CHAPTER 5

FINDINGS AND DISCUSSIONS

5.1 Introduction

This chapter presents the findings and analysis of the empirical results of the study. Since the study focuses on the investigation of the effect of Islamic financial activities of Sukuk announcement, yield spread, and liquidity on stock market response, three main research questions, each containing three research hypotheses, have been formulated. To answer the three research questions, three research objectives have been provided: (1) investigate the stock market reaction to the corporate Sukuk issuance announcement, (2) determine the co-movement between the new and seasoned corporate Sukuk issuance yield spreads on the stock market volatility, and (3) identify the effect of corporate Sukuk liquidity on the stock market liquidity. Thus, this chapter consists of three main sections; the first section (see: section 5.2) provides the empirical result of the first objective of the study, which investigates the stock market reaction to the corporate Sukuk issuance announcement, thereby discussing the result obtained from the analysis. The second section (see: section 5.3) provides the empirical result of the second objective of the study, which aims to determine the co-movement between the new and seasoned corporate Sukuk issuance yield spreads on the stock market volatility thereby discussing the result obtained from the analysis. The third section (see: section 5.4) provides the empirical result of the third objective of the study, which aims to identify the effect of corporate Sukuk liquidity on the stock market liquidity, thereby discussing the result obtained from the analysis. Meanwhile, Section 5.5 presents the summary of the hypotheses tests.

5.2 The Effect of Stock Market Reaction to Sukuk Announcements

This section presents and analyses the results of the first research question, which aims to investigate the stock market reaction to the corporate Sukuk issuance announcement. This research question has the following three research hypotheses:

H1: Sukuk announcements in the Southeast Asia and GCC stock markets are associated with a negative abnormal return,

H2: Announcements of Sukuk in the Southeast Asia market are associated with lower negative abnormal returns compared to the GCC Sukuk market, and

H3: Announcements of Sukuk that have a longer time-lapse are associated with higher abnormal returns.

Following the formulations of the research hypotheses, this section explains how the results of the study contribute to the established body of knowledge by investigating the stock market reaction to the corporate Sukuk issuance announcement. In the first section, it presents the results of the descriptive statistics of the study; as shown in Table 5.1. The descriptive statistics include the descriptive statistics of corporate Sukuk Issuances in Southeast Asia and GCC, the descriptive statistics of corporate Sukuk issuances for the GCC, and the descriptive statistics of corporate Sukuk issuance for Southeast Asia. In section 5.2.2, the empirical tests and the results of the study are explained. The section discusses the regression tests of the models for GCC and Southeast Asia. Subsequently, it carries out the hypothesis testing using the following two tests: (i) the Durbin-Watson statistic test for two-matched groups, (ii) stability test (i.e., ST curves). The section proceeds by performing further statistical analyses concerning the average cumulative abnormal returns followed by the regression results of the performance of the models.

5.2.1 Descriptive Statistics

Table 5.1 reports the descriptive statistics of sample size for the study used, which includes (1) time-lapse, (2) amount, (3) market capitalization, (4) tenor, and (5) coupon rate. These descriptive statistics could explain the stock market reaction to the corporate Sukuk issuance announcement. The table produced by the descriptive statistics shows the number of observations (n=157) for the overall observations, the number of observations (n=120) for Southeast Asia, and the number of observations (n=37) for the GCC.

Table 5.1 presents the descriptive statistics for the independent factors: (1) time-lapse, (2) amount, (3) market capitalization, (4) tenor, and (5) coupon rate within the corporate Sukuk issuance. For the overall sampling frame, it is found that the average (mean) time-lapse of corporate Sukuk issuance announcement is 3.17 days, and the average (mean) for shares held by the market capitalization is USD10669.03, while the average year's tenor is 7.23 years. The descriptive statistics indicate that the dollar amount is USD237.00 million and the average percentage of coupon rate is 4.89%.

As shown in Table 5.1 for GCC countries, the descriptive statistics indicate that the average (mean) time-lapse of corporate Sukuk issuance announcement is 2.78 days and the average (mean) amount of corporate Sukuk issuance announcement is USD467.07 million, while the average (mean) shares held by the market capitalization is USD2560.57. Within the tenor criteria of corporate Sukuk issuance announcements, the average (mean) years of the tenor is 7.89 years, while the average ratio of coupon rate of corporate Sukuk issuance announcement is 3.78%.

Table 5.1 also presents the descriptive statistics for the Southeast Asia countries (Malaysia and Indonesia) for the various control variables: (1) time-lapse, (2) amount, (3) market capitalization, (4) tenor, and (5) coupon rate of the corporate Sukuk issuance.

The descriptive statistics indicate that the average (mean) time-lapse for the corporate Sukuk issuance announcement is 6.70 days and the average (mean) amount is USD43.57 (mean), and the average (mean) of shares held by the Market cap is USD8108,46 million. For the tenor, the average (mean) years of tenor is 6.80 years while the average percentage of the coupon rate is a ratio of 5.92%.

Based on the descriptive statistics, the average time-lapse of the GCC market is 2.78, which is less than the obtained mean for the Southeast Asia market at 6.7 days. It must also be noted that most of the announcements of the GCC market (78.4%) have zero time-lapse, as the announcements were made on the same day as the actual issuance. In terms of the amount of issuance, the average amount of GCC issuance is USD467.07 million, while the amount for Southeast Asia is USD43.57 million. This difference may be explained by the fact that the GCC market has fewer issuances with higher amounts, unlike the Southeast Asia market, which has many issuances with lower amounts. The average tenor for GCC is 7.89 years, which is close to Southeast Asia's, which is 6.8 years. It can also be seen that the coupon rate for GCC Sukuk issuances is, on average equals to 3.78%, less than Southeast Asia's that equals to 2.14%, which resulted from the Saudi market following the Fed policy as it is the largest issuer within the GCC.

Based on the descriptive statistics discussed above, it can be noted that the mean time-lapse in the GCC is reported at 2.78 days compared to 6.70 days for Southeast Asia. This indicates the shorter time-lapse available for potential investors in the GCC capital market compared to Southeast Asia, which means that taking decisions towards Sukuk announcements in the GCC takes less time due to the narrow period between the Sukuk announcement and the actual date of Sukuk issuing. For the amount of Sukuk issuance, despite the higher number of total issuances in Southeast Asia, 120 compared to 37 in the GCC, it can be noted that the mean of the issuance amount in the GCC capital market is reported at 467.07 million dollars, while for Southeast Asia it is reported at 43.57 million dollars. This is due to the capital market structure in the GCC, which regulates Sukuk issuances through the financial institutions, unlike the capital market regulation in Southeast Asia that allows listed companies to issue Sukuk themselves. Furthermore, the tenor’s mean in the GCC is higher than that in Southeast Asia by 1.09 years; the narrow difference is attributed to the similar tenor structure in these two regions, as most of the issuances tenor within the 5 to 10 years (long-term). The coupon rate means in Southeast Asia is higher than that for the GCC by 2.14%. This is attributed to the higher competition in the Islamic bond market in Southeast Asia compared to the GCC Islamic bond market, where issuers offer a higher coupon rate due to the better investment opportunities in Southeast Asia, as well as the wide economic diversification, which is unlike the GCC economy that relies more on oil and gas projects (Aloui, Jammazi, & Hamida, 2018; Rethel, 2018).

Table 5.1: Descriptive Statistics of Corporate Sukuk Issuances

Factors	n*	Minimum	Maximum	Mean	Std. Dev.	UM**
Overall population						
Time-lapse	15	0.00	6.00	3.17	1.71	Days
Amount	15	10.00	2200.00	237.00	311.35	USD/million
Market cap	15	52.46	80929.38	10669.03	12926.41	USD/million
Tenor	15	0.00	20.00	7.2300	3.23	Years
Coupon	15	3.71	9.80	4.89	0.93	Ratio
Malaysia						
Time-lapse	88	0	6	3.17	1.712	Days
Amount	88	10.00	2200.00	237.	311.35	USD/million
Market cap	88	52.46	80929.38	10669.03	12926.41	USD/million
Tenor	88	0	20	7.23	3.227	Years
Coupon	88	0	20	7.23	3.227	Ratio

Table 5.1, continued

Factors	n*	Minimum	Maximum	Mean	Std. Dev.	UM**
Indonesia						
Time-lapse	32	0.00	40.00	20.00	12.00	Days
Amount	32	0.73	87.21	13.77	16.97	USD/million
Market cap	32	34.62	38201.00	5214.36	6328.05	USD/million
Tenor	32	1.00	13.00	5.16	2.68	Years
Coupon	32	7.5	13.75	9.80	1.28	Ratio
Saudi						
Time-lapse	34	0.00	29.00	11.58	0.82	Days
Amount	34	400.00	7,000.00	2,018.93	1.05	USD/million
Market cap	34	86.23	36,051.00	9475.61	2411.03	USD/million
Tenor	34	0.00	40.00	8.48	3.91	Years
Coupon rate	34	0.00	4.56	3.21	1.77	Ratio
UAE						
Time-lapse	2	0.00	0.00	0.00	0.00	Days
Amount	2	100.00	200.00	133.33	0.63	USD/million
Market cap	2	180.00	14236.00	4697.06	1105.52	USD/million
Tenor	2	0.00	5.00	5.00	0.31	Years
Coupon rate	2	7.50	13.95	9.65	2.82	Ratio
Qatar						
Time-lapse	1	0.00	0.00	0.00	0.00	Days
Amount	1	2000.00	2000.00	2000.00	0.00	USD/million
Market cap	1	4000.00	4000.00	4000.00	0.00	USD/million
Tenor	1	10.00	10.00	10.00	0.00	Years
Coupon rate	1	2.5	2.5	2.5	0.00	Ratio
Southeast Asia						
Time-lapse	120	0	40	6.70	8.94	Days
Amount	120	2.23	491.51	43.57	1.56	USD/million
Market cap	120	39.87	61506.33	8108.46	9824.07	USD/million
Tenor	120	0	20	6.80	3.23	Years
Coupon	120	3.71	13.75	5.92	2.25	Ratio
GCC						
Time-lapse	37	0.00	29.00	2.78	7.01	Days
Amount	37	0.026	1,866.27	467.07	1.04	USD/million
Market cap	37	12.59	19423.05	2560.57	3102.34	USD/million
Tenor	37	0.00	40.00	7.89	6.58	Years
Coupon rate	37	0.00	13.95	3.78	2.49	Ratio

*N = Number of observations or No. of issuances
**UM = Unit Measurements
GCC = (1) Saudi Arabia, (2) the United Arab Emirates, and (3) Qatar
Southeast Asia = Malaysia and Indonesia

5.2.2 Empirical Tests

This section examines the first objective of this study, in which three hypotheses are developed to achieve this objective. Section 5.2.2.1 is assigned to test the first hypothesis that Sukuk announcements in Southeast Asia and GCC stock markets are associated with a negative abnormal return; this hypothesis is tested by the market reaction model using event study methodology. Section 5.2.2.2 is assigned to test the second hypothesis that announcements of Sukuk in the Southeast Asia stock market are associated with lower negative abnormal returns compared to the GCC stock market; the independent sample t-test and one-way ANOVA are used to test this hypothesis. Section 5.2.2.3 focuses on testing the third hypothesis that announcements of Sukuk that have a longer time-lapse are associated with higher abnormal returns; the ordinary least squares test is used to examine this hypothesis.

5.2.2.1 Results of Cumulative Average Abnormal Returns (Hypothesis 1)

Table 5.2 below reports the cumulative average abnormal returns for the two stock market regions, Southeast Asia and the GCC, besides reporting the cumulative abnormal returns at the country level for five countries – Malaysia and Indonesia (Southeast Asia region) and Saudi Arabia, United Arab Emirates, and Qatar (GCC region).

Table 5.2: Cumulative Average Abnormal Returns

Event windows	CAAR All	t- test	CAAR Malaysia	t- test	CAAR Indonesia	t- test	CAAR SA	t-test	CAAR UAE	t-test
(0,0)	0.004***	3.18	-0.005***	(4.02)	0.002	0.49	-0.305	-1.76	0.009	1.38
(-1,+1)	0.009***	3.51	-0.009***	(4.78)	0.007	1.70	-0.269	-1.15	0.015	0.37
(-2,+2)	0.010	0.60	0.009	0.14	0.007	0.07	-0.466**	(2.18)	0.029	1.39
(-1,+2)	0.013***	1.98	0.011	1.21	0.017**	2.39	-0.197	-0.76	0.032	0.19
(-2,+1)	-0.010	(1.57)	-0.009**	(2.33)	-0.015	(0.31)	-0.269	-1.16	0.042	0.71
(-5,+4)	-0.006***	(3.31)	-0.007	(1.59)	-0.003***	(3.97)	0.450**	2.42	-0.042	(0.15)
(-5,+15)	0.007	0.34	-0.007	(0.12)	0.004	0.34	0.392**	2.96	-0.038	(0.95)
(-1,+14)	-0.004***	(2.19)	-0.006	(1.43)	-0.003**	(2.20)	0.879**	4.08	0.038	0.36
(0,+3)	-0.002	(0.97)	-0.003**	(2.31)	-0.006	(0.70)	0.896	0.13	-0.038	(0.12)
(-1,+5)	-0.003***	(3.05)	-0.001***	(3.21)	-0.018***	(3.18)	1.195**	2.19	-0.036	(0.63)
(0,+12)	-0.008***	(2.89)	-0.004	(1.80)	-0.028**	(2.63)	0.990	1.50	0.037	0.12
(0,+7)	-0.014***	(4.52)	-0.011***	(5.56)	-0.034**	(2.69)	0.625**	3.09	-0.032	(1.12)

** is significant at 5% level, and *** is significant at 1% level.

CAARSA = Cumulative Average Abnormal Returns for Saudi Arabia

Table 5.2, continued

Event windows	CAAR Qatar	t-test	CAAR SEA	t- test	CAAR GCC	t-test
(0,0)	-0.000	(0.09)	-0.625***	(3.09)	-0.16	(0.97)
(-1, +1)	0.000	0.18	0.646	0.170	0.05	0.91
(-2, +2)	**0.000**	**0.27**	**-0.369****	**(2.15)**	**-0.17**	**(0.78)**
(-1, +2)	0.001	0.36	-0.830**	(2.87)	-0.11	(0.50)
(-2, +1)	-0.001	(0.45)	-0.250***	(5.33)	0.06	0.25
(-5, +4)	0.003	0.55	-0.460***	(3.06)	0.47**	2.38
(-5, +15)	-0.002	(0.64)	0.450**	3.151	-0.15	(0.49)
(-1, +14)	0.003	0.73	0.860	1.83	-14.21**	(27.49)
(0, +3)	-0.003	(0.82)	0.280	1.82	-29.10**	(36.71)
(-1, +5)	0.003	0.91	-1.077**	(4.36)	-28.86**	(26.31)
(0, +12)	0.005	1.00	-0.752	0.66	0.126	0.65
(0, +7)	-0.004	(1.09)	-1.497**	(2.20)	-0.41**	(2.20)

** is significant at 5% level, and *** is significant at 1% level.
CAARSEA = Cumulative Average Abnormal Returns Southeast Asia
CAARGCC = Cumulative Average Abnormal Returns for GCC

As shown in Table 5.2, most of the event windows tested in the GCC and Southeast Asia stock markets have the expected negative sign and are significant at the 0.01 and 0.05 level. The results of the stock market reaction investigation are categorized into three groups, (1) negative and significant reaction, (2) positive and significant reaction, and (3) non-significant reaction. In the overall sample, three event windows were found with a significant and positive abnormal return to Sukuk announcements at event windows (0,0), (-1,1), and (-1,2), while five event windows were found with a significant and negative abnormal return to Sukuk announcements (-5,4), (-1,+14), (-1,+5), (0,+12), and (0,+7). For the Southeast Asia stock market, among the 12 event study windows, seven windows were found with negative and significant reaction; these windows are (0,0), (-2,+2), (-1,+2), (-2,+1), (-5,+4), (-1,+5), (0,+7), and one window with a positive and significant reaction (-5,+15). In the Malaysian stock market, six event windows were found with a significant and negative abnormal return (0,0), (-1, +1), (-2, +1), (0, +3), (-1, +5), and (0, +7). In the Indonesian stock market, six event windows were found with a significant and negative abnormal return (-1, +2), (-5, +4), (-1, +14), (-1, +5), (0, +12), (0, +7). For the GCC stock market, four event windows were found with a negative and significant reaction (-1, +14), (0,3), (-1, +5), (0, +7), and one event window with a positive and significant reaction (-5,4). For the Saudi Arabia stock market, one event window was found with a negative and significant reaction (-2,2), and five event windows with a positive and significant reaction (-5,4), (-5, +15), (-1, +14), (-1, +5), (0, +7). It can be noted for both stock markets that no event window was found with a significant abnormal return for the UAE and Qatar.

