

A Drivers of Islamic Bond Liquidity in Malaysia: Latent Liquidity Approach

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Abstract

A steady liquidity level is an importance characteristic of a financial market, especially after the 2008 financial crisis. The Islamic financial market was virtually isolated from the crisis. It is interesting to explore the underlying determinants that stabilise a market's liquidity level. This paper studies the determinants of a Sukuk's liquidity level in the Malaysian bond market using a new liquidity measure known as latent liquidity. The measure does not require transaction data, which makes it applicable to an illiquid market such as the Malaysian bond market. Utilising data from the Malaysian bond market, the paper involves two steps of data analyses, namely an insight into the trend and the liquidity level of the Sukuk market. It then continues to investigate the driver of Sukuk's liquidity using the latent liquidity as a proxy against five Sukuk characteristics in a random effect regression model. Four variables issuance amount, maturity, coupon rate, and age are found to be significant drivers of Sukuk's liquidity level. Conclusions drawn from the regression results indicate Sukuk's investors' preference in matching long term Sukuk with their long term liabilities, in addition to their fondness for keeping their Sukuk to amortise the return.

Keywords: Sukuk, Islamic bond, liquidity, latent liquidity, Malaysia

1. Introduction

Investors are highly concerned with an asset's liquidity level. A low liquidity level was even blamed as one cause of the recent 2008 financial crisis. Although low liquidity levels are a lifelong problem for investors, excessive liquidity also poses a problem as the economy would be highly leveraged and exposed to economic bubbles. An observable trend during the crisis was the rising popularity of the Islamic financial system and its efficacy in shielding the effects of the financial turmoil. Islamic bond, or Sukuk, is one of the most innovative areas of Islamic finance that helped support the Islamic financial system during the period. Its booming success has attracted immense interest from investors around the world and prompted intensive studies to explore the Sukuk. Despite the extensive study, little focus has been placed on investigating the liquidity level of Sukuk. This paper, aims to evaluate the determinants of Sukuk liquidity level in Malaysia. The term Islamic bond and Sukuk will be used interchangeably.

As shown in Fig. 1, an issuer of Sukuk requires financial advisor and Shariah supervisory board review before reaching an underwriter, to check the permissibility of the Sukuk to be issued. Undergoing Shariah supervisory board review is the step that differentiates the Sukuk issuance procedure from that of a conventional bond. A financial advisor helps with matters pertaining to the Sukuk issuance structure issuance purpose, preliminary terms of coupon rate, interest payment and maturity period, and the selling methods of the Sukuk. Once the Sukuk passes the financial advisor and the Shariah supervisory board reviews it, Sukuks are then marketed by an underwriter that has been appointed by the Sukuk issuer. Most often, the underwriter is an investment bank that initially purchases the entire Sukuk issuance from the issuer. The Sukuk would be re-sold to investors through marketing.

The main purpose of Sukuk development is realising what Islamic banks have lacked in the past, the creation of a real partnership between the sources of financing and the development process using the funding. Hence, development projects in Malaysia currently are mostly funded through Sukuk. Sukuks have effectively

contributed to financing infrastructure projects for electricity, water, roads and buildings. Sukuk affects the economy by providing extra funds for the government and consumers. In essence, Sukuks are loans to the government that are usually purchased by domestic consumers, providing the government with additional funds. This in return allows the government to spend more, which stimulates the economy. A strong economy would generate a healthy cash flow and attract more foreign investment into the country. During an economic boom, investors would flood in and increase the demand for Sukuks. This would enhance the overall structure of the Sukuk market. Hence, Sukuks are indeed required for the economy as a Sukuk's return gives creditability to the financial system and builds confidence in the issuance approving authorities. Sukuks also aid in the realisation of economic and social security in the country by encouraging the pooling of small scale capital and coordinating strong economic development.

The inter-relationship between Sukuk and economy is illustrated below:

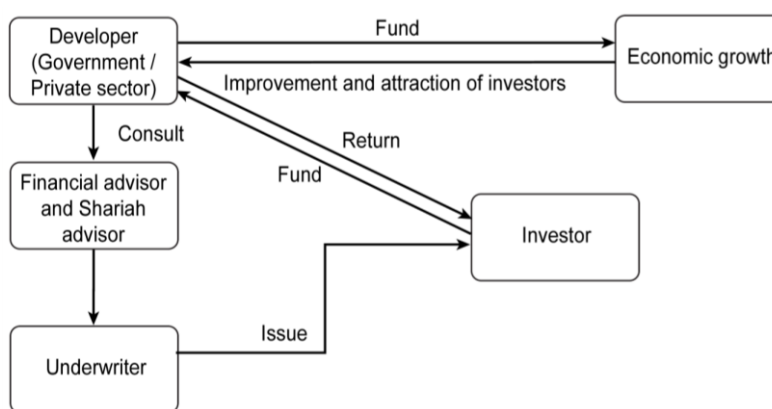


Figure 1. Islamic financial system

Liquidity is harder to explain in practice than in theory. Difficulties arise because liquidity often relies on metrics with sparse yet high transaction frequency data. Bonds are commonly traded over the counter, whereas direct liquidity measures are often not reliable and difficult to obtain. In this regard, this paper utilises a liquidity measurement proposed by Mahanti et al. (2008) called latent liquidity. Latent liquidity is defined as the weighted average turnover of investors who hold a bond, in which the weights are the fractional investors holding. Latent liquidity is suitable when dealing with an illiquid market as the measure does not require transaction data in its measurement. Hence, it is interesting to investigate the liquidity level of Sukuk because Malaysia is the biggest Sukuk issuer in the world. The Sukuk's unique risk sharing structure and prohibition of Riba also make this financial asset an interesting subject to investigate.

