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Stock Market Reactions on Shariah Indices Following Sukuk Issuances: CAAR Analysis on 2008-Financial Crisis

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Abstract

The purpose of this study is to look at how stock markets in Malaysia reacted to *sukuk* issuance announcements from 2004 to the post-2008 financial crisis by examining 50 selected companies listed in The FTSE Bursa Malaysia Kuala Lumpur Composite Index (FBMKLCI), FTSE Bursa Malaysia Emas Shari'ah Index (FBM EMAS), FTSE Bursa Malaysia Hijrah Shari'ah Index (FBM HIJRAH), and Dow Jones Islamic Market Index (DJIM). The data gathered from Datastream, Bloomberg, the Securities Commission Malaysia, and the Bursa Malaysia stock exchange were used to compile this study. A three-year estimation period to investigate market reactions using cumulative average abnormal return (CAAR) was adopted in this study. To investigate market efficiency, this study looked at symmetric and asymmetric event windows. This study discovers that markets responded favourably before the crisis but negatively and significantly during and after the crisis. The findings of this study provide advice to policymakers on how to direct regulators, investors, and issuers to the most *stable* sukuk during a crisis, as well as useful information and suggestions to issuers, policymakers, regulatory organisations, and investors in Islamic bonds.

Keywords: Market Reactions, Sukuk, Shariah Indices, Financial Crisis, CAAR

Introduction

Since the 2008 financial crisis, the COVID-19 pandemic has posed the greatest challenge to the global financial system (Dali et al., 2021). Though the economic picture will only be clearer once the COVID-19 has been completely eradicated, the first half of 2021 saw the *sukuk* market to remain resilient (IIFM, 2021). There are many factors that have contributed to the strong growth trend of the *sukuk* market. First is the favourable expectations for the global economy, relatively stable commodity prices, and the ongoing increase in sovereign *sukuk* issuance. The strong trend is also caused by the rising interest in *sukuk* upon the recent issuers of Formosa *Sukuk* from Taiwan, the *sukuk* issuing of an Egyptian business in January 2020, and the growing investment base (Ahmad et al., 2021). The recent modernisation of Islamic finance, which has changed the dynamics of the Islamic financial industry, has also resulted in the demand of *sukuk* to increase in the last few years, resulting in them gaining universal

acceptance as an alternative to conventional financial products. As a result, recently, *sukuk* has developed into one of the most effective mechanisms to raise funds from the market using Islamic guidelines. Not only that, but *Sukuk* also appeals to conventional investors seeking the possibility of increasing an original asset and the value of the *sukuk*, while the original debt in bonds remained (Mohamed, 2008).

Sukuk is an Arabic word and is the plural of '*sakk'*, which means "legal instrument, deed, or check". *Sukuk* is considered as Shari'ah-compliant bonds, where bonds are defined as long-term debt obligations that are secured by a specified asset or a promise to pay (Al-Amine, 2008). *Sukuk* is defined by Securities Commission Malaysia (2011) as "certificates of equal value which evidence undivided ownership or investment in the assets using Shari'ah principles and concepts approved by the Shari'ah Advisory Council (SAC)". *Sukuk* differs from conventional bonds because it is governed by the rules of Shari'ah, whereas conventional bonds include the elements of *gharar, maysir* and *riba*. Although *sukuk* and conventional bonds are different, they share some similarities. A conventional bond has a fixed term maturity, bear a coupon (profit) and is tradable with the average yield price. Likewise, *sukuk* has a fixed term maturity and pays investors a regular return during the maturity period. In addition, *sukuk* holders have the option to reclaim their capital (Ulusoy & Ela, 2016). However, *sukuk* is structured in such a way that their issuance is not an exchange of paper for money consideration with interest as per conventional bonds. Instead, they are based on an exchange of an approved asset for some financial considerations that allow the investors to earn profits from the said transactions (Zin et al., 2011).