Hence, the overall stock market reaction for Southeast Asia and GCC were negative and significant; meanwhile, the Saudi stock market is dominated by a positive and significant reaction. The interpretation for this reaction within the two stock markets (i.e. Southeast Asia and GCC) can be attributed to the two criteria of these markets, as follows: (1) time-lapse (i.e. the time between the date of announcement and actual date); where the Southeast Asia market has a higher time-lapse mean score at 6.7 days compared to the GCC stock market at 2.78 days, which can be noted from the earlier negative reaction within the Southeast Asia stock market, as it spread over the first week from the announcement. In contrast, the GCC stock market reported a negative reaction from the second week later to the announcement date. (2) Market regulation; the late adoption of a corporate governance code by the GCC security markets compared to the Southeast Asia market, which makes the investor decision process longer. The Saudi market is considered to be the largest issuer of Sukuk within the GCC and relies more on equity-based Sukuk, unlike the Southeast Asia market, which relies more on debt-based Sukuk (Mahomed, Mohamad, & Ariff, 2018). Also, the lack of a secondary

Sukuk market in the GCC has led investors to adopt a buy-hold strategy to maturity, and there is no special committee for Shari'ah compliance in the Saudi market, which contrasts with Southeast Asia.

The negative reaction from both stock markets, Southeast Asia and GCC, are consistent with previous studies, such as Godlewski et al. (2013), Alam et al. (2013), and Mohamed et al. (2017). This result is consistent with the pecking order theory of Myers and Majluf (1984), which contended that issuing external financing sends a negative signal to the investors that hypothesized a significant reaction from the stock market to the debt issuance announcements. Ross (1977) considered that this reaction from the stock market is due to the political, financial, and regulation changes within the stock market. Therefore, a positive reaction from the stock market was directed more emotionally instead of assessing the relative risk and return. Meanwhile, some previous studies, such as Khartabiel et al. (2019) found a significant and positive stock market reaction to the Sukuk announcements post-crisis period, while the study of Elian and Young Taft (2014) revealed significantly positive market reaction for day [14], with average announcement period abnormal returns of 1.6%, which is attributed to the market participants' new look, awareness, and increased demand for Sukuk.

5.2.2.2 Better Abnormal Return Test (Hypothesis 2)

For the purpose of investigating the second hypothesis, which assumes better abnormal returns of the Southeast Asia stock market to the Sukuk announcements compared to the GCC stock market, the independent sample t-test and one-way ANOVA are used to examine the second hypothesis. Prior to running the independent sample t-test and the one-way ANOVA, the normality test is conducted to meet the assumption of variance test. Table 5.3 provides the normality test for both stock markets, Southeast Asia and GCC. The Skewness and Kurtosis for the two stock markets samples are reported within the accepted range of between -3 and +3 recommended by Groeneveld and Meeden (1984); this result confirms the normal distribution of data.

Table 5.3: Normality Test

Region	**N**	**Skewness**	**Kurtosis**
	Statistic	**Statistic**	**Statistic**
Southeast Asia	21	-1.389	1.516
GCC	21	-0.881	-0.109

The independent sample t-test is conducted on the level of regions, which covers Southeast Asia and the GCC, and is based on the country level of Southeast Asia (Malaysia and Indonesia). While for testing the variance within the GCC region, the one-way ANOVA test is used for testing the GCC countries. For the overall sample, three countries, Saudi Arabia, UAE, and Qatar, are categorized for the GCC region, and five countries represent the overall sample (Malaysia, Indonesia, Saudi Arabia, UAE, and Qatar). Table 5.4 presents the results of the mean and standard deviation of both Southeast Asia and GCC for the cumulative average abnormal return obtained from the event study method. It can be noted that the mean score of CAAR obtained for Southeast Asia is equal to -0.2405, which is higher than the mean score of CAAR obtained for GCC, which is -6.0408. Both means are significantly different, as reported by the result of the Levene test in Table 5.5; this result confirms a significant difference between the means at 5.800. Thus, the Southeast Asia stock market is associated with lower negative abnormal returns compared to the GCC stock market. The lower negative abnormal return obtained in the Southeast Asia stock market is attributed to the market efficiency market assumption, which expects less financial shock in well-structured stock markets.

According to Azzam (2016), in 2014, the stock market structure of the GCC region was heavily skewed towards bank assets, which formed about 58.8% of the total capital market structure, while the equity part formed around 34%, and debt securities around 7.2%. Meanwhile, for the Southeast Asia stock market, it was around 38.21% for bank assets, 38.07% for equities, and 23.72% for debt securities (Regan, 2017). According to Brugler et al. (2020), the capital market structure reforms reduced the intermediation and lowered the costs of raising capital. To the extent that the stock market suffers from excess intermediation and illiquidity, carefully crafted market structure reforms could improve investment and risk sharing in the economy.

Besides the different capital market structure between the GCC and Southeast Asia, the regulation and supervision of Sukuk issuance process is different (e.g., Saudi Arabia). Saudi Arabia is the largest Sukuk issuer within the GCC capital market (Khudari & Saad, 2019), but there is a lack of differentiation between Sukuk and conventional bonds by the authority body (Al-Harbi & Rahman, 2018; Alshamrani, 2014). Despite the similarity in the Sukuk structure among the GCC and Southeast Asia countries, which are limited to seven structures of Sukuk – Wakala, Hybrid, Ijara, Mudaraba, Musharaka, Murabaha, and Islamic exchangeable (Kamaluddin et al., 2015) – the absence of a Shari'ah committee to approve the Sukuk issuance and regulate forms the main drawback (Alshamrani, 2014). Therefore, the impact of the result of Sukuk announcements on the stock markets within the two emerging markets with different regulations, institutions, and market structure, could be different.

Table 5.4: T Independent Sample Test – Southeast Asia and GCC – Group Statistics

	Measure	Southeast Asia	GCC
CAAR	N	21	21
	Mean	-.2405	-6.0408
	Std. Deviation	.75075	11.46072

Table 5.5: T Independent Sample Test – Southeast Asia and GCC – Levene Test

Item	Measure	Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	19.617	
	Sig	.000	
t-test for Equality of Means	T-value	2.749	2.749
	Sig	0.004	0.002
Mean Difference		5.80033	5.80033

Table 5.6 reports the results of CAAR means and standard deviation for both stock markets within Southeast Asia – Malaysia and Indonesia. The results show that a higher CAAR mean was obtained in the Malaysian stock market at 0.0042 compared to the CAAR mean score of the Indonesian stock market at -0.0028. Neither CAAR mean showed a significant difference as p = 0.176.

Table 5.6: T Independent Sample Test – Malaysia and Indonesia – Group Statistics

	Measure	Malaysia	Indonesia
CAAR	N	21	21
	Mean	.0042	-.0028
	Std. Deviation	.00648	.01611

Table 5.7: Independent Samples Test – Malaysia and Indonesia – Levene Test

Item	Measure	Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	6.475	
	Sig	0.018	
t-test for Equality of Means	T-value	1.397	1.397
	Sig	.176	.184
Mean Difference		.00700	.00700

Table 5.8 reports the results of the one-way ANOVA for the three countries categorized as within the GCC stock market – Saudi Arabia, UAE, and Qatar. The results of the CAAR means were 0.3268, 0.0323, and 0.0021 for Saudi Arabia, UAE, and Qatar, respectively. These three means were found to have no significant difference as p-value=0.052; as reported in Table 5.9. The CAAR means are tested for the overall sample that covered five countries belonging to the two regions (Malaysia, Indonesia, Saudi Arabia, UAE, and Qatar). Table 5.10 reported the CAAR means obtained from 12 event windows tested within the five stock markets; the CAAR means arranged in descending order are Saudi Arabia (m=0.3268, SD= 0.599), UAE (m=0.0323, SD=0.010), Malaysia (m=0.0042, SD=0.0065), and Qatar (m=0.0021, SD=0.0017). The CAAR means obtained for the five stock markets found a significant difference, which was confirmed at p-value = 0.015; as reported in Table 5.11. Table 5.5 reported multiple comparisons using the Tukey HSD test within the five stock markets, which confirms a significant difference between the CAAR means obtained from each GCC country to each CAAR mean obtained in the Southeast Asia stock markets separately. It was found that the CAAR mean of the Saudi Arabia stock market was significantly different to both stock markets the CAAR means obtained for both Malaysia and Indonesia at p=0.036 and p=0.031, respectively.

Table 5.8: One-way ANOVA – Saudi, UAE, Qatar – CAAR Descriptive Statistics

Country	N	Mean	SD	Std. Error	Min	Max
Saudi	12	.3268	.59870	.1728	-.47	1.20
UAE	12	.0323	.01033	.0029	.01	.04
Qatar	12	.0021	.00168	.0004	.00	.01
Total	36	.1204	.36708	.0611	-.47	1.20

Table 5.9: ANOVA Test – CAAR- Saudi, UAE, Qatar

Differences	Sum of Squares	df	F	Sig.
Between Groups	.772	2	3.230	.052
Within Groups	3.944	33		
Total	4.716	35		

Table 5.10: One-way ANOVA – Malaysia, Indonesia, Saudi, UAE, Qatar- Descriptive Statistics

Country	N	Mean	SD	Std. Error
Malaysia	12	.0042	.00648	.00187
Indonesia	12	-.0028	.01611	.00465
Saudi	12	.3268	.59870	.17283
UAE	12	.0323	.01033	.00298
Qatar	12	.0021	.00168	.00048
Total	60	.0725	.28895	.03730

Table 5.11: ANOVA Test - CAAR

Differences	Sum of Squares	df	F	Sig.
Between Groups	.979	4	3.409	.015
Within Groups	3.947	55		
Total	4.926	59		

Table 5.12: Sample Comparisons - Tukey HSD

(I) Country	(J) Country	Mean Difference (I-J)	Std. Error	Sig.
Malaysia	Indonesia	0.007	0.109	1.000
	Saudi	-.323**	0.109	.036
	UAE	-0.028	0.109	.999
	Qatar	0.002	0.109	1.000
Indonesia	Malaysia	-0.007	0.109	1.000
	Saudi	-0.329**	0.109	.031
	UAE	-0.035	0.109	.998
	Qatar	-0.005	0.109	1.000
Saudi	Malaysia	.323**	0.109	.036
	Indonesia	.329**	0.109	.031
	UAE	0.294	0.109	.068
	Qatar	.325*	0.109	.034
UAE	Malaysia	0.028	0.109	.999
	Indonesia	0.035	0.109	.998
	Saudi	-0.294	0.109	.068
	Qatar	0.030	0.109	.999
Qatar	Malaysia	-0.002	0.109	1.000
	Indonesia	0.005	0.109	1.000
	Saudi	-.325**	0.109	.034
	UAE	-0.030	0.109	.999

* The mean difference is significant at the 0.05 level.
** The mean difference is significant at the 0.01 level.
Dependent Variable: CAAR

The second hypothesis of this study assumes that announcements of Sukuk in the Southeast Asia market are associated with lower negative abnormal returns compared to the GCC Sukuk market. The result obtained confirms the alternative hypothesis, which is in agreement with the theoretical base discussed in section 4.2.1. Based on the market imperfections theory, relevant information to the assets spreads faster in a better regulated stock market. Along with the imperfection theory assumption, deciding which stock market (i.e., Southeast Asia and GCC) has the lower degree of structure consistency of the stock market, it can be linked to a higher reaction to financial events.

Also, this result is in agreement with the finding of Tsaurai (2018) who confirmed that the Southeast Asia stock market is better developed than that of the GCC. Hence, investors in Southeast Asia bear more information related to the Sukuk issuance, which works to speed up their reaction to Sukuk announcements.

5.2.2.3 Regression Model Test Result (Hypothesis 3)

The empirical tests of the third hypothesis regarding the determinants of CAAR (-2, +2) obtained to the Sukuk issuance announcements were (1) time-lapse, (2) market capitalization, (3) tenor, (4) issuance amount, and (5) coupon rate on stock market reaction. The regression function for corporate Sukuk issuance announcements is conducted for a particular region, Southeast Asia and the GCC were obtained using the OLS regression model following (Ashbaugh, Collins, & LaFond, 2004). Therefore, the relationships between the cumulative average abnormal returns as the dependent variable and the determinants of corporate Sukuk issuance announcement – (1) time-lapse, (2) market capitalization, and as well as (3) tenor, (4) issuance amount, and (5) coupon rate as independent variables – are tested in the regression:

$$CAAR_{t1,t2} = \alpha + Lapse_{it} + Cap_{it} + Tenor_{it} + Am_{it} + Cp_{it} + e_{it}$$

(5.1)

where:

a = model intercept

$CAAR_{t1,t2}$= cumulative abnormal return over the event window t_1 and t_2

Lapse = the interval time between the announcement and the actual date of issuance

Cap = market value for all relevant issue-level share types

Tenor = accrual issuance period

Am = amount of issuance

Cp = coupon rate

The regression framework then models the abnormal returns as separate linear equations. Accordingly, six regression models are performed, specified as Model 1, for the overall population of the study that comprises five stock market (Malaysia, Indonesia, Saudi Arabia, UAE, and Qatar), model 2 for the Malaysian stock market, model 3 for the Indonesian stock market, model 4 for the Saudi Arabia stock market, model 5 for the southeast Asia stock market (Malaysia and Indonesia), model 6 for the GCC stock market (Saudi Arabia, UAE, and Qatar).

Before proceeding to the regression test, three tests were conducted to meet the assumptions of OLS regression; these three tests are the correlation test, multicollinearity test, and model stability.

Table 5.13 provides the correlation test among the model constructs; this test is run to test the linearity assumption. It can be noted that there is a significant relationship between three determinants of Sukuk issuance announcement and CAAR (-2, +2). These three factors association were reported as (r=0.157, p=0.049) between issuance amount and CAAR (-2, +2), (r=0.173, p=0.030), between issuance amount and CAAR (-2, +2), and (r=0.169, p=0.034) between issuance amount and CAAR (-2, +2). The results obtained from the correlation test confirm a linearity assumption for the model.

Table 5.13: Pearson's Correlation Test (2-tailed)

Variables	CAAR (-2, +2)	Am	Cp	Tenor	Time-lapse	Market Cap
CAAR (-2, +2)	1					
Amount	.157*	1				
Coupon	-.011	-.347**	1			
Tenor	-.054	.309**	.079	1		
Time laps	.173*	-.037	-.001	.078	1	
Market Cap	.169*	.311**	-.086	.110	.013	1

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

It is assumed that there is multicollinearity between the explanatory variables when there is some kind of linear dependence between them or if there is a strong correlation between them. The correlation not only refers to the different variables but to any of the variables with any regressor of the estimation model. The assumption of absence of multicollinearity is the second relative to the systematic part of the regression model, although it is usually defined as a "data problem" (Kalnins, 2018). For this reason, it is not enough (although necessary) that there are high correlations in the bivariate correlation matrix. The main drawback of multicollinearity is that the variance of the estimated regression coefficients is increased to the point where it is practically impossible to establish its statistical significance since as is known, the value of the t-test for a given regression coefficient is the value of the coefficient divided by its standard deviation. If this is large, the value of the t-test will be low and will not reach significance. Table 5.14 reveals that all the Variance Inflation Factors (VIF) are less than 4, which is within the accepted range recommended by O'brien (2007).