Most empirical research on liquidity level uses transaction data to measure liquidity. These transaction data, despite being widely used, are feasible in only markets that are liquid and dynamic. The study by Jankowitsch et al. (2011) was one exception, when they introduced a new liquidity measure that showed the deviation of trade prices from the expected market valuation of an asset. Over-the-counter (OTC) data in the US corporate bond market were made available with the establishment of Trade Reporting and Compliance Engine (TRACE). They could directly quantify the price dispersion of an asset and prove their liquidity measure is related to a bond's characteristics. Other recent literature has proposed several measures to estimate liquidity utilising the bid-ask spread, transactions data, daily trading volume data and some indirect proxies for liquidity, namely: issued amount, listed, euro, on-the-run, age, missing prices, yield volatility, number of contributors and yield dispersion (see Lesmond, 2005; Dick-Nielsen et al., 2012; Friewald et al., 2012; Amihud, 2002; Houweling et al., 2005; and Jankowitsch et al., 2011).

Schestag et al. (2016) conducted a comprehensive comparison of commonly used bond liquidity measures, and found that three measures introduced by three different sets of authors, namely Corwin and Schultz, Roll, and Hasbrouck, produce the most accurate results. Meanwhile, Helwege et al. (2014) found that the abovementioned proxies tend to be inaccurate as they also capture credit risk on top of liquidity. Their findings are supported by Pelizzon et al. (2016), who discovered that bond market liquidity is driven primarily by credit risk. Lesmond (2005) used a bid-ask spread-based liquidity measurement and found that it performed better than volume-based liquidity in representing cross-country liquidity. Chan et al. (2008) studied the liquidity effect on cross-country

American Deposit Receipt (ADR) premiums and found that ADR premiums are higher when ADR liquidity is high and home country liquidity is low. Amihud (2002) and Lesmond et al. (1999) found that the price impact of market illiquidity has a positive effect on the stock excess return within-country liquidity level. Friewald et al. (2012) used a wide range of liquidity measures covering a comprehensive data set of 23,703 bonds and 3,261 firms to investigate the importance of liquidity in the US corporate bond market. Their research suggests that the economic impact of the liquidity measure is significant during financial crisis, particularly for speculative grade bonds. Dick-Nielsen et al. (2011) used TRACE transaction data and a new measure of liquidity to analyse how liquidity affects bond spreads before and after the subprime crisis. They found a significant effect of liquidity with the onset of the subprime crisis. However, their multivariate analysis showed mixed outcomes for different classes of bonds. Helwege and Wang (2016) found that mega bonds, that is, those at least triple the size of conventional bonds, offer much liquidity to the issuing company, but at no reduction of the cost of debt, as the company is unable to completely sell the bonds. Huang et al. (2014) measured corporate bond liquidity according to the preference of the clientele. They found that bonds with low liquidity attract mostly investors who prefer illiquidity. On the liquidity of conventional and Islamic sovereign bonds in the Malaysian market, Chen et al. (2018) found no significant difference between the two. However, government-issued sukuk produces higher yield relative to its conventional counterpart. Latent liquidity, as proposed by Mahanti et al. (2008), is based on institutional bond holdings, which are accessible even in the absence of transaction data.

Descriptive analysis on Sukuk data shows how substantial the Sukuk market is in Malaysia, hence the paper's significant contribution to the literature. However, despite the massive amount of Sukuk in the bond market, trading activities are still low and the market is illiquid. Conventional measurements of liquidity are not applicable in a low trading volume market with the absence of ample transaction data. Based on this, a measurement that does not rely heavily on transaction data such as latent liquidity remains the right option. The paper ultimately investigates the drivers of Islamic bond liquidity while using latent liquidity as the proxy. Five basic characteristics of bonds are used as the dependent variables, where all of them are found to be significant in affecting the liquidity level of Sukuks in the Malaysian bond market.

This paper is organised as follows. Section 2 presents the database that will be used in the analysis. There is an initial elaboration on how representative the database is of the whole market in terms of market composition, followed by a transaction data analysis to illustrate the trading frequency of Sukuk in Malaysia. This section also provides statistics on the market composition of Sukuk by different bond characteristics, such as issue size, time to maturity and industry distribution. Definition and elaboration of latent liquidity will be discussed in detail in Section 3. In Section 4, a simple regression on the latent liquidity against some bond characteristic is presented to determine the drivers of a Sukuk's liquidity level. Section 5 concludes the paper with a short discussion of the overall findings and implications of the paper for future research.