According to MENA *Sukuk* Report (2009), Malaysia was the largest market for *sukuk* in 2008, raising USD 5.5 billion from 54 issues. During the 2008 financial crisis, the global amount of *sukuk* issuance decreased sharply by 54.5 per cent to USD15.1 billion compared to USD33.1 billion in 2007. The decline in *sukuk* issuance was due to the credit crunch that had forced investors to withdraw from the money market, hence exhausting resources for *sukuk*. The number of global *sukuk* issuance weakened in the first half of 2008 and remained lower than the 2007 record. Despite the decline, the prospects for *sukuk* market remained positive due to the existing demand.

Following the 2008 global financial crisis, the stock market reacted negatively to *sukuk* issuance, resulting in its subsequent decline (Ahmad & Radzi, 2011). This is supported by the findings of Modirzadehbami and Mansourfar (2011), who found a significant negative abnormal return on the day before the announcement of Islamic bonds between 2005 and 2008 in Malaysia. When the global financial crisis hit the Gulf countries, investors began losing confidence in the market (RAM, 2010). Unfavourable news, such as the global financial crisis, affects trust and confidence among investors in *sukuk* (Blinder, 2002). Confidence in the economy, and more specifically in the capital market, is an essential catalyst for economic and financial growth. When the level of confidence increases during strong economic conditions, investors desire to buy *sukuk*. On the other hand, when confidence declines, risk-taking by *sukuk* investors also tends to decline (Dailami & Masson, 2009). Significant negative returns are associated with negative news. Such events will seriously diminish investors' confidence in the Islamic financial system (Muhamed & Radzi, 2012).

Looking at both the increasing expectations of this industry and the growing investor base, the study will investigate the performance of the *sukuk* industry from pre-, during, and post-2008 global financial crisis. By doing so, the main focus of this research is therefore to investigate stock market reactions following *sukuk* announcements in Malaysia using the event study methodology. This is because *sukuk* and equity have similar characteristics (Modirzadehbami & Mansourfar, 2011). *Sukuk* does not pay interest but generates returns through the commoditisation of capital gain. Therefore, it cannot be classified exclusively as debt because it also shares some stock features.

The structure of the paper is organised as follows. Following the introduction is the section which discusses the background of the study and relevant literature. Section 3 demonstrates the research methodology and research findings. Finally, Section 4 brings the discussion to a close offering some recommendations at the end.

Literature Review

Definition of *Sukuk*

Sukuk is a prominent element in the Islamic financial system, contributing approximately 90 per cent to the Islamic capital market (Haider & Azhar, 2010). The Islamic Development Bank (IDB) defines the sukuk as "an asset-backed bond which was designed or structured in accordance with the Shari'ah and which might be traded in the market" (IDB, 2006). The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI, 2008), in its Shari'ah Standard 17 (2), defines sukuk as "certificates of equal value representing undivided shares in the ownership of tangible assets, usufructs and services or (in the ownership of) the assets of particular projects or special investment activity".

Meanwhile, the Islamic Financial Services Board (IFSB, 2007), in its Capital Adequacy Standard (IFBS 2), defines sukuk as "certificates that represent the holder's proportionate ownership in an undivided part of an underlying asset where the holder assumes all rights and obligations to such asset". Sukuk is defined by the Securities Commission Malaysia (2011) as "certificates of equal value which evidence undivided ownership or investment in the assets using Shari'ah principles and concepts approved by the Shari'ah Advisory Council (SAC)". Having considered the numerous definitions of sukuk, the present study will employ the definition of sukuk as issued by the Securities Commission Malaysia.