Table 5.14: Multicollinearity Test

Model Construct	Collinearity Statistics All population		Collinearity Statistics Malaysia		Collinearity Statistics Indonesia	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
Amount	.701	1.426	.492	2.032	.330	3.033
Coupon	.840	1.191	.577	1.733	.459	2.179
Tenor	.856	1.168	.647	1.547	.413	2.421
Time laps	.988	1.012	.977	1.024	.664	1.505
Market cap	.902	1.109	.438	2.284	.261	3.834
Model Construct	**Collinearity Statistics Saudi**		**Collinearity Statistics Southeast Asia**		**Collinearity Statistics GCC**	
	Tolerance	**VIF**	**Tolerance**	**VIF**	**Tolerance**	**VIF**
Amount	.750	1.334	.510	1.962	.657	1.523
Coupon	.863	1.159	.610	1.641	.863	1.158
Tenor	.819	1.221	.623	1.605	.761	1.314
Time laps	.957	1.045	.949	1.054	.978	1.023
Market cap	.973	1.028	.459	2.180	.929	1.076

The stability test is usually used prior to examining the linear relationship hypothesis of the regression model (El-Shagi & Giesen, 2013). The Cumulative Sum (CUSUM) is proposed to assess the stability of the beta coefficient in the regression model; inference is based on a sequence of sums, or sums of squares, of recursive residuals (standardized one-step-ahead forecast errors) computed iteratively from nested subsamples of the data (Ploberger & Krämer, 1992). Under the null hypothesis of coefficient constancy, the values of the sequence outside an expected range suggest a structural change in the model over time; if these structural changes outside an expected range, the model is not useful for estimating the beta coefficient within the regression model (Hwang & Shin, 2013).

Figure 5.1 plots the frequency distributions stability test of Southeast Asia with respect to the determinants of the abnormal return of stock market during the period Q1/2001 to Q3/2016, (1) time-lapse, (2) market capitalization, (3) tenor, (4) issuance amount, and (5) coupon rate of the estimated theoretical model results of the cumulative average abnormal returns given in section 5.2.2.1. Figure 5.2 plots the frequency distributions stability test of the GCC, where the X axis represents the observations during the period Q1/2001 to Q3/2016 and the Y axis represents the statistics. The levels of the effects of the estimated theoretical model results of the cumulative abnormal returns. It can be seen that the structural changes of the model over time for both stock markets were within the expected range of the model, which indicates stable models.

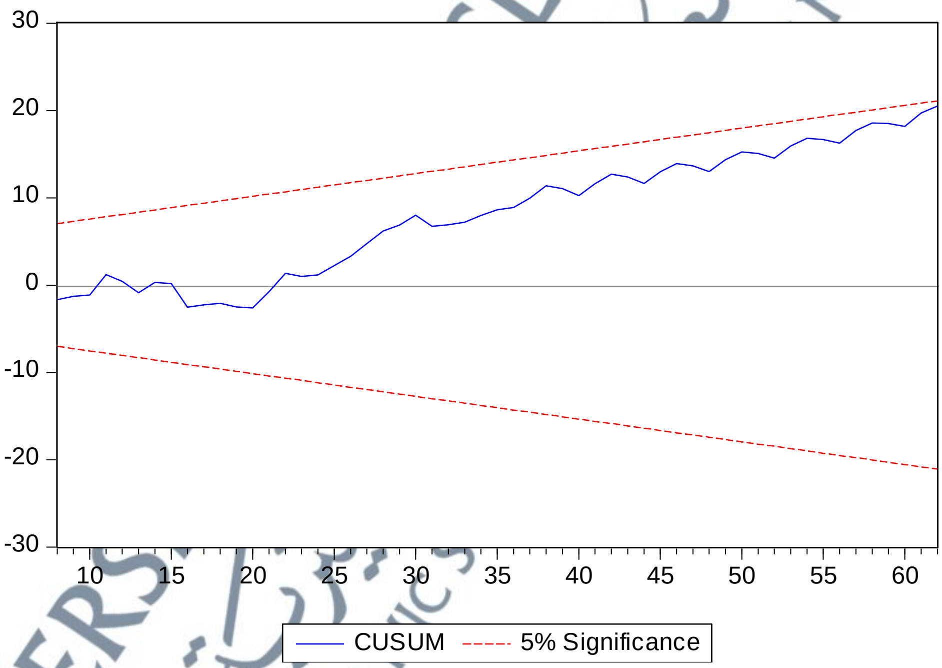


Figure 5.1: Stability Test of Southeast Asia

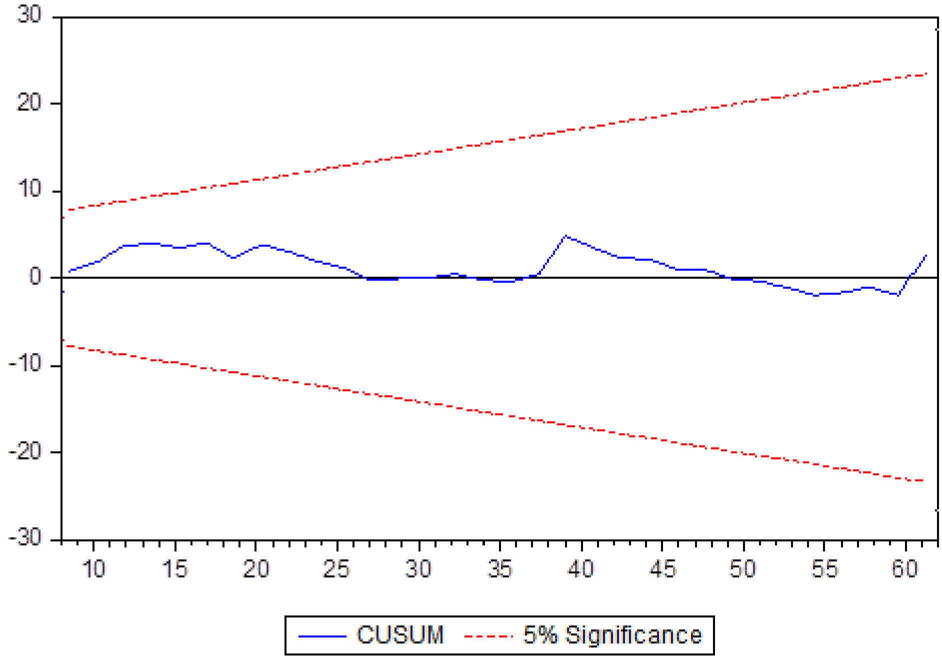


Figure 5.2: Stability Test of GCC

To test the predicted relations between corporate Sukuk issuance announcements determinants, (1) time-lapse, (2) market capitalization, (3) tenor, (4) issuance amount, and (5) coupon rate and CAAR (-2, +2), a series of regression models are estimated. Six regression models are performed and specified over the event window (-2,+2) as Model 1 for the overall population of the study that comprises five stock markets (Malaysia, Indonesia, Saudi Arabia, UAE, and Qatar), model 2 for the Malaysian stock market, model 3 for the Indonesian stock market, model 4 for the Saudi Arabia stock market, model 5 for the southeast Asia stock market (Malaysia and Indonesia), and model 6 for the GCC stock market (Saudi Arabia, UAE, and Qatar).

Table 5.15 provides the results of the regression test for the six regression models. First, the results of the regression model are tested for the entire population. The results of the coefficient determination (R. Squared 0.830) of the estimated model for the entire population using the corporate Sukuk criteria, the overall goodness of fits of the least squares regression method is high. Two criteria of the estimated coefficients – market cap and time-lapse – have the expected sign and are significant at the 0.01 level or 0.05. The results indicate that CAAR is positively related to the market capitalization at (β=0.001, t= 2.899, p= 0.004), and with time-lapse at (β=0.004, t= 22.795, p= 0.000). The model yields an Adjusted R-squared of 0. 830, this is significant at the level of 0.01 and has an R-squared of 0.824.

Thus, it can be said that the estimated regression method performed well. To find the best-fitting model equation for predicting the (1) issuance amount and (2) time-lapse, from scores on constant, the estimated theoretical equation (5.2) is:

$$CAAR_{t1,t2} = \alpha + lapse_{it} + Cap_{it} + Tenor_{it} + Am_{it} + Cp_{it} + e_{it}$$

(5.2)

where:

a = model intercept

CAAR = cumulative abnormal return over the event window t_1 and t_2

Lapse = the interval time between announcement and the actual date of issuance

Cap = market value for all relevant issue level share types

Tenor = accrual issuance period

Am = amount of issuance

Cp = coupon rate

Based on the regression, the equation is:

$$CAARSEA\,(-2, +2) = (-0.019) + 0.001 * CAP + 0.004 * lapse + 0.000 * Am + 0.00006 * Tenor + 0.00002 * Cp$$

This model fits the data well (F = 147.1, $p < 0.05$ and R-squared = 0.830).

Based on the results obtained from the entire population of stock markets; two criteria of Sukuk issuance announcement are found to be positively related to the CAAR: (1) market capitalization and (2) time-lapse. For the market capitalization, the positive association indicates that the higher size of the market capitalization of the Sukuk issuer estimates positive CAAR from the stock market, where investors consider market capitalization as an indicator of expansion strategy accompanied with high financial capability of the issuer. For the time-lapse, a longer time-lapse results in more time for investors to digest information related to the issuance, which results in a positive reaction; as reported for the event window (-2, +2).

Second, the result of the regression model is tested for the Malaysian stock market. In terms of the result of the coefficient determination (R. Squared 0.930) of the estimated model for the Malaysian stock market only using the five corporate Sukuk criteria, the overall goodness of fit of the least squares regression method is high. Three criteria of the estimated coefficients – coupon rate, time-lapse, and market cap – have the expected sign and are significant at the 0.01 level or 0.05. The results indicated that CAAR is negatively related to coupon at (β= -0.001, t= -3.602, p= 0.001), positively with time-lapse at (β=0.002, t= 5.731, p= 0.000), and positively with market cap at (β=0.005, t= 12.461, p= 0.000). The model yields an Adjusted R-squared of 0.926, which is significant at the level of 0.01, and has an R-squared of 0.930.

Thus, it can be said that the estimated regression method performed well. To find the best-fitting model equation for predicting the (1) issuance amount, (2) coupon rate, (3) time-lapse, and (4) market cap from scores on constant, the estimated theoretical equation (5.3) is:

$$CAAR_{t1,t2} = \alpha + lapse_{it} + Cap_{it} + Tenor_{it} + Am_{it} + Cp_{it} + e_{it}$$

(5.3)

where:

a = model intercept

CAAR = cumulative abnormal return over the event window t_1 and t_2

Lapse = the interval time between announcement and actual date of issuance

Cap = market value for all relevant issue level share types

Tenor = accrual issuance period

Am = amount of issuance

Cp = coupon rate

Based on the regression, the equation is:

$$CAARSEA\,(-2, +2) = (-0.107) + (-0.001) * Cp + 0.002 * lapse + 0.005 * Cap + 0.000 * Tenor + (0.001) * Am$$

This model fits the data well ($F = 219.45$, $p < 0.05$ and R-squared = 0.930).

Based on the results obtained from the Malaysian stock market; three criteria of Sukuk issuance announcement are found to be positively related to the CAAR: (1) market cap, (2) time-lapse, and while one criterion, (3) coupon rate, was found to be negatively related. For the coupon rate, the negative association indicates that the higher coupon rate of the Sukuk estimates negative CAAR from the stock market, where investors consider the coupon rate to be an indicator of suffering financial deficits or debt. For the coupon rate, investors consider the coupon rate as compensation for the investment. For the time-lapse, longer time-lapse results in more time for investors to digest information related to the issuance, which results in a positive reaction, as reported for the event window (-2, +2). For the market capitalization, the higher market cap results in a positive determinant for the Sukuk issuance announcement impact, as a higher market cap of the issuer impacts positively on the cumulative average abnormal return.

Third, the results of the regression model are tested for the Indonesian stock market. The result of the coefficient determination (R. Squared 0.426) of the estimated model for the Indonesian stock market only uses the five corporate Sukuk criteria; the overall goodness of fit of the least squares regression method is moderate. Two criteria of the estimated coefficients – coupon rate and tenor– have the expected sign and are significant at the 0.01 level or 0.05. The results indicated that CAAR is negatively related to tenor at (β= -0.003, t= -3.910, p= 0.001), and positively with coupon rate at (β=0.011, t= 3.255, p= 0.003). The model yields an adjusted R-squared of 0.315, which is significant at the level of 0.01, and has an R-squared of 0.426.

Thus, it can be said that the estimated regression method performed well. To find the best-fitting model equation for predicting (1) tenor and (2) coupon from the scores on constant, the estimated theoretical equation (5.4) is:

$$CAAR_{t1,t2} = \alpha + lapse_{it} + Cap_{it} + Tenor_{it} + Am_{it} + Cp_{it} + e_{it}$$

(5.4)

where:

a = model intercept

CAAR = cumulative abnormal return over the event window t_1 and t_2

Lapse = the interval time between announcement and actual date of issuance

Cap = market value for all relevant issue level share types

Tenor = accrual issuance period

Am = amount of issuance

Cp = coupon rate

Based on the regression equation is:

$$CAARSEA\,(-2, +2) = (-0.103) + (-0.003) * Tenor + 0.011 * Cp + 0.000 * Am + (0.001) * lapse + 0.004 * Cap$$

This model fits the data well (F=3.85, p<0.05 and R-squared=0.315).

Based on the results obtained from the Indonesian stock markets, one criterion, the tenor of the Sukuk issuance announcement, is found to be negatively related to the CAAR, while one criterion, coupon rate, is found to be positively related. For the tenor, the negative association indicates that the longer tenor of the Sukuk estimates negative CAAR from the stock market, where investors consider longer tenor as an indicator of riskier debt over a longer time. For the coupon rate, higher coupon rate results in a positive determinant for the Sukuk issuance announcement impact, as a higher coupon rate of the issuer impacts positively on the cumulative average abnormal return.

Fourth, the result of the regression model is tested for the Saudi stock market. For the result of the coefficient determination (R. Squared 0.762) of the estimated model for the Saudi stock market using only the five corporate Sukuk criteria, the overall goodness of fit of the least squares regression method is moderate. Two criteria of the estimated coefficients – tenor and time-lapse – have the expected sign and are significant at the 0.01 level or 0.05. The results indicated that CAAR is negatively related to tenor at (β= -0.002, t= -2.434, p= 0.021), positively related with time-lapse at (β=0.005, t= 9.858, p= 0.000). The model yields an Adjusted R-squared of 0.724, which is significant at the level of 0.01, and has an R-squared of 0.762.

Thus, it can be said that the estimated regression method performed well. To find the best-fitting model equation for predicting the (1) issuance amount, (2) time-lapse, (3) coupon rate, (4) market cap and (5) coupon rate from scores on constant, the estimated theoretical equation (5.5) is:

$$CAAR_{t1,t2} = \alpha + lapse_{it} + Cap_{it} + Tenor_{it} + Am_{it} + Cp_{it} + e_{it}$$

(5.5)

where:

a = model intercept

CAAR = cumulative abnormal return over the event window t_1 and t_2

Lapse = the interval time between announcement and actual date of issuance

Cap = market value for all relevant issue level share types

Tenor = accrual issuance period

Am = amount of issuance

Cp = coupon rate

Based on the regression, the equation is:

$$CAARSEA\,(-2,+2) = 0.017 + (-0.002) * Tenor + 0.005 * lapse + 0.001 * Am + 0.00005 * Cp + (0.001) * Cap$$

This model fits the data well ($F = 19.89$, $p < 0.05$ and R-squared = 0.762).

Based on the result obtained from the Saudi stock market, two criteria of Sukuk issuance announcements are found to be related to the CAAR: (1) time-lapse was found with positively impact and (2) tenor was found to be negatively related. For the tenor, the negative association indicates that the higher tenor of the Sukuk estimates negative CAAR from the stock market, in that investors consider the tenor as an indicator of higher risk of holding the Sukuk. For the time-lapse, the longer time-lapse results in more time for the investor to digest information related to the issuance, which results in a positive reaction, as reported for the event window (-2, +2).

Fifth, for the result of the regression test for Southeast Asia, the result of the coefficient determination (R. Squared 0.909) of the estimated model for Southeast Asia using only the corporate Sukuk characteristic, the overall goodness of fits of the least-squares regression method is high. The statistical results are reported in Table 5.15. All of the estimated coefficients for tenor and time-lapse have the expected sign and are significant at the 0.01 level or 0.05. The results indicated that CAAR is positively related to time-lapse at (β=0.002, t= 3.792, p= 0.000), but negatively related to tenor at (β= -0.002, t= -7.447, p= 0.000). The model yields an Adjusted R-squared of 0.905, which is significant at the level of 0.01 and has an R-squared of 0.909.