2. Liquidity Measurement and Data

Over-the-counter (OTC) trading involves no central market place or clearing house, making data on the traded prices and volume difficult to access. Although it is a very interesting to study bond market liquidity, unavailability of data has become a major research constraint. This limitation is further aggravated when attempting to study a fraction of medium-sized bond markets like Malaysia. The lower liquidity levels associated with a smaller potential investor base was mentioned by Petrsek (2012) in his study on multimarket trading effects on liquidity and pricing.

2.1 Malaysia Islamic Bond Database

The study uses Sukuk data from the Malaysian bond market. Malaysia is the third-largest bond market in Asia (excluding Japan) and the biggest issuer of Sukuks in the world. At the end of 2010, the Malaysian bond market stood at RM763.4 billion, approximately 97% of total GDP. Globally, the Sukuk market has enjoyed tremendous growth, with an average annual growth of 40%. At the end of 2008, Sukuk issuance is reported to be USD14.9 billion, with Malaysia representing 61% of the figure. This undoubtedly makes Malaysia's Sukuk market an interesting venue for study. All of the data in this study are taken from Bond Infohub, Bank Negara Malaysia's website specifically for bond-related issues. However, some transaction data are not readily available in the database, which requires the use of proxies that do not highly rely on transaction data.

2.2 Comparative Analysis of the Malaysian Islamic Bond Database

Sukuk comprises approximately 37% of the total market holding in the Malaysian bond market. Its remarkable growth has made it a vital segment of the whole market, with promising effects on Malaysia's economy. First, this paper provides some evidence of Sukuk's significant existence in the whole Malaysian bond market. Table 1 presents the composition of Sukuks and conventional bonds compared to the total Malaysian bond market. The

comparison is based on the outstanding amount of bonds, running from 2007 until 2012. As seen from the table, the outstanding amount of Sukuks represents approximately 35.78% of whole bond market, compared to 64.22% for conventional bonds in 2007. Sukuks' market composition increased to almost half of the market by 2012 at 47.19%, with an increment of more than 11% within six years. On the other hand, as a result of the rising composition of Sukuks, conventional bonds suffered a decreasing trend every year and reached a low of 52.81% in 2012. As such, the increasing importance of Sukuks in the Malaysian bond market is shown in the table.

Table 1. Composition of Sukuks and conventional bonds outstanding in the Malaysian bond market, 2007-2011

Year	Composition of conventional bonds outstanding in the market (%)	Composition of Sukuks outstanding in the market (%)
2007	64.22	35.78
2008	63.93	36.07
2009	61.41	38.59
2010	61.46	38.54
2011	58.36	41.64

Source: Bank Negara Malaysia (2012).

Table 2 shows the increasing issuance volume of Sukuks from a mere RM10 billion in 2007 to RM36 billion in 2011. Sukuks issuance's composition of the market has also shown a tremendous growth from 18.49% in 2007 to 38.58% in 2011. The almost four-fold increase (from RM10 billion to RM36 billion) has made a Sukuk's issuance almost half of the total market issuance, which further supports our claim that the Sukuk market in Malaysia is indeed significant enough for a study.

Table 2. Growth of conventional and Islamic bond issuance composition in the market, 2007-2011

Year	Conventional & Sukuk issuance (MYR 'mill)	Conventional bond issuance (MYR 'mill)	Conventional bond issuance as percentage of total issuance (%)	Sukuk issuance (MYR 'mill)	Sukuk issuance as percentage of Total issuance (%)
2007	54,080.89	44,080.89	81.51	10,000.00	18.49
2008	60,000.00	43,500.00	72.50	16,500.00	27.50
2009	88,500.00	60,000.00	67.80	28,500.00	32.20
2010	58,100.00	37,100.00	63.86	21,000.00	36.14
2011	93,312.35	57,312.35	61.42	36,000.00	38.58

Source: Bank Negara Malaysia (2012).

The outstanding amount of Sukuks is also analysed as a composition of Malaysia's Gross Domestic Product (GDP) value in Table 3, which shows that Sukuks' outstanding amount contribution to GDP drops slightly in 2008 before increases tremendously from 2009 onwards. Again, the negative growth in 2008 is inferred to be caused by the financial crisis in 2008. Still, the significance of Sukuks' composition in Malaysia's GDP shown in Table 3 validates our claim that Sukuks are indeed playing a bigger role in the Malaysian bond market and economy.

Table 3. Composition of Sukuks' outstanding amount over GDP (%), 2007-2011

Year	GDP	Size (RM 'mil)	% GDP
2007	642,048.00	199,445.58	31.06
2008	740,906.00	211,369.03	28.53
2009	679,688.00	248,471.05	36.56
2010	765,966.00	294,186.06	38.41
2011	852,734.00	350,242.21	41.07

Source: Bank Negara Malaysia (2012).

Table 4. Composition of Sukuks' outstanding amount in the market, by credit rating, 2007-2011

Rating	Sukuks' outstanding amount as percent of total outstanding amount (%)				
	2007	2008	2009	2010	2011
AAA	36.65	0.00	0.00	8.08	0.00
AA	2.16	11.15	0.00	7.33	6.75
A	71.70	46.45	7.97	0.00	57.67
BBB and below	0.00	0.00	0.00	0.00	0.00
Total	24.69	12.76	1.42	7.47	6.53

Source: Bank Negara Malaysia (2012).

