understanding of how the market-making efforts in London affect various behaviors in that market.

5.0 Conclusion⁵

This paper describes how over the last 10 years a *sukuk* market has been nurtured in the United Kingdom. Though progress in terms of number of listings was slow during the initial 3 years, investors have shown heightened interest in raising funds using 125 listings as at 2020 to raise some USD50 billion funds. The average size per issue is 3.5 times larger than the average size of the issues in the other 22 *sukuk* markets that collectively have issued more than 20,000 *sukuk* with combined funds raised of USD526 billion. In that comparison, it was noted that the LSE appears to list larger issues besides the highly active OTC market made in LSE for privately traded *sukuk*.

In terms of risk, most of the *sukuk* listed on the LSE are rated as As and Bs with just 3 listings rated C and 2 unrated. It appears that the LSE favors investment grade listings hence the handful of C-rated bonds. It may be that in the LSE's next phase of development, more C-rated listings may appear. This is something to look forward to in the future as it signifies growing interest among a larger pool of issuers.

The yield structure data⁶ showed that the LSE pricing is rational in that the higher-risk B-rated *sukuk* offers 1.02 per cent higher return to investors than the A-rated yield of 1.00 per cent. Our analysis also showed the average profit per trade for brokers in the bond market is very low, about USD2.10 per trade of a *sukuk* with a face value of USD1,000.00. This aspect

⁵ The discussant at the conference asked two questions. (i) What is the transaction cost in the mainstream bond market in LSE? The answer: London is well-known as a very large bond market where investors from across the world prefer to invest in bonds. Thus, the volume being very high, the bid-asked spread is, on average, lower than the *sukuk* market average of 22 basis points. (ii) Could a market be made in Turkey for the same investors to invest in *sukuk* certificates on the Bursa Istanbul. The answer: Yes, if over a period of time, the Turkish currency stabilizes, and the liquidity builds up sufficiently, investors would want to invest. The other attraction of London is its very advanced dispute settlement procedure, one that is important for investors to have confidence in choosing a location where the security is listed.

⁶ The yield data for the LSE *sukuk* were kindly provided by Prof Shamsheer Mohamed of INCEIF. The authors are grateful for this help in another university.

has yet to be studied for any of the 22 other *sukuk* markets. Knowing the economics and the yield structure of all 23 markets will be very useful for the investors/traders in the Islamic bond markets across the world, which is a study to be pursued as a separate task.

Finally, we identified a few key research/analytical issues to be investigated in an expanded version of this paper on the market-making history of the LSE. This expanded version will deal mainly with theoretical issues such as valuation theory and the price effects of *sukuk* issuance.

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