Thus, it can be said that the estimated regression method performed well. To find the best-fitting model equation for predicting (1) time-lapse and (2) tenor, from the scores on constant, the panel data method was used, and the estimated theoretical equation (5.6) is:

$$CAAR_{t1,t2} = \alpha + lapse_{it} + Cap_{it} + Tenor_{it} + Am_{it} + Cp_{it} + e_{it}$$

(5.6)

where:

a = model intercept

Lapse = the interval time between announcement and actual date of issuance

Cap = market value for all relevant issue level share types

Tenor = accrual issuance period

Am = amount of issuance

Cp = coupon rate

Based on the regression equation is:

$$CAARSEA\,(-2, +2) = 0.011 + (-0.002) * Tenor + 0.002 * Lapse + (0.001) * Am + (0.001) * Cp + 0.000 * Cap$$

This model fits the data well (F = 226.87, $p < 0.05$ and R-squared = 0.909).

Based on the result obtained from the Southeast Asia stock market; two characteristics of Sukuk issuance are found to be significantly related to the abnormal stock return: time-lapse found with positive impact, and negatively with tenor. For the time-lapse, a longer time-lapse results in more time for investors to digest information related to the issuance, which results in a positive reaction; as reported for the event window (-2, +2).

Sixth, to test the predicted CAAR obtained from the GCC stock market on the Sukuk announcement, Table 5.15 provides the results of the regression test of five determinants: (1) time-lapse, (2) market capitalization, (3) tenor, (4) amount, and (5) coupon rate.

Four of the estimated coefficients that amount, coupon, time-lapse, and market capitalization found with a significant impact on CAAR, of the stock market reaction have the expected sign and are significant at the 0.01 level or 0.05. The results indicated that the determinants of the corporate Sukuk issuance announcements of GCC – amount and time-lapse – are positively related to the cumulative average abnormal return of the stock market, while negatively related to coupon rate and market capitalization. The benchmark model yields an Adjusted R-squared of 0.973, which is significant at the significant level of 0.01, and has an R-squared of 0.977. The results indicated that CAAR is positively related to amount at (β=0.007, t= 17.570, p= 0.000), negatively with coupon rate at (β=-0.001, t= -2.634, p= 0.013), and positively with time-lapse at (β=0.001, t= 2.761, p= 0.010), and negatively with market capitalization at (β=-0.001, t= -3.054, p= 0.005). The estimated theoretical equation (5.7), which used by the study of Godlewski et al., (2013), is set as follows:

$$CAAR_{t1,t2} = \alpha + lapse_{it} + Cap_{it} + Tenor_{it} + Am_{it} + Cp_{it} + e_{it} \quad (5.7)$$

where:

a = model intercept

CAAR = cumulative abnormal return over the event window t_1 and t_2

Lapse = the interval time between announcement and the actual date of issuance

Cap = market value for all relevant issue level share types

Tenor = accrual issuance period

Am = amount of issuance

Cp = coupon rate

The regression equation is:

$$CAARGCC(-2, +2) = -0.141 + 0.007{*}Am + (0.001) * Cp + 0.001{*}lapse + (.001)\ Cap + 0.000004 * Tenor$$

This model fits the data well (F = 261.5, $p < 0.05$ and R-squared = 0.977).

The obtained results from the GCC market are interpreted as these two criteria of Sukuk announcement (i.e., the amount and time-lapse) affect the CAAR of the stock market positively, where the higher amount of issuance estimate the cumulative average abnormal return positively. This impact is interpreted as investors holding more confidence in issuances with a higher amount, which indicates the better financial position of the issuer. Meanwhile, the time-lapse gives more time to investors to investigate the issuance status, purpose, and the financial position of the issuer.

Based on the result obtained from the Southeast Asia stock market; two characteristics of Sukuk issuance are found to be significantly related to the abnormal stock return: time-lapse found with positive impact, and negatively with tenor. For the time-lapse, a longer time-lapse results in more time for investors to digest information related to the issuance, which results in a positive reaction; as reported for the event window (-2, +2). The results from the GCC stock market indicated that CAAR is positively related to amount and time-lapse, and negatively with coupon rate and market capitalization. The obtained results from the GCC market are interpreted as these two criteria of Sukuk announcement (i.e., amount and time-lapse) affect the CAAR of stock market positively, where the higher amount of issuance estimate the cumulative average abnormal return positively. This impact is interpreted as investors holding more confidence in issuances with higher amount, which indicates the better financial position of the issuer. Meanwhile, the time-lapse gives more time to investors to investigate the issuance status, purpose, and the financial position of the issuer. For the coupon rate, the positive association indicates that the higher coupon rate of the Sukuk issuance estimates positive abnormal return from the stock market, where investors consider coupon rate as compensation for the case if the profit is cut.

The theory of market timing by Baker and Wurgler (2002) explains the capital structure based on the signals send by the market towards companies, which is why companies tend to issue bonds when a favorable behavior is perceived in the market, and they tend to buy back their own shares when market values are lower, evidencing a relationship between the capital structure of the company and the historical behavior of the market. According to this theory, there is no optimal capital structure, and, at all times, the financial structure of the company is the result of financing decisions accumulated over time. Hence, issuing debt is expected with a positive reaction from the stock market, as issuing debt decision taken by the firm managers takes into consideration the timing consideration, which supposed to be suitable. In this regard, the debate of this theory is in agreement to the result obtained about time-lapse factor.

Table 5.15: Regression Tests

All population – sample 157

Variables	Coefficient	Std. Error	t-Statistic	Prob	Robust t- Statistic
Constant	-.019***	.007	-2.776	.006	-2.408
Amount	.000	.000	-1.387	.167	1.042
Coupon	.000	.000	.013	.990	0.969
Tenor	.000	.000	.845	.399	-1.840
Time-lapse	.004***	.000	22.795	.000	2.373
Market cap	.001***	.000	2.899	.004	2.197
R-squared	0.830	Adjusted R-squared			0.824
F-statistic	147.1				

Malaysia – Sample 88

Variables	Coefficient	Std. Error	t-Statistic	Prob	Robust t- Statistic
Constant	-.107	.009	-11.575	.000	-1.201
Amount	-.001	.000	-1.622	.109	-1.728
Coupon	-.001***	.000	-3.602	.001	2.046
Tenor	.000	.000	1.757	.083	-1.273
Time-lapse	.002***	.000	5.731	.000	4.913
Market cap	.005***	.000	12.461	.000	2.262
R-squared	0.930	Adjusted R-squared			0.926
F-statistic	219.45				

Indonesia – Sample 32

Variable	Coefficient	Std. Error	t-Statistic	Prob	Robust t-Statistic
Constant	-.103	.049	-2.110	.045	-2.788
Amount	.000	.004	-.126	.901	-0.038
Coupon	.011***	.003	3.255	.003	2.311
Tenor	-.003***	.001	-3.910	.001	-2.012
Time-lapse	-.001	.001	-.533	.599	0.048
Market cap	.004	.002	2.016	.054	2.625
R-squared	0.426		Adjusted R-squared		0.315
F-statistic	3.85				

Table 5.15, continued

Saudi Arabia – Sample 33					
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**	**Robust t-Statistic**
Constant	.017	.111	.156	.877	1.180
Amount	.001	.004	.238	.814	-1.031
Coupon	.000	.002	.032	.975	1.528
Tenor	-.002**	.001	-2.434	.021	-5.431
Time-lapse	.005***	.001	9.858	.000	1.989
Market cap	-.001	.002	-.710	.483	-0.114
R-squared	0.762		Adjusted R-squared		0.724
F-statistic	19.89				
Southeast Asia- Sample: 120					
Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**	**Robust t-Statistic**
Constant	.011	.007	1.711	.090	-1.259
Amount	-.001	.000	-1.806	.074	-0.228
Coupon	-.001	.000	-1.781	.078	0.725
Tenor	-.002***	.000	-7.447	.000	-4.337
Time-lapse	.002***	.000	3.792	.000	2.347
Market cap	.000	.000	1.510	.134	1.563
R-squared	0.909	Adjusted R-squared			0. 905
F-statistic	226.87				
GCC – Sample 37					
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob**	**Robust t-Statistic**
Constant	-.141	.006	-24.801	.000	-22.108
Amount	.007***	.000	17.570	.000	17.005
Coupon	-.001**	.000	-2.634	.013	-2.349
Tenor	.000	.000	1.398	.172	1.182
Time-lapse	.001**	.000	2.761	.010	2.573
Market cap	-.001***	.000	-3.054	.005	-3.010
R-squared	0.977	Adjusted R-squared			0.973
F-statistic	261.50				

** significant at 5% level, *** significant at 1% level.
Dependent Variable: CAAR

Further investigation is conducted to figure out the optimal time-lapse between the Sukuk announcement date and the actual date of issuance of Sukuk. Based on the event study test among five stock markets, Malaysia, Indonesia, Saudi Arabia, UAE, and Qatar, as well as two regions, Southeast Asia and GCC, over 15 event windows were tested. As shown in Table 5.16, the entire sampling frame, Southeast Asia, GCC, Malaysia, Indonesia, and Saudi Arabia, obtained a significant CAAR at the window (0, +7), then the significant impact started to disappear. Hence, further investigation is conducted to include five event windows, (0,+8), (0,+9), (0,+10), (0,+11), and (0,+12) to confirm the range of significant CAAR based on the actual date of issuance, which is equal to zero in this study. The further analysis covered two regions, Indonesia and GCC and Indonesia and Saudi Arabia stock markets. The result revealed a significant impact extending to event window (0, +11), then started to disappear. Therefore, it can be concluded that CAAR is affected by Sukuk announcement in the range of (0, +7) and (0, +11); these periods can be an optimal time-lapse for the issuer and stock market regulators to consider when deciding the Sukuk issuance date. Taking into consideration other financial and economic announcements, financial events, such as dividends distribution, CEO selection, and accounting policy, and for economic events, change the interest rate and tax, will lead to conflict among these events and distort the optimal period.

Table 5.16: Additional CAAR Test – Two Stock Market Group

No	Event windows	CAAR Indo + GCC	t- test	CAAR Indo + Saudi	t- test
1	(0,0)	-0.151	(3.72) ***	-0.76	(4.17) ***
2	(-1,1)	-0.68	(1.24)	-0.76	(1.43)
3	(-2,2)	-0.69	(0.92)	-0.82	(1.13)
4	(-1,2)	-1.11	(1.88)	-1.25	(2.17) ***
5	(-2,1)	-0.26	(0.36)	-0.34	(0.49)
6	(-5,4)	-0.39	(0.46)	-0.64	(0.78)
7	(-5,+15)	0.19	0.18	-0.46	(0.42)
8	(-1,+14)	-0.76	(0.78)	-1.31	(1.39)
9	(0,3)	-0.83	(2.14) ***	-0.90	(2.48) ***
10	(-1,+5)	-2.04	(3.02) ***	-2.26	(3.44) ***
11	(0,+7)	-2.94	(4.83) ***	-3.10	(5.29) ***
12	(0,+8)	-2.85	(4.48)***	-3.08	(5.01) ***
13	(0,+9)	-2.61	(3.90)***	-2.91	(4.51) ***
14	(0,+10)	-1.93	(2.63)***	-2.30	(3.28) ***
15	(0,+11)	-1.27	(1.62)	-1.70	(2.25) ***
16	(0,+12)	-0.98	(1.22)	-1.42	(1.85)

*** significant at 1% level.

To conclude the main objective of the current section, investigations on the effects of the stock market reaction to the corporate Sukuk issuance announcement in Southeast Asia, GCC, and Saudi Arabia have been undertaken. The proposed models were tested, which indicated the positive/negative effects of amount, coupon, tenor, and time on corporate Sukuk issuance announcements after controlling for the constant effects of the models.

The first model was tested to determine the effects of the amount, coupon, tenor, and time on corporate Sukuk issuance announcements within the GCC financial sector. The model showed that the amount was negatively related to corporate Sukuk issuance announcements, but the effect was not significant. The model also showed that coupon was positively related to corporate Sukuk issuance announcements, but that the effect was not significant either. In addition, the model showed that tenor was negatively related to corporate Sukuk issuance announcements but that the effect was not significant. Finally, the model showed that time was positively related to corporate Sukuk issuance announcements but that the effect was also insignificant.

The second model was tested to determine the positive/negative effects of amount, coupon, tenor, and time on corporate Sukuk issuance announcements within the Southeast Asia financial sector. The model showed that the amount was positively related to corporate Sukuk issuance announcements but that the effect was insignificant. The model also showed that coupon was positively related to corporate Sukuk issuance announcements and that the effect was significant. Additionally, the model showed that tenor was negatively related to corporate Sukuk issuance announcements but that the effect was also insignificant. Finally, the model showed that time was positively related to corporate Sukuk issuance announcements and that the effect was not significant.

5.3 Effect of The New Corporate Sukuk Issuance Yield Spread on The Stock Market Volatility

To determine the effect of the corporate Sukuk issuance yield spreads on the stock return volatility, three hypotheses are constructed as follows:

H1: New Sukuk yield is associated with a higher spread compared to the seasoned Sukuk yield spread.

H2: New Sukuk yield spread is associated with a higher negative influence on the stock market volatility.

H3: Seasoned Sukuk yield spread is associated with a lower negative influence on the stock market volatility.

5.3.1 Sukuk Spread Comparison (Hypothesis 4)

5.3.1.1 Descriptive Statistics

In Table 5.17, the descriptive statistics of Sukuk issuance yield spread by the issuers under study is shown. These statistics describe the nature of the mean and standard deviation of both seasoned and new Sukuk for the fourteen issuers. From the table, the means of nine issuers are higher for new Sukuk than seasoned Sukuk. Also, the mean of the means of new Sukuk is higher than that for seasoned Sukuk at 126.634 compared to 112.556. This shows that, on average, the value of new Sukuk when compared to seasoned Sukuk is higher. On the other hand, ten of the issuers for seasoned Sukuk have a higher spread or variability compared to new Sukuk. For the aggregate, the variance, which measures the spread of data around the mean, is higher, on average, for the seasoned Sukuk yield compared to the new Sukuk yield at 58.90 against 35.74. In addition, as a rule, the higher the variance the higher the spread of the data around the mean. From the above, it is clear that the seasoned Sukuk has a higher spread than new Sukuk. However, this is not sufficient to reject the hypothesis that New Sukuk yield is associated with higher spread compared to the seasoned Sukuk yield spread. This is because, a further statistical investigation is necessary to confirm the significance of this description.

Table 5.17: Descriptive Statistics of The Corporate Sukuk Issuance Yield Spreads

Issuer	N	New		Seasoned	
		Mean	**Std. Deviation**	**Mean**	**Std. Deviation**
ALMT	234	200.830	59.525	148.694	63.102
DRBM	234	212.204	21.096	151.421	97.973
GAMU	234	108.012	19.695	91.221	9.031
IJMS	234	87.305	18.718	100.896	46.416
KLKK	234	73.714	14.876	56.258	58.772
HBMBSSX	234	119.778	59.376	113.605	150.348
MISC	234	72.174	23.067	79.761	40.486
MMCB	234	142.405	18.664	143.512	7.505
POHK	234	126.927	61.233	120.911	87.793
SIME	234	103.118	31.874	80.338	95.988
TLMM	234	62.469	15.249	57.747	9.200
UMSB	234	136.795	18.498	139.862	54.750
UMWS	234	146.753	61.096	150.613	95.367
WCTE	234	180.396	77.522	140.947	7.980
Average		**126.634**	**35.74**	**112.556**	**58.90**

5.3.1.2 Levene's Test for Equality of Variances

Table 5.18 shows the Levene's test, which puts forward a null hypothesis of equal variance in the two variables. There are mixed results, as shown below in the table. A significance value of less than 0.05 means the variability in the conditions or variables is not the same or is different, thereby rejecting the null hypothesis of homogeneity of variance. From the result obtained, ten out of the fourteen issuers have their variance or spread significantly different. However, this difference in the spread is partially in keeping with the hypothesis. Of the ten issuers, six issuers, DRBM, IJMS, KLKK, MISC, UMSB, and UMWS, have a higher and significant spread in their seasoned Sukuk compared to new Sukuk. This is because, as a rule, the variance is significant if the sig., value is less than 0.05, or, alternatively, equal variance is not assumed. The six issuers DRBM, IJMS, KLKK, MISC, UMSB, and UMWS, all have a significant value of 0.000, which is less than 0.05. This implies a rejection of the hypothesis that new Sukuk yield is associated with a higher spread compared to the seasoned Sukuk yield spread for these six issuers. This also means that for these six issuers of seasoned Sukuk, the spread is not equal when compared to new Sukuk. On the other hand, four issuers, GAMU, MMCB, TLMM, and WCTE, have a higher and significant spread in their new Sukuk compared to the seasoned. This is in tandem with the rule of significance that a significant value of less than 0.05 is significant, and the variables have unequal variances. Thus, the hypothesis that new issues have a higher spread compared to seasoned ones is accepted. This acceptance is premised on the fact that GAMU, MMCB, TLMM, and WCTE have a significant value that is less than 0.05.