Table 4 shows a high market presentation by Sukuks according to their credit rating between 2007 and 2008 (24.69% and 12.76%), followed by lower market presentations in the following years. Overall, Sukuks are not deemed to represent the whole market, especially in 2009 when Sukuks' composition fell to a mere 1.42%. However, if we look from every bond class, Sukuks indeed proved to reasonably represent the market. For instance, in 2007, when Sukuks comprised 36.65%, 2.16% and 71.70% of the total bond market for AAA, AA and A bonds, respectively. Quite the same observation could be seen until 2011. The reason behind these figures is that Sukuks are issued as only investment bonds and are rarely issued as speculative bonds, in line with the prohibition of usury (Riba) in Islamic law. Hence, the low total market representation by Sukuks is caused by its non-involvement with BBB or lower-grade bonds. This justification indicates the decrease in 2009 was due to a hostile condition that affected the Sukuk market.

Table 5. Composition of Sukuks' outstanding amount in the market by time to maturity, 2007-2011

Time to maturity	Sukuks as percent of total (%)				
	2007	2008	2009	2010	2011
< 1 Year	0.00	0.00	0.00	0.00	0.00
2 Years	0.00	0.00	0.00	33.33	0.00
3 Years	0.00	0.00	21.43	27.40	0.00
4 Years	0.00	49.33	76.92	37.50	0.00
5 Years	28.57	49.01	43.48	32.61	7.14
6 Years	35.11	55.38	90.91	45.83	16.67
7 Years	31.52	53.44	50.00	37.04	5.26
8 Years	27.91	61.06	100.00	58.33	16.67
9 Years	25.00	60.75	80.00	83.33	16.67
10 Years	18.75	65.00	42.86	30.77	12.50
11-15 Years	14.41	68.91	70.00	0.00	11.63
16-30 Years	17.65	91.00	33.33	0.00	11.76
> 30 Years	100.00	0.00	0.00	0.00	0.00
Total	23.71	62.24	56.00	34.83	7.48

Source: Bank Negara Malaysia (2012).

Table 5 presents the statistic for Sukuks' outstanding amount in the market from 2007-2011 based on their maturity, which shows Sukuks being issued as long-term bonds (greater than one year). The shortest maturity offered by a Sukuk is two years (in 2010) and the maturity period could be as long as 50 years (in 2007). Most Sukuk buyers tend to buy and hold the asset until the maturity date to amortise its return. Generally, Sukuks are reasonably representative for most segments in the market, as the percentages for 5-30 years maturity segments are high. This provides support for our claim that Sukuk data used in the study are adequate for research.

Having discussed the significance of Sukuks in the Malaysian bond market, this paper will further conduct an analysis on the liquidity level of Sukuks in the Malaysian bond market based on the available transaction data. Table 6 provides data on the average daily volume of Islamic bonds as a percentage of the market's daily average volume from 2007 to 2011. In the table, the average daily volume of Sukuks is 1.09% from the market daily average. In 2007, Sukuks' daily average is higher than the average of 1.09%, before beginning to fluctuate around the average value in 2008 until mid-2010.

Table 6. Comparison of monthly trade volume between Islamic bonds compared to whole market, 2007-2011

Year Month	Market total		Islamic bond		Average daily volume of Islamic bond (as percent of market)
	Total Volume (million)	Daily Average (over number of days in month)	Volume (million)	Daily Average (over number of days in month)	
2007 January	120,494.68	3886.93	1800.56	58.08	1.49
February	101,738.03	3633.50	2124.00	75.86	2.09
March	150,538.30	4856.07	1878.55	60.59	1.25
April	107,155.39	3571.85	1021.26	34.04	0.95
May	116,218.51	3748.98	1238.20	39.94	1.07
June	96,443.27	3214.78	1594.10	53.14	1.65
July	81,523.79	2629.79	2297.28	74.11	2.82
August	89,895.79	2899.86	2230.95	71.97	2.48
September	86,066.25	2868.88	2247.48	74.92	2.61
October	90,379.21	2915.46	2912.20	93.94	3.22
November	71,744.64	2391.49	1252.80	41.76	1.75
December	82,610.39	2664.85	1605.44	51.79	1.94
2008 January	121,744.85	3927.25	817.50	26.37	0.67
February	100,555.69	3467.44	422.40	14.57	0.42
March	99,188.89	3199.64	379.20	12.23	0.38
April	130,212.14	4340.40	1400.10	46.67	1.075
May	102,427.58	3304.12	432.30	13.95	0.42
June	119,063.55	3968.79	513.40	17.11	0.43
July	109,073.91	3518.51	1090.84	35.19	1.00
August	117,782.80	3799.45	584.95	18.87	0.49
September	135,517.72	4517.26	1396.13	46.54	1.03
October	115,287.02	3718.94	1366.76	44.09	1.19
November	89,060.23	2968.67	661.97	22.07	0.74
December	72,366.97	2334.42	1212.90	39.13	1.68
2009 January	79,339.17	2559.33	206.00	6.65	0.26
February	84,277.56	3009.91	541.85	19.35	0.64
March	80,374.56	2592.73	887.20	28.62	1.10
April	93,452.90	3115.09	469.80	15.66	0.50
May	79,186.10	2554.39	488.95	15.77	0.62
June	82,985.24	2766.17	814.00	27.13	0.98
July	88,754.90	2863.06	938.00	30.26	1.06
August	82,322.17	2655.55	1069.65	34.50	1.29
September	85,259.57	2841.99	774.52	25.82	0.91
October	89,147.53	2875.73	597.80	19.28	0.67
November	75,590.54	2519.68	552.20	18.41	0.73
December	81,588.47	2631.89	1343.15	43.33	1.65
2010 January	93,929.36	3029.98	608.80	19.64	0.65
February	64,835.95	2315.57	741.66	26.49	1.14
March	126,209.77	4071.28	1439.50	46.44	1.14
April	128,563.10	4285.44	993.75	33.13	0.77
May	99,308.48	3203.49	647.75	20.89	0.65
June	91,806.32	3060.21	1126.00	37.53	1.23
July	106,525.50	3436.31	702.70	22.67	0.66
August	106,103.41	3422.69	783.15	25.26	0.74
September	112,921.64	3764.05	7464.31	248.81	6.61
October	122,913.09	3964.94	1818.43	58.66	1.48
November	106,407.54	3546.92	299.85	9.99	0.28
December	96,433.46	3110.76	1300.34	41.95	1.35
2011 January	128,220.18	4136.13	2292.80	73.96	1.79
February	98,635.78	3522.71	2043.90	72.99	2.07
March	187,563.62	6050.44	1360.65	43.89	0.73