Background of *Sukuk*

Sukuk, which is also referred to as an "Islamic bond", is a capital market instrument that enables the owner of the right to obtain income from this asset by considering the right of ownership over an asset and raising funds from the public investors and is among the fastest-growing instruments in the world (Alpaslan, 2014). It is the most active Islamic debt market instrument in Malaysia because it covers almost 90 per cent of the local Islamic capital market (Haider, 2010). *Sukuk* was first issued in Malaysia in 1990 by Shell MDS Private Limited, a foreign-owned non-Islamic company. Since the world's first ringgit *sukuk* was issued, a various form of *sukuk* have been issued, such as *sukuk mudharabah* in 1994, *sukuk ijarah* in 2001, sovereign *sukuk* in 2002, *sukuk musyarakah* in 2005 and exchangeable *sukuk* in 2006 (Said, 2011).

***Sukuk* during 2008-Financial Crisis**

The 2008 global financial crisis had an effect on the *sukuk* market. The global *sukuk* issuance had declined by more than 50 per cent by the end of 2008, and Malaysia had been hit the hardest, followed by the Gulf Cooperation Council (GCC) countries (Ahmad & Radzi, 2011). The year 2008 and 2009 were difficult years for the Islamic capital markets, including some high-profile international *sukuk* defaults (Nanaeva, 2010). In October 2008, the East Cameron Gas *Sukuk,* worth USD167 million, filed for bankruptcy. Later in May 2009, Dar Al Kuwait failed to meet its obligation on a USD100 million *sukuk*. Saudi Arabia's Saad Group is another example of an organisation that had failed to meet *sukuk* payments.

The deterioration of *sukuk* issuance in Malaysia, especially after the 2008 global financial crisis, has created a complicated situation among *sukuk* issuers (Ahmad & Radzi, 2011). Ahmad and Radzi (2011) also said that the reactions of the stock markets in Malaysia were never consistent, and the prices were unpredictable during the crisis. Since the decreased number of *sukuk* issuances in Malaysia during the 2008 financial crisis, the prices of stock markets also fluctuated, displaying either positive or negative reactions. Negative reactions, as reflected by low stock market index values, indicate a lack of confidence among *sukuk* investors to invest in *sukuk*.

Therefore, the growth rate of *sukuk* issuance also deteriorated during the financial crisis. Based on the previous literature, it is found that the growth rate of *sukuk* issuance had decreased after the 2008 financial crisis from 1.89 per cent in 2007 to -0.64 per cent in 2008. However, the growth rate for conventional bonds increased from 0.11 per cent in 2007 to 1.58 per cent after the crisis in 2008. This suggests that the crisis has a higher impact on *sukuk* than on conventional bonds. The situation raises several questions. First, why did Malaysia experience the hardest hit in terms of *sukuk* issuance during the financial crisis? Second, why was the growth rate of *sukuk* issuance at a lower rate than that of conventional bonds?

The deterioration of *sukuk* issuance and its impact on confidence level among *sukuk* investors during the crisis are the important issues investigated in this research. Since empirical work on *sukuk* with respect to stock market reactions and confidence effects are relatively scarce, this research contributes to the literature by providing new information to address the gap. The findings would be significant to regulators, policymakers, industry players, issuers, investors and researchers in the industry.

Overview of Sukuk Development

A look at the 2021 *sukuk* issuance pipeline as well as the current issuances suggest a good year for the *sukuk* market. *Sukuk* has continued to attract new issuers, with a greater emphasis on ESG-related issuances, an increase in issuances by relatively new entrants such as Nigeria and Egypt, and an expanding investor base, all of which are positively contributing to the market's development. *Sukuk* is now widely accepted as a viable source of financing for project financing, general-purpose corporate needs, capital adequacy, sovereign budgetary and fiscal requirements, liquidity management, and other purposes (IIFM, 2020).

Global *Sukuk* issuance increased from around 19.84% p.a. or USD145.702 billion in 2019 to USD 174.641 billion in 2020. The steady issuance volume during 2020 was mainly due to sovereign *sukuk* issuances from Asia, GCC, Africa and certain other jurisdictions. Malaysia

continued to dominate the *sukuk* market even though the share of countries like Indonesia, UAE, Saudi Arabia and Turkey increased with good volume.