The above provides justification for DRBM, IJMS, KLKK, MISC, UMSB and UMWS to focus on seasoned issues while GAMU, MMCB, TLMM, and WCTE should focus on new issues.

Table 5.18: Levene's Test for Equality of Variances

Issuer	Variance Assumption	F	Sig	t	Sig. (2-tailed)	Mean Difference	Std. Error Difference
ALMT	Equal variances assumed	0.504	0.478	9.194	0.000	52.135	5.671
	Equal variances not assumed			9.194	0.000	52.135	5.671
DRBM	Equal variances assumed	22.043	0.000	9.278	0.000	60.783	6.551
	Equal variances not assumed			9.278	0.000	60.783	6.551
GAMU	Equal variances assumed	155.286	0.000	11.854	0.000	16.791	1.416
	Equal variances not assumed			11.854	0.000	16.791	1.416
IJMS	Equal variances assumed	35.681	0.000	-4.154	0.000	-13.591	3.272
	Equal variances not assumed			-4.154	0.000	-13.591	3.272
KLKK	Equal variances assumed	23.955	0.000	4.404	0.000	17.456	3.963
	Equal variances not assumed			4.404	0.000	17.456	3.963
MBSSX	Equal variances assumed	0.068	0.794	0.584	0.559	6.174	10.567
	Equal variances not assumed			0.584	0.560	6.174	10.567
MISC	Equal variances assumed	65.343	0.000	-2.491	0.013	-7.587	3.046
	Equal variances not assumed			-2.491	0.013	-7.587	3.046

Table 5.18, continued

Issuer	Variance Assumption	F	Sig	t	Sig. (2-tailed)	Mean Difference	Std. Error Difference
MMCB	Equal variances assumed	263.850	0.000	-0.842	0.400	-1.107	1.315
	Equal variances not assumed			-0.842	0.400	-1.107	1.315
POHK	Equal variances assumed	2.218	0.137	0.860	0.390	6.016	6.997
	Equal variances not assumed			0.860	0.390	6.016	6.997
SIME	Equal variances assumed	0.562	0.454	3.445	0.001	22.780	6.612
	Equal variances not assumed			3.445	0.001	22.780	6.612
TLMM	Equal variances assumed	40.099	0.000	4.056	0.000	4.722	1.164
	Equal variances not assumed			4.056	0.000	4.722	1.164
UMSB	Equal variances assumed	53.235	0.000	-0.812	0.417	-3.068	3.778
	Equal variances not assumed			-0.812	0.417	-3.068	3.778
UMWS	Equal variances assumed	12.579	0.000	-0.521	0.602	-3.860	7.404
	Equal variances not assumed			-0.521	0.602	-3.860	7.404
WCTE	Equal variances assumed	157.325	0.000	7.743	0.000	39.449	5.095
	Equal variances not assumed			7.743	0.000	39.449	5.095

5.3.2 New Sukuk Yield Spread and Stock Market Volatility (Hypothesis 5)

5.3.2.1 Clustering Volatility

Volatility clustering, a characteristic of financial time series, is the tendency of large changes in the prices of financial assets to cluster together, which results in the persistence of this magnitude of the price changes. Benoit Mandelbrot (1963) described it as the observation that large changes tend to be followed by large changes, and small changes tend to be followed by small changes when it comes to markets. The diagram below is necessary to establish the presence of clustering volatility in the series and to adequately model it. In a time series stock prices, it is observed that the variance of stock prices is high for extended periods and low for extended periods making an independent and identically distributed (Lepistö, Järvenpää, Ihantola, & Tuuri, 2016) model of stock prices inappropriate. A visual inspection of the diagram below shows an oscillation of the series around the mean value, with small changes occurring persistently for some periods, up to point 85. This is followed by another period of large changes or high volatility, persisting into another high volatility on a more downward level. This feature of persistent periods of calmness and persistent periods of high volatility, as shown below, signifies volatility clustering. This is a stylized fact financial time series, which exhibits a condition that necessitates the application of the ARCH model.

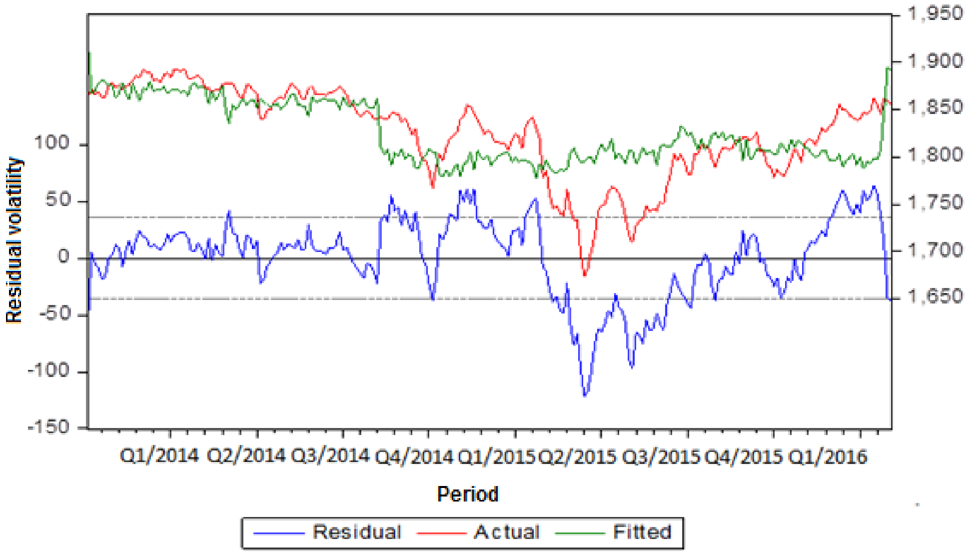


Figure 5.3: Volatility Clustering

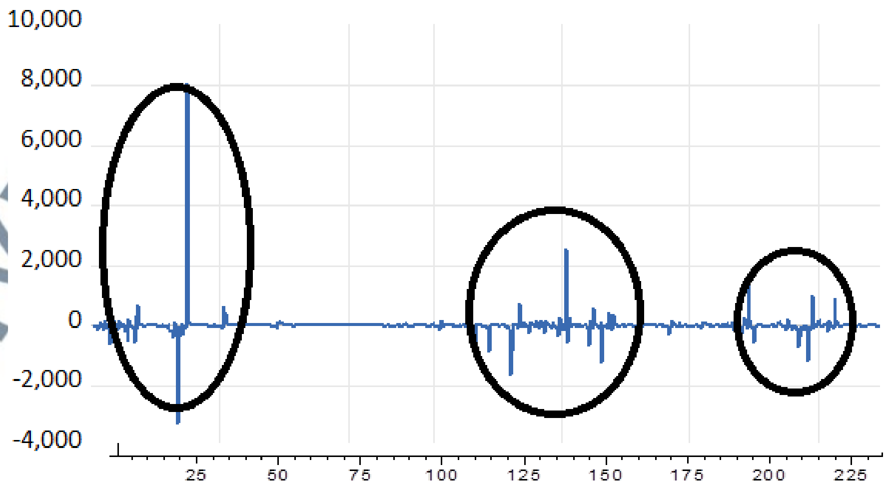


Figure 5.4: Stock Market Volatility

Figure 5.5 shows the new sukuk yield plot volatility. The plot shows different periods of persistent volatility, both high and low. There are periods of persistent small changes followed by another period of sustained small changes up to point 85. Then another period of higher volatility is followed by a period of larger downward volatility. This is then followed by smaller and persistent changes. The changes in the plots reflect volatility clustering. Fama (1990) explained that the stock returns tend to fluctuate, thereby exhibiting volatility clustering, whereby large returns are usually complimented by small returns. This implies that the stock market volatility variable is nonlinear and dependent. In line with this, Bollerslev, Engle, and Nelson (1994) posited that stock returns usually reflect a tendency of not being I.I.D. As such using an IID (independent and identically distributed) model becomes implausible. This situation requires ARCH type modelling for plausible output.

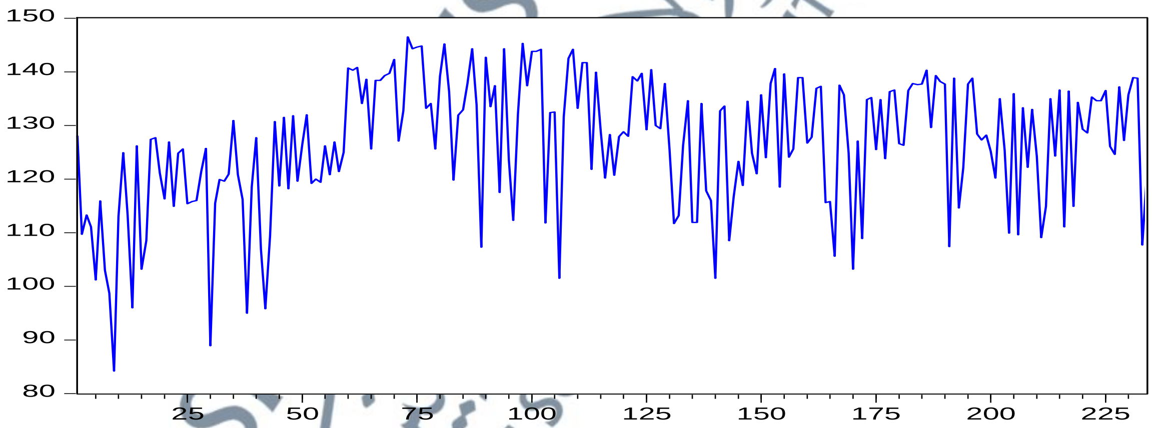


Figure 5.5: New Sukuk Yield Spread Volatility

The above is the plot of the new Sukuk yield spread, even the figure looks like stationary, but the unit root test confirmed not stationary. A visual examination of this plot shows that the series has seasonality components, suggesting that the variable is non-stationary. A non-stationary variable is one that has its mean and standard deviation changing over time, making it impossible for any plausible forecast or prediction to be made. As such, the variable has to be made stationary. The above is a rule of thumb approach for confirming that a variable is stationary. Further tests will have to be carried out to confirm the plausibility of the above.

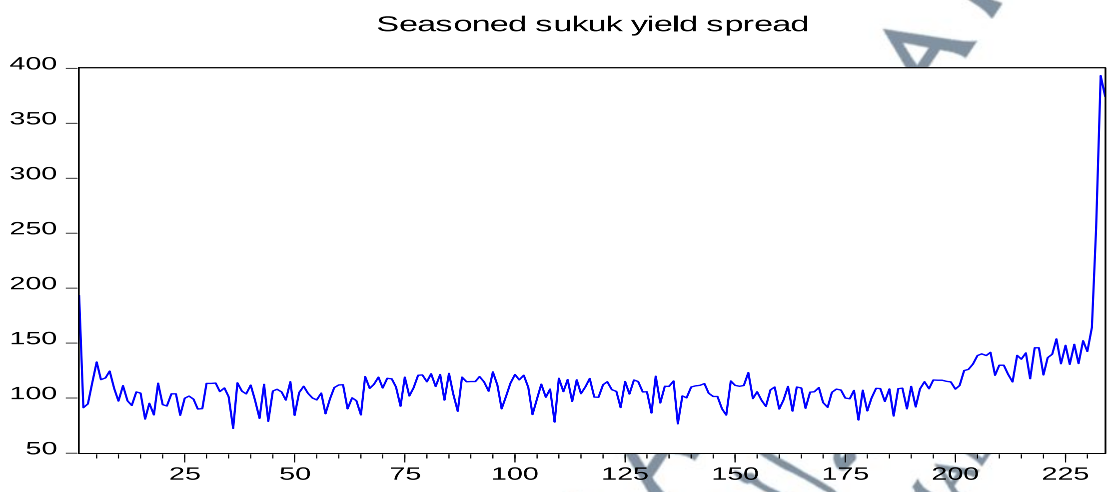


Figure 5.6: Seasoned Sukuk Yield Spread Volatility

The above is the pre-estimation visualization of the variable seasoned Sukuk yield spread. Unlike the other variable, the variable does not contain any component that makes it non-stationary, such as trend, or seasonality. This also implies that the variable has a constant mean and unchanging variance. This shows that the variable is stationary using the rule of thumb. Further analysis can be carried out on the variable, especially for forecast or prediction.

5.3.2.2 Descriptive Analysis

Table 5.19 shows the descriptive statistics of the variables. From the table below the mean of new Sukuk is higher than that of seasoned Sukuk. Also, the standard deviation is larger for seasoned compared to new Sukuk. Atoi (2014) posited that the standard deviation is a measure of the riskiness and that the higher the standard deviation the higher the volatility. Therefore, the seasoned Sukuk yield has higher volatility compared to the new Sukuk yield. Also, stock price and new Sukuk are negatively skewed or negatively asymmetric and less than zero. Negative skewness is an indication that the lower tail of the distribution is thicker than the upper tail, meaning that the variables fall more than they rise. This is clear from the plots above. However, the new Sukuk is positively skewed or has positive asymmetry and is greater than zero. This indicates that the upper tail of the distribution is thicker than the lower tail meaning that the variable raises more than it drops. A kurtosis value equal to three suggests a normal distribution and that it is mesokurtic. However, if the kurtosis value is greater than 3, then the data set has heavier tails when compared to a normal distribution and is said to be leptokurtic. In the table below, all the variables are greater than 3, and hence, heavily tailed and leptokurtic. The inference that can be drawn from the Jarque-Bera statistics, since the p-values are less than 0.05, is that we reject the null hypothesis of normality for the dataset.

Table 5.19: Descriptive Statistics – New and Seasoned Sukuk Issuance, and Stock Price Volatility

Statistics	Stock	New	Seasoned
Mean	1825.978	126.633	112.557
Maximum	1892.650	146.500	393.200
Minimum	1673.940	84.200	72.500
Std. Dev.	47.826	12.041	31.385
Jarque-Bera	25.838	20.529	23450.73
Probability	0.000	0.000	0.000
Observations	234	234	234

5.3.2.3 Unit Root Test

Table 5.20 represents the Augmented Dickey Fuller Test (ADF) test for stationarity. The ADF tests the existence of a unit root in the variables. The presence of a unit root in a series result in spurious regression, errant behaviours of the variables, and renders its predictive capacity implausible. The null hypothesis of this test is that the variable(s) are non-stationary or have unit root. This hypothesis is rejected if the ADF statistics are less or more negative than the critical values or the p-values are less than 0.05. A rejection of the null hypothesis implies that the variables are stationary or do not have a unit root. From the table above the results show that two variables, stock and seasoned Sukuk, are stationary after first difference, i.e., the variables are non-stationary at level, while new Sukuk is stationary at level. We reject the null hypothesis of a unit root because the ADF statistic is less or more negative than the critical values at 1%, 5% ND 10% S and the p-value is less than 0.05.

Table 5.20: Unit Root Test

	D (Stock)	D (Seasoned)	New
ADF statistics	-13.544	-19.402	-4.094
Prob.	0.000	0.000	0.001
Critical Values			
1%	-3.458	-3.458	-3.458
5%	-2.873	-2.874	-2.874
10%	-2.573	-2.573	-2.573
Order	1(1)	1(1)	1(0)

5.3.2.4 Heteroscedasticity Test

Table 5.21 represents the heteroscedasticity test for the ARCH effect. The heteroscedasticity test is conducted to either accept the null hypothesis of 'no ARCH effects' (homoscedasticity) or the alternative (heteroscedasticity). The test relies on the value of the LM statistics and its p-values and the co-efficient of the squared residual, which have to be significant to reject the null hypothesis. From table 5.21, the LM is 172.0934 with a p-value of less than 1%, 0.000. Also, the coefficient of the squared residuals is also significant at 1%. These values indicate that there is an arch effect.

Therefore, reject the null hypothesis of no ARCH effect and estimate the ARCH model for a better result.