April	170,874.98	5695.83	1689.75	56.33	0.99
May	151,605.20	4890.49	1057.50	34.11	0.69
June	166,497.02	5549.90	587.15	19.57	0.35
July	164,923.58	5320.12	1113.26	35.91	0.68
August	207,471.24	6692.62	763.25	24.62	0.37
September	238,286.48	7942.88	1102.65	36.76	0.46
October	133,688.84	4312.54	589.05	19.00	0.44
November	122,343.17	4078.11	336.30	11.21	0.27
December	135,834.05	4381.74	918.05	29.61	0.68
Total	6,671,270.07	3655.490449	72944.94	39.96983014	1.09

Source: Bank Negara Malaysia (2012).

Table 7 provides data on Islamic bond market liquidity based on trading frequency to show that the Malaysian Islamic bond market is illiquid. Due to data constraints, it is assumed that the frequency of transaction refers to the day of transaction. It is also observed that the trading frequency drops from 2007 to 2011, despite the fact that the economy entered a post-crisis period in 2010. Such a decrease would be caused by the sharp fall of Sukuk issuance in 2008-2009 (see Table 4), reducing the amount of available Sukuks and their trade. This table also shows that across the year, no bond transacts more than 200 times, and this is out of almost RM 1.2 million Sukuks analysed in the study. A large proportion of Sukuks (over 50%) trade at least once a year. With this, it could be said that Malaysia's Islamic bond market is illiquid, and any measure of liquidity that uses daily trading data is not appropriate to be used in this segment of the bond market. As mentioned by Tayeh (2016), it is inconclusive to study the market liquidity by looking at the impact of market volatility. Hence, using latent liquidity to measure the level of liquidity in this study is appropriate because latent liquidity does not require daily trading data in its calculation.

Table 7. Sukuk trade distribution by frequency of trading, 2007-2011

Frequency of trading (times/year)	2007	2008	2009	2010	2011
>200	0	0	0	0	0
150-200	2	0	0	0	0
100-150	0	2	0	0	0
50-100	2	1	2	3	6
30-50	8	1	1	3	3
10-30	75	24	23	27	29
5-10	70	43	40	40	47
at least 1 and at most 5	173	155	116	118	95
No trade	0	0	0	0	0
Total	330	226	182	191	180

Source: Bank Negara Malaysia (2012).

Table 8. Sukuk trade distribution, based on ten industries in Malaysia, 2007-2011

Industry	Transaction				
	2007	2008	2009	2010	2011
Consumer product	3	2	0	2	0
Industrial product	27	25	18	17	18
Mining	0	0	0	0	0
Construction	109	86	69	92	75
Trading/ services	45	32	27	10	10
Properties	27	15	11	8	18
Plantation	6	1	7	0	1
Technology	3	2	0	9	11
Infrastructure	76	46	40	36	27
Finance	21	15	11	18	19
Total	317	224	183	192	179

Source: Bank Negara Malaysia (2012).

To look at the industrial development impact, this study explores the impact of Sukuks on 10 industries in Malaysia between 2007 and 2011. As shown in Table 8, the mining industry is the only industry that has not been involved with Islamic bonds, thus Sukuks are being traded in almost all industries in Malaysia. The construction industry is the most active industry involved with Sukuks, which is not surprising as most Sukuks are issued to fund construction and development projects. Despite the growing outstanding amount and issuance volume, the volume of Sukuk trading decreased gradually from 2007-2011. Again, the phenomena may be attributed to the reduction in Sukuk issuance in 2008-2009 compared to 2007, causing the volume of trading of available Sukuks to fall.