Figure 1: Global FIs *Sukuk* Issuances (Jan 2001 – Dec 2020)
All Tenor, All Currencies, in USD Millions

Source: IIFM (2021)

In 2020, *sukuk* issuances by financial institutions (FIs) showed strong performance, with the issuance volume recorded a new high till the date of USD 33.76 billion, a whopping issuance increase of USD 15.00 billion or 80% p.a. as compared to the previous year. The FIs were active *sukuk* issuers since their inception, and initially, the issuances were on the floating profit rate basis, which suited their balance sheet management. Starting from 2010, FIs became more active as an issuer for not only liquidity management purposes but also to meet the Basel Capital Adequacy requirements by issuing Tier 1 (Perpetual) and Tier 2 *sukuk*. During the year, several FIs based in various jurisdictions have mostly issued Tier 1 Sukuk (IIFM, 2021). The international *sukuk* market, though it accounts for approximately 24% of overall Global *Sukuk* issuances since inception, is the natural attraction and driver of the *sukuk* market from a global perspective. According to Table 1, the UAE maintained its volume and value leader position in the international *sukuk* market with a share of 27.01%, closely followed by Malaysia with a share of 25.77%, Saudi Arabia with a share of 19.67%, Indonesia with a share of 6.38%, Bahrain with a share of 4.69% and with a share of Turkey 5.09%. Together with Saudi Arabia, Qatar, UAE, Oman & Bahrain, the five GCC countries commanded over 59.07% of the entire international *sukuk* issuances since inception.

Table 1: Regional Break-up of International Sukuk issuance (Jan 2001 – Dec 2020)

ASIA & FAR EAST	Number of Issues	Amount USD Millions	% of Total Value
China	1	97	0.03%
Hong Kong	5	3,196	0.96%
Indonesia	24	21,203	6.38%
Japan	3	190	0.06%
Malaysia	174	85,633	25.77%
Pakistan	4	3,600	1.08%
Singapore	4	711	0.21%
Total	**215**	**114,630**	**34.49%**
GCC MIDDLE EAST	**Number of Issues**	**Amount USD Millions**	**% of Total Value**
Bahrain	109	15,589	4.69%
Kuwait	21	5,177	1.56%
Oman	5	4,219	1.27%
Qatar	25	16,195	4.87%
Saudi Arabia	78	65,353	19.67%
United Arab Emirates	138	89,764	27.01%
Total	**376**	**196,297**	**59.07%**

Source: IIFM Sukuk Report (2021)

According to Table 2, around 57.62% of the international issuance in 2020 came from 5 out of 6 GCC countries. Malaysia was the most active region in International *Sukuk* issuances with a share of 29.36%, followed by Turkey of 7.01% and Indonesia of 5.90% market share.

Table 2: Regional Break-up of International Issuances for the Year 2020

AFRICA	Number of Issues	Amount USD Millions	% of Total Value
Nigeria	1	150	0.05%
South Africa	1	500	0.15%
Sudan	1	130	0.04%
Total	**3**	**780**	**0.23%**
Europe & OTHERS	**Number of Issues**	**Amount USD Millions**	**% of Total Value**
France	1	1	0.0003%
Germany	3	206	0.06%
Luxembourg	3	280	0.08%
Turkey	33	16,917	5.09%
United Kingdom	11	1.769	0.53%
USA	5	1,367	0.41%
Kazakhstan	1	77	0.02%
Total	**57**	**20,617**	**6.20%**
Grand Total	**651**	**332,325**	**100%**

Source: IIFM Sukuk Report (2021)

Previous Studies on Stock Markets Reactions

Many studies have been conducted to examine how market participants react to bond announcements and how they affect firm value. A substantial amount of literature has focused on the group of bonds that have both equity and bond components. A noteworthy first finding was by Mikkelson and Partch (1986), who recorded the absence of any significant reaction of the stock markets to conventional bond announcements. This was evident that stock markets do not react to debt announcements, including bond issuances, even if some studies also found evidence for a negative reaction as the reaction of stock markets to the issue of bonds was affected by opposing influences (Spiess & Affleck-Graves, 1999).