Table 5.21: Heteroscedasticity Test: ARCH

Model Fit				
F-statistic	652.6973	Prob. F (1,231)		0.0000
Obs*R-squared	172.0934	Prob. Chi-Square (1)		0.0000
Regression				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	170.3754	81.02098	2.102855	0.0366
RESID^2(-1)	0.857871	0.033579	25.54794	0.0000
R-squared	0.738598	Mean dependent var.		1244.492
Adjusted R-squared	0.737467	SD dependent var.		2063.290

5.3.2.5 Diagnostic Test

Table 5.22 shows the serial correlation test results. The test has a null hypothesis if there is no serial correlation as against the alternative of the presence of serial correlation. The decision to accept or reject either of the hypothesis's rests with the p-value. The null hypothesis of no serial correlation is accepted if the p-values are greater than 0.05 or 5%. From the table above, the p-values are all greater than 0.05, so we accept the null hypothesis of no serial correlation. This implies that the model is poor statistical tests.

Table 5.22: Serial Correlation Test

Autocorrelation	Partial Correlation		AC	Q-Stat	Prob*
.|. |	.|. |	1	-0.019	0.0814	0.775
.|* |	.|* |	2	0.156	5.8667	0.053
.|* |	.|* |	3	0.096	8.0836	0.044
.|* |	.|. |	4	0.080	9.6313	0.047
.|. |	.|. |	5	-0.023	9.7637	0.082
.|. |	*|. |	6	-0.034	10.039	0.123
.|. |	.|. |	7	-0.051	10.670	0.154
.|. |	.|. |	8	-0.004	10.674	0.221
*|. |	.|. |	9	-0.078	12.154	0.205
.|* |	.|* |	10	0.077	13.624	0.191
.|. |	.|. |	11	-0.060	14.528	0.205
.|. |	.|. |	12	-0.017	14.603	0.264
.|. |	.|. |	13	0.014	14.653	0.329
.|. |	.|. |	14	-0.008	14.668	0.401
.|. |	.|. |	15	-0.061	15.595	0.409
.|. |	.|. |	16	-0.011	15.623	0.480
.|. |	.|* |	17	0.051	16.273	0.505
.|. |	.|. |	18	-0.027	16.456	0.561
.|. |	.|. |	19	0.005	16.462	0.626
.|. |	.|. |	20	-0.039	16.855	0.662
.|. |	.|. |	21	-0.006	16.864	0.719
.|. |	.|. |	22	0.004	16.868	0.771
.|. |	.|. |	23	-0.022	16.997	0.809
.|. |	.|. |	24	-0.015	17.053	0.846
.|. |	.|. |	25	-0.049	17.684	0.856
.|. |	.|. |	26	-0.019	17.782	0.884
.|. |	.|. |	27	-0.030	18.022	0.903
*|. |	.|. |	28	-0.070	19.354	0.887
.|. |	.|. |	29	-0.002	19.355	0.912
.|. |	.|. |	30	-0.023	19.495	0.929
.|. |	.|. |	31	-0.042	19.979	0.936
.|. |	.|. |	32	0.023	20.130	0.949
.|. |	.|* |	33	0.070	21.475	0.939
.|. |	.|. |	34	0.059	22.449	0.935
.|. |	.|. |	35	-0.018	22.541	0.949
.|* |	.|* |	36	0.148	28.686	0.802

5.3.2.6 Arch/GARCH Effect

Table 5.23 represents the output of the GARCH model. The coefficient of the lagged squared residual and lagged conditional variance in the variance equation are positive and highly statistically significant, the p-value is less than 0.05. A statistically significant value shows that the GARCH model (1,1) has successfully modelled the behaviour of stock market volatility. Furthermore, by summing the coefficient of lagged squared residual (0.445) and the coefficient of lagged conditional variance (0.565), the total equals 1. This, according to Chan, Cheng, and Fung (2010), implies the persistence of volatility. Therefore, this result shows the presence of time varying conditional volatility of the stock price and that the volatility shocks are large, highly relentless, and persistent. In sum, it denotes that the effects of today's shock remain in the forecast of variance for many periods in the future. The coefficient of the new Sukuk is negative and highly insignificant. This implies that the hypothesis of the new Sukuk yield spread is associated with a higher negative influence on the stock price volatility can be rejected.

Table 5.23: The GARCH Model – New Sukuk

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	1840.590	1.808219	1017.902	0.0000
		Variance Equation		
C	1163.735	634.8778	1.833007	0.0668
RESID (-1) ^2	0.444846	0.164350	2.706705	0.0068
GARCH (-1)	0.565311	0.085178	6.636782	0.0000
NEW	-8.435437	4.712546	-1.789996	0.0735
R-squared	-0.093735	Mean dependent var		1825.978
Adjusted R-squared	-0.093735	SD dependent var		47.82683

5.3.3 Seasoned Sukuk Yield Spread and Stock Market Volatility (Hypothesis 6)

5.3.3.1 Diagnostic Test

Table 5.24 shows the serial correlation test results. The test has a null hypothesis if there is no serial correlation as against the alternative of the presence of serial correlation. The decision to accept or reject either of the hypothesis's rests with the p-value. The null hypothesis of no serial correlation is accepted if the p-values are greater than 0.05 or 5%. From table 5.24, the p-values are all greater than 0.05, so we accept the null hypothesis of no serial correlation. This implies that the model is reasonable.

Table 5.24: Serial Correlation Test 2

<table>
<tr><th>Autocorrelation</th><th>Partial Correlation</th><th></th><th>AC</th><th>PAC</th><th>Q-Stat</th><th>Prob*</th></tr>
<tr><td>.|. |</td><td>.|. |</td><td>1</td><td>-0.003</td><td>-0.003</td><td>0.0024</td><td>0.961</td></tr>
<tr><td>.|* |</td><td>.|* |</td><td>2</td><td>0.115</td><td>0.115</td><td>3.1521</td><td>0.207</td></tr>
<tr><td>.|* |</td><td>.|* |</td><td>3</td><td>0.101</td><td>0.103</td><td>5.5962</td><td>0.133</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>4</td><td>0.056</td><td>0.046</td><td>6.3580</td><td>0.174</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>5</td><td>-0.041</td><td>-0.064</td><td>6.7542</td><td>0.240</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>6</td><td>-0.038</td><td>-0.063</td><td>7.0950</td><td>0.312</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>7</td><td>-0.057</td><td>-0.060</td><td>7.8882</td><td>0.343</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>8</td><td>-0.008</td><td>0.010</td><td>7.9036</td><td>0.443</td></tr>
<tr><td>*|. |</td><td>.|. |</td><td>9</td><td>-0.086</td><td>-0.058</td><td>9.7250</td><td>0.373</td></tr>
<tr><td>.|. |</td><td>.|* |</td><td>10</td><td>0.067</td><td>0.083</td><td>10.824</td><td>0.371</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>11</td><td>-0.051</td><td>-0.031</td><td>11.465</td><td>0.405</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>12</td><td>-0.018</td><td>-0.029</td><td>11.547</td><td>0.483</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>13</td><td>0.026</td><td>0.020</td><td>11.711</td><td>0.551</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>14</td><td>-0.010</td><td>-0.015</td><td>11.737</td><td>0.627</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>15</td><td>-0.054</td><td>-0.053</td><td>12.463</td><td>0.644</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>16</td><td>-0.007</td><td>-0.014</td><td>12.476</td><td>0.711</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>17</td><td>0.041</td><td>0.058</td><td>12.905</td><td>0.743</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>18</td><td>-0.020</td><td>-0.012</td><td>13.004</td><td>0.791</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>19</td><td>-0.003</td><td>0.003</td><td>13.007</td><td>0.838</td></tr>
<tr><td>.|. |</td><td>*|. |</td><td>20</td><td>-0.049</td><td>-0.074</td><td>13.637</td><td>0.848</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>21</td><td>-0.012</td><td>-0.022</td><td>13.675</td><td>0.883</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>22</td><td>0.007</td><td>0.025</td><td>13.688</td><td>0.912</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>23</td><td>-0.031</td><td>-0.019</td><td>13.932</td><td>0.929</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>24</td><td>-0.025</td><td>-0.019</td><td>14.091</td><td>0.945</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>25</td><td>-0.056</td><td>-0.056</td><td>14.930</td><td>0.943</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>26</td><td>-0.029</td><td>-0.028</td><td>15.160</td><td>0.954</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>27</td><td>-0.046</td><td>-0.049</td><td>15.722</td><td>0.958</td></tr>
<tr><td>*|. |</td><td>*|. |</td><td>28</td><td>-0.094</td><td>-0.074</td><td>18.106</td><td>0.923</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>29</td><td>0.002</td><td>0.010</td><td>18.107</td><td>0.942</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>30</td><td>-0.034</td><td>-0.012</td><td>18.418</td><td>0.951</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>31</td><td>-0.061</td><td>-0.053</td><td>19.435</td><td>0.947</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>32</td><td>0.019</td><td>0.012</td><td>19.532</td><td>0.959</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>33</td><td>0.054</td><td>0.064</td><td>20.334</td><td>0.959</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>34</td><td>0.025</td><td>0.016</td><td>20.511</td><td>0.967</td></tr>
<tr><td>.|. |</td><td>.|. |</td><td>35</td><td>-0.024</td><td>-0.055</td><td>20.665</td><td>0.974</td></tr>
<tr><td>.|* |</td><td>.|* |</td><td>36</td><td>0.156</td><td>0.129</td><td>27.417</td><td>0.847</td></tr>
</table>

5.3.3.2 GARCH Effect

Table 5.25 represents the GARCH output for the sixth hypothesis. The coefficient of the lagged squared residual is positive, while the coefficient of the lagged conditional variance is negative. The p-values at the threshold level of 5% are significant for both. Significant coefficients denote that the GARCH model (1,1) has successfully modelled the behaviour of stock prices. This implies that stock volatility in the previous periods has the power of explaining the current stock volatility conditions. Furthermore, by summing the coefficient of the lagged squared residual (1.36) and the coefficient of the lagged conditional variance (0.51), it gets 0.85, which is close to 1. This value means that volatility shocks are quite relentless and persistent. The coefficient of seasoned Sukuk yield is negative and significant. This implies that the hypothesis, seasoned Sukuk yield spread is associated with a lower negative influence on the stock price volatility is accepted.

Table 5.25: ARCH/GARCH Model Output – Seasoned Sukuk

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	1840.178	1.149260	1601.185	0.0000
		Variance Equation		
C	1222.838	471.7503	2.592130	0.0095
RESID (-1) ^2	1.359489	0.609620	2.230061	0.0257
GARCH (-1)	-0.507491	0.162722	-3.118763	0.0018
NEW	-3.854611	1.857382	-2.075293	0.0380
R-squared	-0.088525	Mean dependent var		1825.978
Adjusted R-squared	-0.088525	SD dependent var		47.82683

To conclude the second main objective of the current research, it is necessary to investigate whether new Sukuk yield is associated with higher spread compared to the seasoned Sukuk yield spread, in addition to investigating the influence of new and seasoned Sukuk yield spread on the stock market volatility.

Three hypotheses were formulated to answer the research question of the study and to satisfy the main research objectives of the study. The first hypothesis was to examine whether new Sukuk yield is associated with higher spread compared to the seasoned Sukuk yield spread. The second hypothesis was to test if new Sukuk yield spread is associated with higher negative influence on the stock market volatility. The third hypothesis was to test if seasoned Sukuk yield spread is associated with lower negative influence on the stock market volatility.

To test the fourth hypothesis, the data of 234 yield spreads of 14 Sukuk issuers from Malaysia and Indonesia were analysed. The independent sample t-test is used to test the fourth hypothesis. According to Levene's test result, which is used to assess the equality of variance for both yield spreads of new and seasoned Sukuk. The result confirmed that, among ten Sukuk issuers, there was a significant difference in spread between the yield spreads of new and seasoned Sukuk, while for the other four Sukuk issuers, a non-significant difference was found between the yield spreads of new and seasoned Sukuk issuances.

To test the fifth hypothesis, the data were analysed using the ARCH and GARCH tests. The result shows the presence of time varying conditional volatility of the stock price and that the volatility shocks are large, highly relentless, and persistent. In sum, it denotes that the effects of today's shock remain in the forecast of variance for many periods in the future. The coefficient of new Sukuk is negative and highly insignificant. This implies that the hypothesis of new Sukuk yield spread being associated with higher negative influence on the stock price volatility can be rejected.

To test the sixth hypothesis, the data were analysed using the ARCH and GARCH tests. The result revealed that stock volatility in the previous periods has the power of explaining the current stock volatility conditions. Furthermore, summing the coefficient of lagged squared residual (1.36) and the coefficient of lagged conditional variance (0.51) reaches 0.85, which is close to 1. This value means that volatility shocks are quite relentless and persistent. The coefficient of the seasoned Sukuk yield is negative and significant. This implies that the hypothesis, seasoned Sukuk yield spread is associated with lower negative influence on the stock price volatility is accepted.

The result obtained from the ARCH and GARCH analysis revealed a negative marginal significance (as p-value ranged between 0.05 and 0.1 (Mulder, 2016; Mulder & Olsson-Collentine, 2019; Pritschet, Powell, & Horne, 2016)) influence of new Sukuk yield spread on the volatility of the stock market, as well as a negative and significant influence of seasoned Sukuk yield spread on the stock market volatility. The negative signs of both influences from the new and seasoned Sukuk yield spread indicate that bad information news within the Sukuk market, either new or seasoned, will lead to a higher volatile influence on the stock market, while good information news from the Sukuk market will lead to less effect on volatility compared to bad news.

Referring to the size effect of the seasoned Sukuk yield spread that was reported at (β = -3.855), it confirmed less influence on the stock market volatility compared to the new Sukuk yield spread that was reported at (β = -8.435). This can be attributed to the fact that the lower yield from the new Sukuk issue is linked to the issuing of liquidity, thus suggesting that new bond issues have higher liquidity than seasoned bonds (Huang, Huang, & Lee, 2019). Conard and Frankena (1969) highlighted the role of the coupon interest as a determinant between the new bond issue and the seasoned bond, thus anticipating that a higher rate of coupon interest of the new bond issue is reflected as a higher risk of a refunding call. This means that the new Sukuk issuance yield spread is associated with a higher negative influence on the stock market volatility.

In agreement with the results of this study, Goh and Yang (2017) investigated the determinants of the yield spread of seasoned and new offerings; this investigation covered 2,637 issuances over the period 2005-2012 from the USA capital market. The finding of Goh and Yang (2017) confirmed systematic under-pricing from seasoned issuing, and that this recovered partially, but not completely. This result is interpreted by the liquidity shock, which plays a part in under-pricing, besides the downward sloping demand curve for seasoned bonds. This result is consistent with the asymmetry information model of Rock (1986), where under-pricing is necessary to compensate uninformed investors

5.4 The Effect of Corporate Sukuk Liquidity on the Stock Market liquidity

The main third research objective of the current study was to identify the effect of corporate Sukuk liquidity on the stock market liquidity. This main research objective is further portioned into two partial research objectives. Accordingly, this section is divided into three further subsections. Subsection 5.4.1 provides the descriptive statistics of Sukuk and stock market liquidity, while subsection 5.4.2 provides the result obtained for testing the seventh hypothesis, and subsection 5.4.3 provides the result obtained for testing the eighth hypothesis.

To identify the effect of corporate Sukuk liquidity on the stock market liquidity, two hypotheses were tested. These hypotheses are as follows:

H7: Sukuk liquidity has a significant and positive influence on the stock market liquidity.

H8: Higher Sukuk grade has a higher impact on stock market liquidity compared to low Sukuk grade.

5.4.1 Descriptive Statistics of Stock Market Liquidity

Table 5.26 shows the descriptive statistics of all the variables that affect corporate Sukuk liquidity on the stock market liquidity used in this study. Due to the lack of high frequency of Sukuk trading within the secondary market in Indonesia, Saudi Arabia, UAE, and Qatar, the data for this section were retrieved from the Malaysian stock market. Looking at Table 5.26, there are 108 data, with mean, standard deviation, minimum, and maximum of Stock Market Liquidity (STL), and two measurements used for Sukuk liquidity, which are Latent Liquidity Sukuk (LLS) and Amihud Sukuk Liquidity (ASL).