From the discussion of comparative analysis in this section, several conclusions could be made regarding the overall Sukuk market in Malaysia. First, Sukuks have become an integral component of the economy with the increasing magnitude of issuance and outstanding amount over the years. This is further supported by the rising composition of Sukuks as a percentage of GDP in Malaysia over the years. Second, the Sukuk market is indeed an illiquid market as its trading frequency is very low, with average trading occurring once to five times a year. This provides support for our choice of liquidity measurement.

3. Methodology: Liquidity Measurement

The previous section has shown that almost 50% of the bonds trade once to five times in a year; hence, this provides evidence to support our claim that the Islamic bond market in Malaysia is indeed very illiquid. Although an illiquid market is a good place to study liquidity, scarce transaction data present a major problem. In overcoming the data scarcity problem, any measurement that is highly dependent on transaction data will be avoided. The paper utilises the latent liquidity measure introduced by Mahanti et al. (2008) to measure the liquidity level in the Malaysian Sukuk market.

The original latent liquidity by Mahanti et al. (2008) measures the liquidity level from the investors' perspective using data from a custodial bank. However, we are not concerned with the investor-perspective. The way Mahanti et al. construct the latent liquidity measure without high reliance on the transaction data makes the measure applicable in the paper. Instead of using data from a custodial bank, the paper uses data from the Bank Negara Malaysia. The whole Sukuk market is considered one fund as part of the entire bond market. Studying the Sukuk market as one segment of the Malaysian bond market requires addressing Sukuk holding in the total market.

In the Bank Negara Malaysia database, the bond turnover ratio is used to measure Sukuks' market liquidity. The bond turnover ratio divides the annual turnover with the average outstanding Sukuks, without considering individual Sukuks holding in the whole Sukuk market. Latent liquidity in this paper is defined as the degree of an individual Sukuk's turnover level as a composition of the total Sukuk market. Precisely, the paper defines the fractional holding of Sukuk i (as percentage of the total outstanding amount of Sukuks in the market) in the market as π_i^j . Mahanti et al. (2008) define the average portfolio turnover as the ratio of dollar trading volume of a fund to the value of the fund. However, the paper directly uses yearly average turnover data collected from the database and denotes it as $T_{i,t}$. Latent liquidity in this paper is defined as

$$L_j^i = \sum \pi_i^j T_{i,t} \quad (1)$$

Therefore, latent liquidity is defined as the aggregate weighted-average level of turnover of individual Sukuk holdings in the market. The most convenient feature of latent liquidity is it does not require the use of transaction data such as bid-ask spread or daily transaction data. This makes it feasible to analyse data from an illiquid segment of the market, in the absence of regular trading data.

Fig. 2 provides distribution analysis on the latent liquidity generated for Sukuks in the Malaysian bond market. A high proportion of latent liquidity concentrates between the values 0.00-0.0025, whereas the rest of the liquidity falls scattered between 0.0025-0.035. The maximum latent liquidity value recorded is 0.037258, whereas the minimum value is 0.0000269. The mean value also falls relatively closer to the minimum value at 0.001182. The low liquidity values shown in the figure are no surprise given the severity of the liquidity level in Malaysian Sukuk market. The fact that the study focuses on the Islamic sub-segment of the relatively small Malaysian bond market (as compared to the US bond market as the most studied bond market) validates our findings of the low liquidity level in the Malaysian Sukuk market.

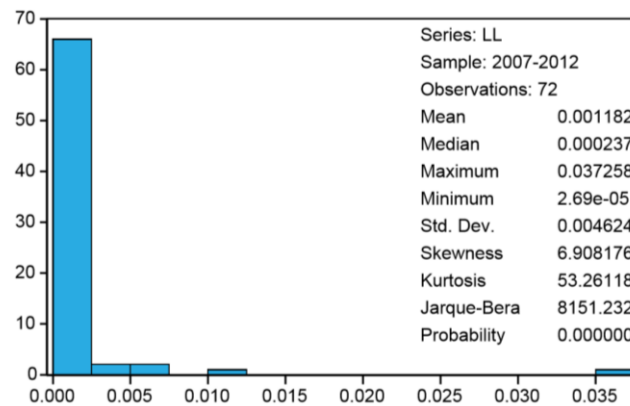


Figure 2. Distribution analysis on latent liquidity, 2007-2012

Segregating the generated latent liquidity into each cross section under study enables a closer observation of the latent liquidity level for each Sukuk. The graphs plotting a latent liquidity time series between 2007-2011 in Fig. 3 show the trends for each respective bond. Of the twelve graphs, five graphs show a sharp fall in latent liquidity in 2009. However, five other Sukuks show much earlier liquidity falls in 2008. Miraculously, two Sukuks show an increase in their latent liquidity levels during the crisis period of 2008-2009. It is fairly safe to say that the Malaysian Sukuks have also suffered the effect of liquidity breakdown in 2008. After going through turbulent years between 2008-2009, eight Sukuks suffer another fall in 2011, whereas almost all Sukuks transcend to higher liquidity in 2012.