Brown and Warner (1980) said that event studies are frequently used to test market efficiency. An event study is a statistical method used to gauge the impact of a corporate event, such as stock splits, earnings announcements and acquisition announcements. Several studies for the United States market document a significantly negative (on average –1.5 per cent) market response to convertible bond issues, confirming the hybrid nature of these financial instruments. The announcement effect of different corporate securities has been the subject of numerous studies, such as Mikkelson and Partch (1986) for equity, Eckbo (1986) for bonds, and Dann and Mikkelson (1984) for convertible securities. These support the models proposed by (Myers and Majluf, 1984).

However, the results of the effect of issuance analysed in several studies present a mixed picture. For example, Dann and Mikkelson (1984); Mikkelson and Partch (1986); Billingsley et al (1990) found significantly negative stock market reactions on the issuance date for the United States domestic market. However, Kang and Stulz (1996) discovered a significantly positive market reaction in the Japanese market. In general, the stock market does not appear to react very strongly on the date of issue.

Miller and Rock (1985) showed that a larger than expected external financing reveals a lower-than-expected operating cash flow, which is negative news to investors. This implied a negative stock price effect of an unanticipated debt issue as well as a negative correlation between the price effect and the amount of unanticipated new financing. Thus, the difference between the market's reactions to straight debt and equity issues was broadly consistent with the Myers and Majluf (1984) model. In their framework, the market reacted negatively to unanticipated external financing as relatively uninformed investors account for the possibility that the firm was attempting to take advantage of a situation in which it knows the security offered was priced above its "intrinsic" value. Eckbo (1986) found significantly negative average abnormal returns to firms offering convertible debt. However, straight debt offering, with the exception of a subsample of public utility offerings, was on average associated with zero abnormal performance.

Shaheen (2006) recorded that preliminary evidence showed that acquiring firms did not experience significant abnormal returns around the announcement date. Market participants received no signal on the acquisition announcement day regarding the acquiring firm. Cakir and Raei (2007), who examined the risk–reduction advantage of issuing sovereign *sukuk* found that adding *sukuk* to the portfolio of fixed-income securities reduced the VaR, demonstrating that these investment certificates created diversification benefits to investors.

They suggested that there was no significant market reaction to conventional bond issues but a significant negative stock market reaction to *sukuk* issues.

Between 2000 to 2006, Ibrahim and Minai (2009) found that the market reaction was significantly positive during event windows [-3, 0] and [-3, 3] during the announcements of Islamic debt issuance in Malaysia. The wealth effect of Islamic bond issuance announcements was positively influenced by the issuer's investment opportunity and negatively influenced by the size of the issue, the size of the firm and whether the announcement was accompanied by the Securities Commission (SC) approval. The finding implies that the positive reaction was not due to investors' preference for Islamic compliant activities, but it was due to similar factors found in studies on conventional bonds. The negative influence of SC approval on the wealth effect indicates that many listed companies issuing Islamic debt were not complying with the information disclosure requirement.

Ashhari et al (2009) found that there was a wealth effect on the announcement of Islamic bonds issued for the period 2001 to 2006 in Malaysia. The early market reaction to Islamic bond announcements was positive. Regardless of the reactions, a possible reason for the early response could be the fact that information about Islamic bond offerings often leaks out to the market before the announcement. Ameer and Othman (2010) found significant negative abnormal returns near the announcement days in Malaysia over the period of 2001 to 2007. They found that the average abnormal return of the subordinated bonds was significantly positive compared to other types of bonds. The average abnormal return (AAR) for the subordinated bonds was significantly positive and larger than AAR for the medium term and straight bonds, whereas zero-coupon bonds had the most significant negative returns. Since there was no risk of expropriation from the current bondholders, the stock market would react positively to such announcements.