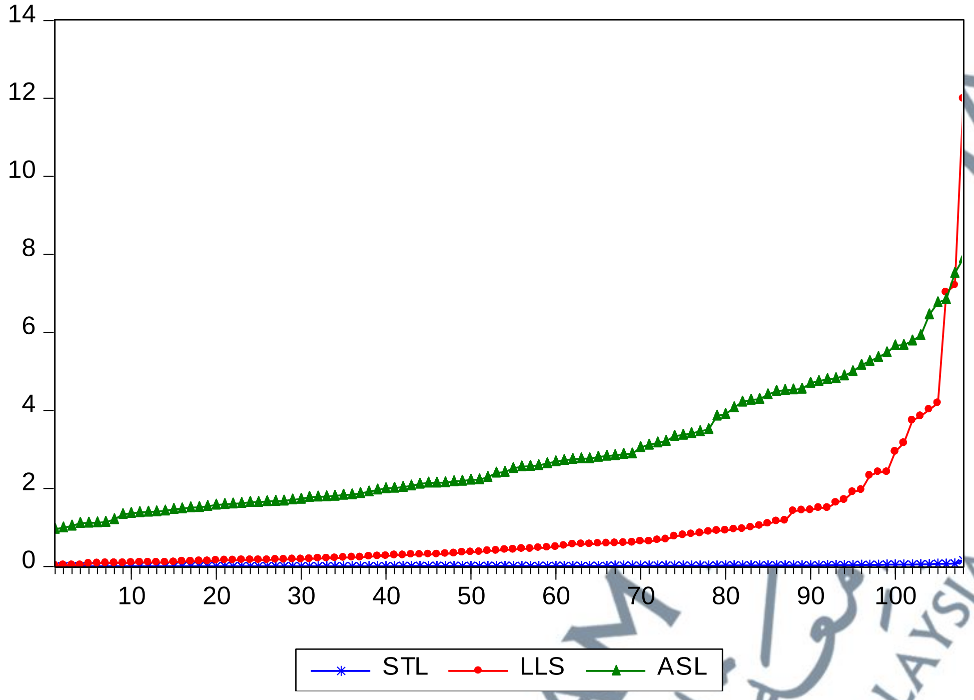
Based on Table 5.26, it is found that the average mean of the stock market liquidity is 0.016, which is measured by the relative effective spread of stock market index at time t; the maximum relative effective spread of stock market index is reported at 0.155 over the observation period, while the minimum value is reported at 0.001, with a standard deviation at 0.020. This indicates the low relative effective spread of the stock market index over the observation period. For the latent liquidity Sukuk, the mean score reported at 0.966, with a minimum value at 0.021 and maximum value at 11.996, and standard deviation at 1.641; the unit of latent liquidity Sukuk is calculated as the aggregate weighted average of outstanding Sukuk to the total Sukuk market outstanding on a monthly basis. It can be noted that the larger difference between the minimum and maximum LLS is attributed to the monthly basis used for the calculation. The mean score for Amihud Sukuk liquidity is reported at 2.945, which is higher than the mean of LLS, as the ALS calculation based on the turnover trading volume in Sukuk in the specified period t divided by the number of Sukuk outstanding, the minimum and maximum values of ASL reported at 0.952 and 7.901, respectively. It can be noted that there is a smaller gap between the minimum and maximum value found compared to LLS. This indicates that a lower frequency was found from the ASL measurement compared to the LLS measurement for Sukuk liquidity. Table 5.26 shows that the distribution of LLS is too peaked compared to ASL as it reported at 23.504 compared to 3.290 for ASL and 21.524 for STL; this means there is a non-normal distribution for the LLS and STL.

Table 5.26: Descriptive Statistics

Measure	LLS	STL	ASL
Mean	0.966	0.016	2.945
Maximum	11.996	0.155	7.901
Minimum	0.021	0.000	0.952
Std. Dev.	1.641	0.020	1.610
Probability	0.000	0.000	0.000
Observations	108	108	108

Keywords: LLS: latent liquidity Sukuk; STL: stock market liquidity; ASL: Amihud Sukuk liquidity

Figure 5.7 shows the movement trend of stock market liquidity, latent liquidity Sukuk, and Amihud Sukuk liquidity over the period 01/01/2008 to 31/12/2016. It can be seen that both measurements of Sukuk liquidity – latent liquidity and Amihud liquidity – have a co-movement over the period. This co-movement confirms the relative similarity of both liquidity measurements over the observation period.



STL= stock market liquidity; LLS= latent liquidity Sukuk; ASL=Amihud Sukuk liquidity

Figure 5.7: Movement Trend Over the Period 2008 to 2016

The cumulative sum test (CUSUM) is used to test the model stability; this test is designed to assess the model parameters stability, as the instability of the model refers to neglecting an important model from the study, which makes it difficult for the regression model to estimate the predictors effectively. As shown in Figure 5.8, the observation changes over the period do not exceed the significance level 0.05, which is marked by the red line; this confirms the model stability and efficient regression estimation from the model.

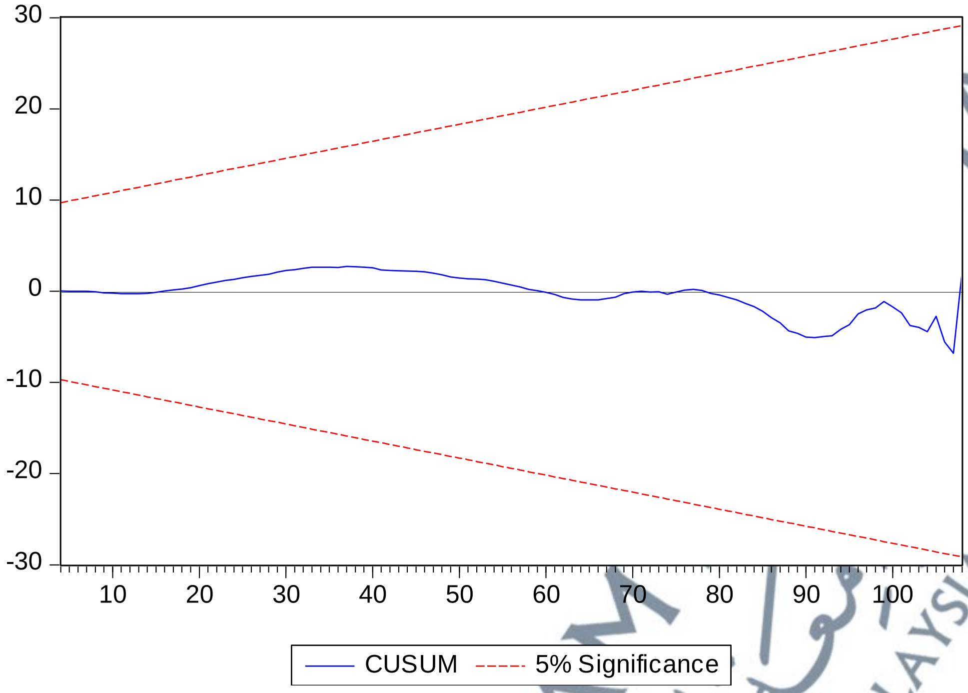


Figure 5.8: Stability Test CUSUM – Liquidity Model

5.4.2 Sukuk Liquidity and Stock Market Liquidity (Hypothesis 7)

For the purpose of testing the assumption of linearity, Table 5.27 shows the correlation test result for the model construct that comprises three variables: stock market liquidity (STL), latent liquidity Sukuk (LLS), and Amihud Sukuk liquidity (ASL). The correlation result confirmed a significant and positive relationship between latent liquidity Sukuk and stock market liquidity at (r=0.972, p=0.000), and a significant and positive relationship between Amihud Sukuk liquidity and stock market liquidity at (r=0.513, p=0.000). The result obtained from the correlation test meets the linearity assumption of regression that assumes linearity within the model construct.

Table 5.27: Correlation Test of Stock Market Liquidity and Sukuk Liquidity

Variable	STL	LLS	ASL
STL	1		
LLS	.972**	1	
ASL	.513**	.502**	1

** Correlation is significant at the 0.01 level (2-tailed)
Key: STL = Stock Market Liquidity, LLS = Latent Liquidity of Sukuk, ASL= Amihud Sukuk liquidity

To satisfy the heteroscedasticity assumption for the regression model, the heteroscedasticity test is conducted, the result of which is shown in Table 5.28. This indicates the probability of the Chi-square being higher than 0.05, which confirms the data has no heteroscedasticity issue.

Table 5.28: Heteroscedasticity Test: Breusch-Pagan-Godfrey

Measure	Statistic
F-statistic	1.980
Obs*R-squared	7.712
Scaled explained SS	55.751
Prob. F (4,103)	0.103
Prob. Chi-Square (4)	0.103
Prob. Chi-Square (4)	0.000

5.4.2.1 Multicollinearity Test

For the purpose of testing the multicollinearity assumption, Kalnins (2018) indicates that multicollinearity issues occur when there is a high correlation of one or more independent variables within the model construct with the dependent variable or among each other. The multicollinearity issue within the model constructs confuses the results and leads to incorrect inferences, as the model will not be able to relate the predictors' variance with the regression outcomes (Adeboye, Fagoyinbo, & Olatayo, 2014). The multicollinearity issue was tested for in the stock market liquidity model by using the variance inflation factor (VIF). As shown in Table 5.29, the obtained VIF for both liquidity measurements reported less than 4.0 as recommended by Kalnins (2018).

Table 5.29: Multicollinearity Test – Sukuk Liquidity Model

Variable	Collinearity Statistics	
	Tolerance	VIF
LLS	.748	1.337
ASL	.748	1.337

Dependent Variable: STL

5.4.2.2 Model Stability

The cumulative sum test (CUSUM) test was also applied to check the parameter stability for stock market liquidity. Figure 5.9 shows the CUSUM test where the estimated values of the parameters for the regress and variable, i.e., stock market liquidity and explanatory variables, i.e., latent liquidity Sukuk are plotted against each iteration. The stock market liquidity and latent liquidity of Sukuk as well as grade AAA, grade AA, and grade A are notations that are used in statistical software by default and are the estimated parameters used in Figure 5.9.

In Figure 5.9, a CUSUM test is shown, which is the intercept of the models representing the stability of the data. The graph shows the stability analysis of the data for rating grade AAA, AA, and A, respectively. For stock market liquidity and latent liquidity of Sukuk, there is a slight change in stability, while for grade AAA, grade AA, and grade A, a significant change occurs compared to the stock market liquidity and latent liquidity of Sukuk. The data for the ratings are looking more stable than for the stock market liquidity and latent liquidity of Sukuk. The same procedure was done until the entire sample space was exhausted. The stability test showed that in almost all cases, there are significant relationships at the significance level of 5%; as seen in all four graphs.

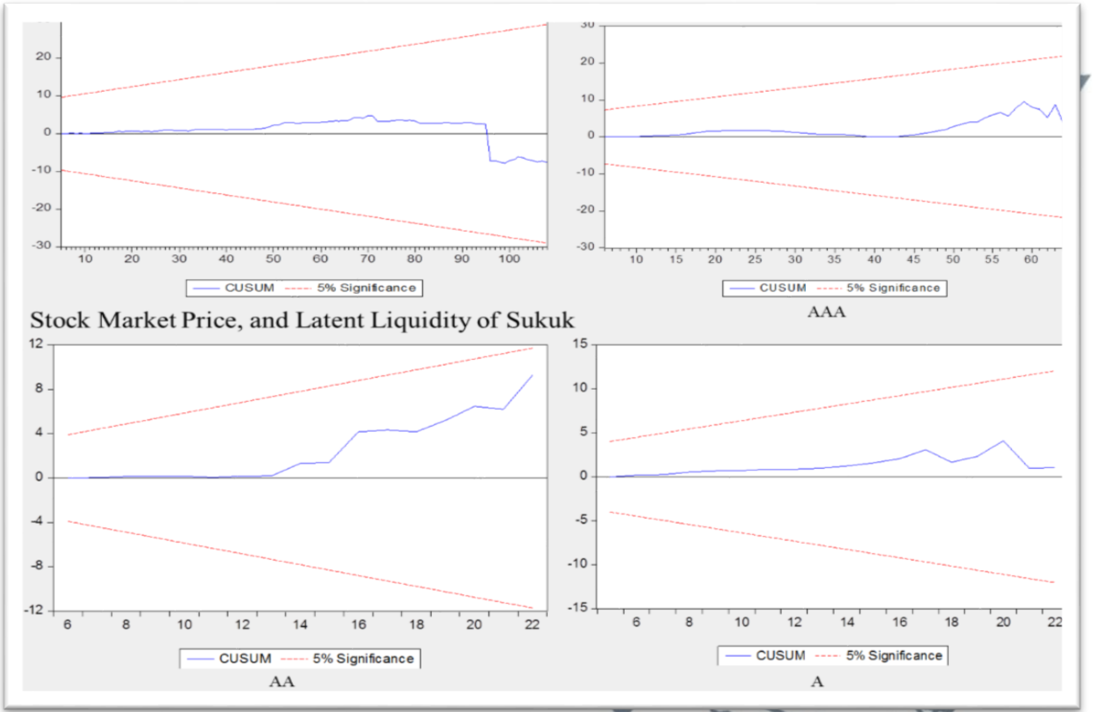


Figure 5.9: CUSUM Test for Model Stability

For testing the seventh hypothesis of the study, Sukuk liquidity is considered as a determinant factor of stock market liquidity. Further, a method of least squares was used in studying the relationships between stock market liquidity as the dependent variable and Sukuk liquidity as the explanatory variable. The regression model is defined as equation (5.8) as follows:

$$STL = C_1 + C_2 LLS + C_3 ASL + e$$

(5.8)

where:

STL = stock market liquidity

LLS = latent liquidity of Sukuk

ASL = Amihud Sukuk liquidity

e = an error term

The seventh hypothesis is tested in two stages. The first stage tests the explanatory estimation of the latent liquidity of Sukuk, while the second stage tests both Sukuk liquidity measurements, latent liquidity and Amihud liquidity, against stock market liquidity. Between the first and second stage of the estimation test, the analysis of variance (ANOVA) is tested to confirm whether or not there is any similarity between both measurements of Sukuk liquidity.

Table 5.30 below shows the model result of stock market liquidity and Sukuk liquidity using the latent liquidity of Sukuk as an explanatory estimator. The model was used to determine whether or not the latent liquidity of Sukuk has a significant and positive influence on the stock market liquidity. The objective of the investigation is to determine whether or not the model fits the data well. The statistical results and the reports of the model results of stock market liquidity and latent liquidity of Sukuk for the study used are summarized and described in the Table 5.30 below.

Table 5.30: Regression Test – Latent Liquidity

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.004486	0.001112	4.032837	0.0001
LLS	0.010233	0.000537	19.03867	0.0000
R-squared	0.956640	Mean dependent var		0.016404
Adjusted R-squared	0.954956	SD dependent var		0.020385
F-statistic	568.1168			

STL = Stock Market Liquidity, LLS = Latent Liquidity of Sukuk

The result of the coefficient of determination (R-squared= 0.957) shows that the overall goodness of fit of the models is high. Moreover, the test results indicate that the model passes the functional form misspecification, and residual errors test at 1%. This implies that the model is well specified, without any problem and that it can be said that the estimated regression model performed well. To find the best-fitting model equation for predicting new and yet unknown scores on the latent liquidity of Sukuk on C, a regression model was used; the estimated equation (5.9) is:

$$STL = C_1 + C_2 LLS + e$$

(5.9)

The regression equation is:

$$STL = 0.004 + \ 0.010 * \ LLS + 0.000$$

This model fits the data well ($F= 568.1168$, $p<.0000$ and R-squared$= 0.956640$). The result obtained from the first stock market liquidity model confirmed a significant and positive impact of latent liquidity of Sukuk on the stock market liquidity at ($C_2 = 0.010$, $t = 19.039$, $p = 0.000$).

5.4.2.3 Independent Samples Test – Sukuk Liquidity Measures

This part compares two measurements of liquidity, first Latent liquidity Sukuk (LLS) and second Amihud liquidity (ASL). The independent sample t-test is conducted to check whether or not there is a significant difference between the two measurements, then proceeds with the second regression model test to check which liquidity measurement has a significant impact on the stock market liquidity. Table 5.31 represents the result obtained from the independent sample test, which reveals that there is a significant variability difference between the two measures of liquidity – latent liquidity of Sukuk and Amihud liquidity Sukuk – as Levene's test of variance equality is significant at ($p=0.017$). Also, the result confirmed a significant difference between the latent liquidity of Sukuk and Amihud liquidity Sukuk as there is a mean difference equal to (-1.979), which is significant at (t=-8.949, p=0.000).