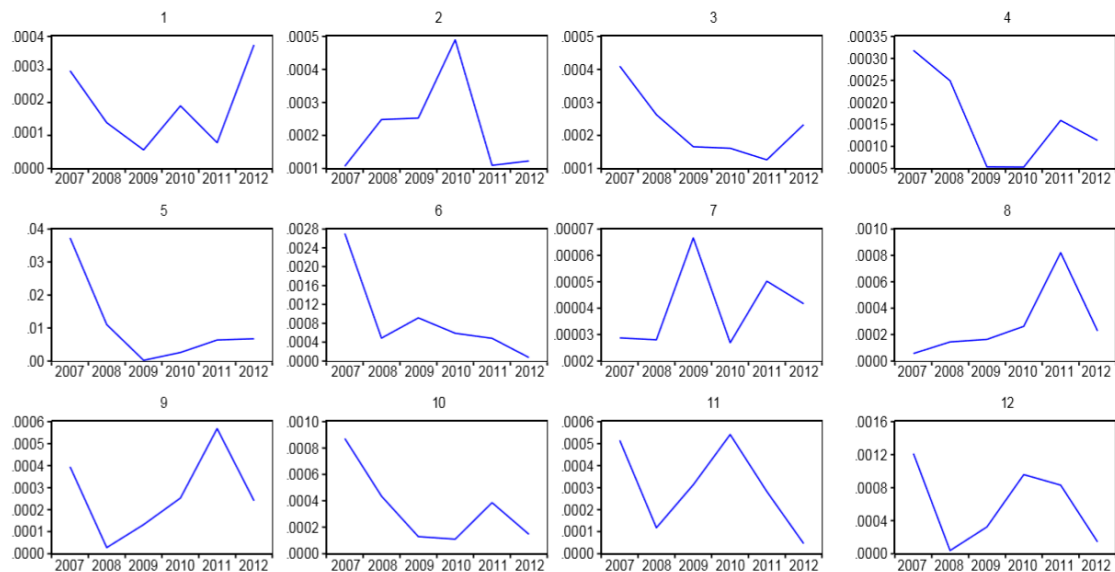


Figure 3. Trend of latent liquidity according to individual cross section, 2007-2012

4. Findings: Drivers of Islamic Bond Liquidity

From the generated latent liquidity in the previous section, the study continues to find the determinant drivers of Sukuks' liquidity level in the Malaysian market. According to Jankowitsch et al. (2011), the most important liquidity proxies are the amount issued, maturity, age, rating, bid-ask spread and trading volume. Latent liquidity is regressed against a Sukuk's time to maturity, issuance amount, coupon value, rating and age as the independent variables. All data used are in the form of yearly data, running from 2007 until 2012. The rating variable uses RAM's rating, where an AAA bond is weighted as 1, an Aa1 bond is weighted as 2, an Aa2 bond is weighted as 3, an Aa3 bond is weighted as 4 and a Baa bond is weighted downwards as 5. The Random Effect (RE) regression model is used for estimation after performing the specification tests to determine whether pooled regression (Breusch-Pagan LM test) or Fixed Effect models (Hausman Test) could suffice.

Table 9. Random effect regressions for the drivers of liquidity

C	Ln (Issue Amount)	Ln (Coupon)	Ln (Maturity)	Ln (Age)	Ln (Rating)	R ²
-0.028319	0.002475	-0.001136	-0.005398	-0.001470	-0.000625	0.350199
[0.0428]*	[0.0444]*	[0.0613]**	[0.0440]*	[0.0830]**	[0.1180]	

Source: Bank Negara Malaysia (2012).

* significant at the 5% level; ** significant at the 10% level.

Table 9 presents the summary of regression results for the random effect model to determine the factors affecting a Sukuk's liquidity level in the Malaysian market. From the results reported in Table 9, liquidity is correlated with two independent variables (issuance amount and maturity) at a 0.05 significant level, whereas two other variables (coupon rate and age) are found to be significant determinants of a Sukuk's liquidity level at a 0.10 significant level. Credit rating turns out to be insignificantly correlated to a Sukuk's liquidity. It is predictable that the issuance amount of a Sukuk is positively associated with the Sukuk's liquidity level. Its coefficient is statistically significant at the 5% level, suggesting its importance in affecting a Sukuk's liquidity. This is consistent with Houweling et al. (2005), who consider a bond's issuance amount to be an indication of a bond's liquidity. Most banks have been using issuance amount as the liquidity criterion in building their bond indices.

The coupon rate seems to be a statistically significant liquidity determinant for Sukuks at a 0.10 significant level, in which the coupon rate has a negative relationship with the liquidity level. In explaining the inverse correlation, we make an assumption that Sukuk investors are more likely to lock in buy-and-hold activities when the coupon rate is high to amortise the return. This in turn, reduces the tradable amount of a Sukuk, hence, lowering its liquidity level. Mahanti et al. (2008) could not find any clear relationship between coupon and liquidity and inferred a positive relationship between the two variables, as a vibrant market could make a bond with a high coupon rate be deemed lucrative and more tradable. However, the contrasting relationship between the Sukuk coupon rate and the liquidity level in the study could also be due to the confounding effect that the coupon rate imposes on liquidity, by which investors would consider other factors over coupon rate.