According to Abdul Qoyum (2011), there was a significant positive market reaction just prior to a firms' positive surprise earnings announcements. When a firm announced positive surprise earnings, investors appeared to perceive a positive signal about the firm's future which resulted in an increase in the firm's stock price. Therefore, positive surprise earnings announcements did indeed send a positive signal about the profitability and future success of a firm. By doing so, stock prices rose, and the market reacted quickly to the available information.
On the other hand, according to Modirzadehbami and Mansourfar (2011), a significant negative abnormal return occurred one day before the announcement date in a sample of 45 listed companies on Bursa Malaysia involved in the issuing of Islamic debts during 2005 to 2008. The event window was -15 to +15 days around the announcement date (22 working days). The negative abnormal return of the day before the announcement was highly significant at the 5% level and insignificant on day +1. Significant negative abnormal return of the day before indicated that the announcement of Islamic bonds in the market reflected bad news in the Malaysian market between the years 2005 to 2008.

The Impact of Financial Crisis and Stock Market Reactions
Stock markets in Malaysia are flexible and can seriously hamper the Malaysian economy if confidence falls as it did during the 2008 crisis. Historical data show that the FTSE Bursa Malaysia index fell in the months of January to March 2008, May to October 2008 and March

2009. The index then grew strongly over the period from May to July 2009. Financial crises have had a negative impact on the economy, especially in the sectors that rely on external sources of finance with long-standing financial systems in countries (Mahani & Rajah, 2009).

According to the MENA Sukuk Report (2009), the *sukuk* market remained positive because of the existing and strong demand for *sukuk*. It had also been supported by the higher level of surplus savings and reserves in Asia. The recovery of the *sukuk* market depended largely on the global financial industry rehabilitation process. This recent crisis in the financial industry led to calls to rely more on Islamic principles as Islamic financial institutions were impacted less than conventional institutions during the crisis. The restrictions placed by Islamic laws on financial transactions had a cushioned impact on Islamic institutions.

According to Asshari et al (2009), news of the Malaysian economy entering a recession following a second-quarter of gross domestic product (GDP) did not profoundly weaken the stock market. This investigation could provide additional insights and further evidence on the effects of debt announcements on stock returns in the emerging capital market in Malaysia. The evidence obtained was useful to international investors who wished to invest and can help to reduce investment risk. Standard and Poor's (2009) reported that the market's anticipated growth of *sukuk,* including those for infrastructure and project finance, failed to materialise in 2008, with total *sukuk* issuance falling 56 per cent compared to the previous year. *Sukuk* fund structures provided an alternative to traditional bank financing that showed no immediate signs of a return in the financial markets.

The global financial crisis in 2008 had a significant impact on stock market reactions. Therefore, it was hard to predict the *sukuk* markets. It was critical for *sukuk* holders and investors in other fixed-income financial products to have access to hedging solutions to counter challenges during the crisis. in line with the growth of financial products in the primary market, more attention must be given to the development of Shari'ah-compliant hedging solutions.