Table 5.31: Independent Samples Test - Sukuk Liquidity Measures

Test	Measure	Liquidity Measurements	
		Equal Variances Assumed	**Equal Variances Not Assumed**
Levene's Test for Equality of Variances	F	5.791	
	Sig.	0.017	
t-test for Equality of Means	t-test	-8.949	-8.949
	df	214	213.923
	Sig	.000	.000
	Mean Difference	-1.979	-1.979

Table 5.32 below shows the model result of stock market liquidity and Sukuk liquidity using two measurements of Sukuk liquidity – the latent liquidity of Sukuk and Amihud liquidity Sukuk – as explanatory estimators. The model was used to determine whether or not the latent liquidity of Sukuk and Amihud liquidity Sukuk have a significant influence on the stock market liquidity. The objective of the investigation is to determine whether or not the model fits the data well. The statistical results and the reports of the model results of stock market liquidity, latent liquidity of Sukuk, and Amihud liquidity Sukuk for the study used are summarized and described in Table 5.32 below.

Table 5.32: Regression Test – Latent and Amihud Liquidity Measures

Variable	Coefficient	Std. Error	t-Statistic	Robust t- Statistic	Prob.
C	-0.003155	0.000917	-3.438836	-3.029	0.0008
LLS	0.009087	0.000376	24.15355	21.184	0.0000
ASL	0.003661	0.000383	9.547429	8.378	0.0000
R-squared	0.970273	Mean dependent var			0.016404
Adjusted R-squared	0.969707	SD dependent var			0.020385
F-statistic	1713.578				

The result of the coefficient of determination (R-squared= 0.970) shows that the overall goodness of fit of the models is high. Moreover, the test results indicate that the model passes the functional form CUSUM test and residual errors test within 5%. This implies that the model is well specified, and that the estimated regression model performs well. To find the best-fitting model equation for predicting new and yet unknown scores on latent liquidity of Sukuk and Amihud liquidity Sukuk on C, a regression model was used, and the estimated equation (5.10) is:

$$STL = C_1 + C_2 LLS + C_3 ASL + e$$

(5.10)

The regression equation is:

$$STL = (-0.003) + \ 0.009 * \ LLS + 0.004 * ASL \ + 0.000$$

This model fits the data well (F = 1713.578, $p < 0.05$ and R-squared = 0.970). The result obtained from the first stock market liquidity model confirmed the significant and positive impact of latent liquidity of Sukuk on the stock market liquidity at (C_2=0.009, t=24.154, p=0.000), and a significant and positive impact of Amihud liquidity Sukuk on the stock market liquidity at (C_3 = 0.004, t = 9.547, p = 0.000). The robustness test ran to confirm meeting the assumptions of the regression test, the obtained t-statistics from the confirmed the result of the post-regression test.

The result obtained confirmed an association between Sukuk liquidity and stock market liquidity, as there is no existing evidence in previous studies to indicate this association, specifically for Sukuk instruments. In considering Sukuk as an instrument of debt, few studies from the conventional bonds are reported. Gentile and Giordano (2013) found a contagion among the Euro and US stock market; the contagion between the debt and equity liquidity is confirmed in causality association, where the higher liquidity in the debt market leaks positively to the equity market. The same occurs in the economic crisis in which the lower liquidity of either the bond or stock market causes the lower liquidity of the other instrument. Also, Chowdhury, Uddin, and Anderson (2018) tested the liquidity effect within eight emerging stock markets in Asia; the finding indicates a bidirectional association between bond liquidity and stock market liquidity. The finding emphasized the role of monetary policy in that money supply, government expenditure, and private borrowing affect the stock market liquidity for both the bond and stock market.

Anderson (2017) investigated the causal relationship between bond liquidity and stock return, in which the yield spread of bonds is used as a measurement of bond liquidity. Anderson (2017) used the imputed round-trip cost (IRC) for measuring the bond liquidity, which estimates the transaction costs of trading by the difference between the ask and bid price over the maximum price of the imputed round-trip trades. His study finding revealed a significant relationship between bond liquidity and stock return, where improving the bond liquidity leads to improving the profitability; this can be gained by lowering the related transaction cost of higher bond liquidity or higher expected cash flow.

In the case of the Malaysian secondary market, most investors in the Malaysian stock market prefer to hold Sukuk until the maturity date (Hanafi et al., 2018), which is interpreted as being due to the low association between Sukuk liquidity and stock market liquidity for the two Sukuk liquidity measurements. Also, the lower trading of Sukuk within the secondary market (Smaoui & Ghouma, 2020) is attributed to the high domination of financial institutions over the secondary market (Ulusoy & Mehmet, 2018) and to the insufficient information about Sukuk (Duqi & Al-Tamimi, 2019). According to Ulusoy and Mehmet (2018), only 6% of Sukuk is traded by securities Brokers and traders in the Malaysian stock market, while the Sukuk trading by financial institutions comprises 78%, with insurance firms at 5%, and 11% traded by investment funds and firms. Apergis, Artikis, and Kyriazis (2015) found evidence that firms with a small capital market have a higher trading frequency on the secondary market compared to large capital firms. For the finding of Jaccard (2013), illiquidity within the stock market, either in debt or equity instruments, would be a reason for the stock market and economic recession.

The positive association between Sukuk liquidity and the stock market can be explained by the risk trend of both instruments. Investors shift their investment decisions based on risk and return (Janor, Yakob, Hashim, Zanariah, & Wel, 2017); debt is considered as being a less risky instrument compared to shares (Modigliani and Miller, 1958) in recession economic conditions, as investors shift their investment to lower risk instruments, while in stable economic condition, investors take their decision to invest based on their risk aversion. Hence, assets that share the same risk weight will share the same trend of liquidity (Goyenko & Ukhov, 2009). Hakim and Rashidian (2002) tested the cointegration among Dow Jones Islamic market index, Wilshire 5000 Index, and three-month T-bills; the finding confirms an equal Sharpe ratio for both the

Wilshire 5000 Index and three-month T-bills. This result clarifies a parallel and positive risk to the debt instrument represented by three-month T-bills and the stock market index represented by the Wilshire 5000 Index. This result concludes that the probability of leaking investment from a higher risk instrument, such as equity to debt can be neglected for the case of stock market index.

5.4.3 Stock Market Liquidity and Sukuk Ratings (Hypothesis 8)

For testing the eighth hypothesis, the Sukuk rating is used as a determinant factor of stock market liquidity; the method of least squares regression is used. Three control variables are included in the model, as these variables have revealed a significant and positive impact on stock market liquidity following Ding and Hou (2015). The regression model for Sukuk rating is defined as equations (5.11), (5.12), and (5.13) as follows:

$$STL = C_{11} + C_{12}LLS_{AAA} + e$$

(5.11)

$$STL = C_{21} + C_{22}LLS_{AA} + e$$

(5.12)

$$STL = C_{31} + C_{32}LLS_{A} + e$$

(5.13)

where:

STL = stock market liquidity

LLS_{AAA} = latent liquidity of Sukuk – Rate AAA

LLS_{AA} = latent liquidity of Sukuk – Rate AA

LLS_{A} = latent liquidity of Sukuk – Rate A

Table 5.34 below shows the analysis of Sukuk rating for three grades of Sukuk – AAA, AA, and A – to test the hypothesis assuming that a higher Sukuk grade has a higher impact on stock market liquidity compared to a low Sukuk grade. Looking at the table, there are 108 data (N. observations), with stock market liquidity being a dependent variable as well as the latent liquidity of three grade Sukuk independent variables. The research results are summarized and described in the table, which reports the statistical results of the Sukuk rating for model (1) AAA for the study use, which includes abbreviations of stock market liquidity as a dependent variable. The AAA grading model (1) is used for the study, and the goal of the investigation is to determine whether or not the model fits the data well. Table 5.34 presents the statistical result of the method of least squares for the Sukuk rating of the model (1) AAA of the research study.

From the results of the coefficient of determination (R-squared= 0.9775), it is clear that the overall goodness of fit of the least squares regression method is high. Moreover, the test results indicate that the model passes the assumptions of linearity, multicollinearity, stability, functional form misspecification, residual errors, and least squares test at 0.000 level. This implies that the model is well specified and meets the assumptions. Thus, it can be said that the estimated least squares regression method performed well.

To find the best-fitting model equation for predicting new and yet unknown scores on latent liquidity of Sukuk grade AAA, the method of least squares is used, and the estimated theoretical equation (5.14) is:

$$STL = C_{11} + C_{12}LLS_{AAA} + e$$

(5.14)

The regression equation is:

$$STL = 0.0013 + 0.0177 * LLS_{AAA} + e$$

This model fits the data well (F = 871.91, $p < 0.05$ and R-squared = 0.9775).

The second model (2) shows the least squares result of the Sukuk rating for grade AA. Based on the result of the analysis, it can be determined whether a higher Sukuk grade has a higher impact on stock market liquidity compared to the low Sukuk grade used in this study. The AA grading is based on the method of least squares and the goal of the investigation is to determine whether or not the model fits the data well. Table 5.34 presents the statistical result of the least squares method for the Sukuk rating of grade AA.

From the result of the coefficient of determination (R-squared= 0.9971), it is clear that the overall goodness of fit of the model is high. Moreover, the test results indicate that the model passes the functional form misspecification, residual errors, and model test at 5%. This implies that the model is well specified, and without any problem. Thus, it can be said that the estimated model performed well. To find the best-fitting model equation for predicting new and yet unknown scores on latent liquidity of Sukuk grade AA, the method of least squares is used, and the estimated theoretical equation (5.15) is:

$$STL = C_{21} + C_{22}LLS_{AA} + e$$

(5.15)

The regression equation is:

$$STL = (-0.0027) + 0.0164 * LLS_{AA} + e$$

This model fits the data well (F = 2106.1, p < 0.05 and R-squared = 0.9971).

The third model (3) shows the analysis of Sukuk rating for grade A. The objective of the current study was to determine whether a higher Sukuk grade has a higher impact on stock market liquidity compared to the low Sukuk grade used in this research. The research findings are summarized in the table, which reports the statistical results of the Sukuk rating for grade A. The rating for grade A also used the method of least squares and the goal of the investigation is to determine whether or not the model fits the data well. Table 5.33 presents the statistical result of the method of least squares for the Sukuk rating of grade A.

From the result of the coefficient of determination (R-squared= 0.9696), it is clear that the overall goodness of fit of the model is high. Moreover, the method of least squares test result indicates that the model passes the serial correlations, functional form misspecification, residual errors, and the test result at 5%. This implies that the model is well specified and without any problem. Thus, it can be said that the estimated method of least squares performed well. To find the best-fitting model equation for predicting new and yet unknown scores on the latent liquidity of Sukuk grade A, the least squares method is used, and the estimated theoretical equation (5.16) is:

$$STL = C_{31} + C_{32}LLS_A + e$$

(5.16)

The regression equation is:

$$STL = 0.0028 + 0.0109 * LLS_A + e$$

This model fits the data well (F = 191.96, p < 0.05 and R-squared = 0.9696).

Table 5.33: Result of Sukuk Rating for Grade AAA, AA, A

Variable	Model 1 Grade AAA		Model 2 Grade AA		Model 3 Grade A	
	Coefficient	***t***	**Coefficient**	***t***	**Coefficient**	***t***
C	0.0013	1.8539	-0.0027	-5.3517	0.0028	1.0896
LLS	0.0177	11.774	0.0164	31.189	0.0109	11.894
R-squared	0.9775		0.9971		0.9696	
Adjusted R^2	0.9764		0.9966		0.9646	
F-statistic	871.91		2106.1		191.96	

Dependent variable: STL = Stock Market Liquidity, independent variable: LLS = Latent Liquidity of Sukuk

Based on the result obtained for the eighth hypothesis, it can be noted that the size effect varies among the Sukuk rating; it emphasized that the higher the Sukuk rating, the higher effect of Sukuk liquidity on the stock market liquidity. The brief summary of the result presented in Table 5.33 revealed a size effect (β=0.0177) for Sukuk rated AAA followed by Sukuk rating AA at (β= 0.0164), and for Sukuk rated A at (β=0.0109). This confirmed that a higher Sukuk rating has a higher liquidity effect on the stock market liquidity.

5.5 Summary of the Hypotheses Testing

Table 5.34 presents the summary of hypotheses testing by this study, which revealed that all the hypotheses constructed were accepted.

Table 5.34: Summary of Hypotheses Testing

	Hypothesis	Method	Result	Decision
Objective 1: To investigate the stock market reaction to the corporate Sukuk issuance announcement				
H1	Sukuk announcements in the Southeast Asia and GCC stock markets are not associated with an abnormal return	Event study methodology	Negative and significant reaction in the Southeast Asia and GCC stock markets toward Sukuk announcements	Cannot be rejected
H2	Announcements of Sukuk in the Southeast Asia market are associated with lower negative abnormal returns compared to the GCC Sukuk market	Variance Analysis Tests	SA-CAAR = -0.240 GCC-CAAR = -6.04	Cannot be rejected
H3	Announcements of Sukuk that have a longer time-lapse are associated with higher abnormal returns	Multiple linear regression The Generalized Method of Moments	SA = (β=0.034, t=3.943, p=0.000) GCC = (β=0.008, t=8.601, p=0.000)	Cannot be rejected
Objective 2: To determine the co-movement between the new and seasoned corporate Sukuk issuance yield spreads and the stock market volatility				
H4	New Sukuk yield is associated with a higher spread compared to the seasoned Sukuk yield spread	Variance Analysis Tests	a sig., value that is less than 0.05	Cannot be rejected
H5	New Sukuk yield spread is associated with a higher negative influence on the stock market volatility	Autoregressive model	(β=-8.435, t=-1.789, p=0.0735) (at marginal significance)	Cannot be rejected
H6	Seasoned Sukuk yield spread is associated with a lower negative influence on the stock market volatility	Autoregressive model	(β=-3.855, t=-2.075, p=0.038)	Cannot be rejected

Table 5.34, continued

	Hypothesis	Method	Result	Decision
Objective 3: To identify the effect of corporate Sukuk liquidity on the stock market liquidity				
H7	Sukuk liquidity has a significant and positive influence on the stock market liquidity	Variance Analysis Tests Multiple linear regression The Generalized Method of Moments	LLS = (β=0.009, t=24.15, p=0.000) ASL = (β=0.004, t=9.547, p=0.000)	Cannot be rejected
H8	Higher Sukuk grade has a higher impact on stock market liquidity compared to low Sukuk grade	Multiple linear regression	AAA = β=0.0018, t=11.774 AA = β=0.0164, t=31.189 A = β= 0.0109, t=11.894	Cannot be rejected

5.6 Chapter Summary

Overall, the main goal of this chapter was to provide the analysis part of this study, which was organized into three main sections. The first section is assigned for the first objective, which aims to investigate the stock market reaction to the corporate Sukuk issuance announcement, as well as examine five determinants of this association – time-lapse, market capitalization, and yield to maturity, as well as tenor, amount, and coupon – within the corporate Sukuk issuance framework of the Southeast Asia market and the GCC Sukuk market. The findings in this section confirmed that Sukuk issuance announcement impact stock market reaction significantly and negatively. The result confirmed that the time-lapse is a crucial factor in determining the stock market reaction sign, which suggests that this is an important factor that helps broaden the knowledge of corporate Sukuk issuance announcement timing practices in the stock markets of Southeast Asia and the GCC.

The second section was assigned for the second objective. The second objective of the study was to determine the effect of the new and seasoned corporate Sukuk issuance yield spreads on the stock market volatility. The objective of this study was to provide empirical findings concerning whether new Sukuk yield was associated with higher spread compared to the seasoned Sukuk yield spread, new Sukuk yield spread is associated with higher negative influence on the stock price volatility, and seasoned Sukuk yield spread is associated with lower negative influence on the stock price volatility. The sample of the study was retrieved from the Malaysian and Indonesian stock markets volatility over the period 2014-2016. The findings in this section found that there is a significant difference between the yield spreads of new and seasoned Sukuk issuances. Also, the result obtained from the ARCH and GARCH modelling confirmed a significant association between the yield spreads of both new and seasoned Sukuk issuances with the stock market volatility.

The third section was assigned for the third objective. The third objective of the study was to identify the effect of corporate Sukuk liquidity on the stock market liquidity. The objective of this study was to provide empirical findings concerning whether Sukuk liquidity has a significant and positive influence on the stock market liquidity and whether a higher Sukuk grade has a higher impact on stock market liquidity compared to a low Sukuk grade. The sample of the study consisted of data of 108 observations and data of 22 observations for both analyses and grading. The study showed that there are significant relationships between both Sukuk liquidity (i.e., the Latent liquidity measurement and Amihud liquidity measurements) and the stock market liquidity.