The maturity of a Sukuk is found to be significant at a 0.05 significant level and appears to be inversely related to liquidity. This implies that the longer Sukuk's maturity, the lower the liquidity level of the Sukuk. This is in line with the nature of investment, where assets with shorter maturity are more liquid. Again, the buy-and-hold nature of investors (such as insurance companies) that are keen to lock their long maturity bond to match their long term liabilities is believed to be the key factor for the decreasing liquidity issue of longer term bonds. However, from another point of view, we could say that a bond with a short maturity is less risky than a long maturity bond. This is because a small difference in coupon value or bonds yield could have much larger effects on bonds with longer maturities than on bonds with relatively short maturities.

The result further indicates that the age of a Sukuk is significant at the 0.10 level and negatively related to liquidity. This suggests that a Sukuk's liquidity level decreases as the age of the Sukuk increases. The result is consistent with that of Houweling et al. (2005), who conclude that as a bond ages, an increasing percentage of issued amount is absorbed in the investors' buy-and-hold portfolio. A bond's on-the-run characteristic gives an explanation for the high Sukuk liquidity level right after the issuance date and the relatively low liquidity level after some period of time as the Sukuk becomes off-the-run.

Moreover, the results from Table 9 reveal that the credit rating of a Sukuk is not a significant driver of the Sukuk's liquidity in the study. The possible explanation for this finding could be as follows: Sukuks are commonly issued as good quality bonds, resulting in the rating having little effect on investors' investment decisions. On the other hand, the Sukuk credit rating is shown to be inversely related to liquidity level. In regressing the rating variable, the highest credit class is given a weighing of 1, where the weighting gets bigger for lower credit classes. Hence, the negative outcome is somewhat expected for the Sukuk market. Sukuks are mainly issued for investment purposes; thus, most Sukuks are rated from Aaa to A. Bbb and lower grade bonds are considered to be speculative bonds. As one of the main elements in Shariah law is the prohibition of usury or Riba, which bars the manipulation of the interest rate in assets, it is a rare occasion to see Sukuks being issued as speculative bonds.

In summary, four bond characteristics (namely issuance amount, maturity, coupon rate, and age) are found to be significantly related to a Sukuk's liquidity level in the Malaysian bond market. On the other hand, one variable, namely the credit rating, is found to be statistically insignificant, implying its insignificant influence in driving a Sukuk's liquidity level. The direction of correlation between issuance amount, maturity, age, and credit rating variables towards liquidity is consistent with past literature. However, the coupons of Sukuks are in contrast to

bonds' natural positive characteristics towards liquidity, implying that Sukuk investors favour a buy-and-hold strategy in their investment.

5. Conclusion

This paper uses a liquidity measure introduced by Mahanti et al. (2008) and applies it to the Sukuk market in Malaysia. Latent liquidity is more applicable to the Malaysian Sukuk market for its non-reliance on transaction data than to other liquidity measures. The trend of the Sukuk market is illustrated in the paper, together with an analysis on the liquidity level in the market based on trading amount data. Two conclusions have been drawn from the descriptive analysis: first, the Sukuk's existence in the Malaysian bond market and economy is very significant and vital. Second, the Sukuk market is illiquid with little transaction volume every year.

The latent liquidity measure is tested across five basic bond characteristics to determine the drivers of a Sukuk's liquidity level. The four variables of issuance amount, maturity, coupon rate, and age are found to be significant determinants of a Sukuk's liquidity level, whereas credit rating is not. The Sukuk issuance amount is found to be significant and positively related to liquidity, in accordance to most empirical research prior to the study. The same could not be said for the rating variable, which shows an insignificant negative effect on liquidity level. The negative correlation is actually expected because Sukuks are being widely issued as investment bonds rather than speculative bonds. Hence, it comes as no surprise that investors are less keen on a Sukuk's rating in deciding on Sukuk trading as Sukuks do not differ much in term of rating. Given the weighting used in the study, in which an AAA grade bond is weighted as 1, an AA bond is weighted as 2 and an A bond is weighted as 3, the inverse relationship between the independent variable and the dependent variable is somewhat expected.

On the other hand, the coupon rate has a significant negative effect on the Sukuk liquidity level. This relationship is explained by investors' behaviour towards Sukuks, where investors prefer to keep Sukuks instead of selling them to amortise the return. This, consequently, would cause a Sukuk's liquidity to fall, as illustrated by the result. Meanwhile, Sukuk maturity shows a significant negative correlation with the Sukuk liquidity level, complying with past literature. Longer maturity Sukuks would lead to less liquid Sukuk conditions due to the tendency for investors to hold longer term Sukuks. Another negative significant determinant of the Sukuk liquidity level is age, where Sukuks become less liquid after some period of time due to the off-the-run factor. Still, we could see that time related characteristics of Sukuks play a large role in influencing the liquidity level.

With the increasing demand for Islamic financial products, the study of Islamic financial products could contribute considerably towards future study in the area. The study paves the way for further research on the liquidity level of Islamic assets as opposed to the conventional asset in the vast literature. Further study could also be undertaken to determining the driver of liquidity level by adding more variables, such as interest types, options attached to the bonds and many more innovative bond characteristics as the market advances.

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