Theoretical Framework

Efficient Markets Theory

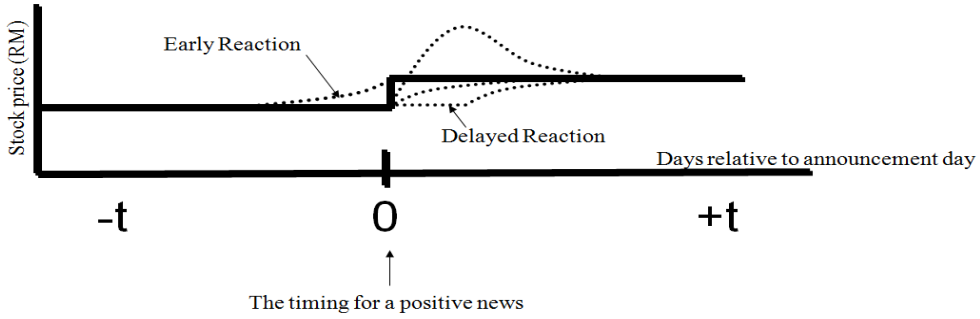
The efficient markets theory covers how the market price reflects the available information, whether the price adjusts quickly and accurately in response to news. According to Frederic (2001) in his book "*The Economics of Money, Banking, and Financial Markets*", efficient markets theory is the application of rational expectations to the pricing of securities in financial markets. Current security prices will fully reflect all available information because in an efficient market, all unexploited profit opportunities are eliminated. Efficient markets theory also views expectations of future prices as equal to optimal forecasts that use all currently available information. In other words, the market's expectations of future securities prices are rational, which implies that the expected return on the securities is equal to the optimal forecast of the return. In this theory, current prices in a financial market will be set such that the optimal forecast of a security's return when all available information is used is equal to the security's equilibrium return. Consequently, in an efficient market, a security's price fully reflects all available information.

Frederic (2001) says that the term 'random walk' describes the movements of a variable whose future changes are unpredictable because the variable is just as likely to fall as it is to rise. An important implication of efficient market theory is that stock prices should approximately follow a random walk, which means that future changes in the stock prices should for all practical purposes, be unpredictable. Market efficiency refers to how quickly and precisely security prices adjust to news. As the random walk theory states that news arrives at random, security price changes, therefore, cannot be forecasted.

Event Studies Theory

Event studies theory explains how the cumulative average abnormal returns (CAAR) are calculated and how a market responds to either positive or negative news. According to Ana (2002), event studies are an important tool in finance for the valuation of firms and for estimating the changes in firm value resulting from, for example, changes in its capital structure. In general, the value of a firm is difficult to measure. However, if there is an efficient market for the firm's stock, the impact of a decision can be measured by the change in the stock price around the time when the decision becomes public knowledge. Although such events can be studied in many ways, the empirical finance literature has taken a particular approach based on statistical tests of the significance of abnormal stock returns around the event dates. The reaction of a stock price to news, which will also change the security price, cannot be predicted, as shown in Figure 2.

Figure 2: Reaction of Stock Prices to News



Source: Frederic (2001)

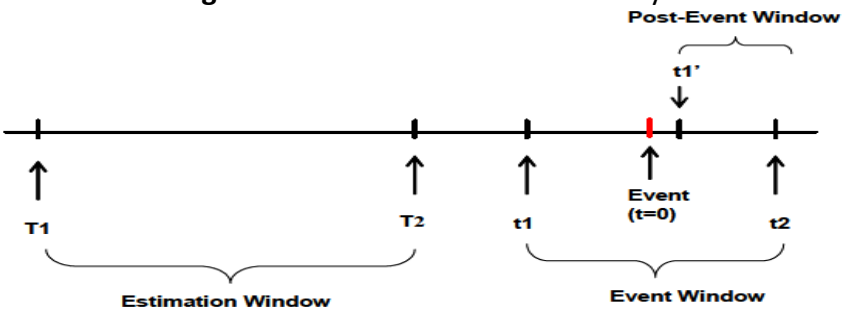
In an event study, it is crucial to test for any evidence of (1) under reaction, (2) overreaction, (3) early reaction, or (4) delayed reaction around the event. If the market is "semi-strong-form efficient", the effects of an event will be reflected immediately in the security prices. Thus, a measure of the event's economic impact can be constructed using the security prices that are observed over a relatively short time period (Frederic, 2001).

Fridson (1994), in his book "*Advances in Behavioral Finance",* mentions that three versions of the Efficient Markets Hypothesis (EMH) can be distinguished depending on the level of available information: (1) weak form EMH, (2) semi-strong form EMH and (3) strong form EMH. The weak form EMH states that current asset prices already reflect past prices and volume information. The information contained in the past sequence of prices of a security is fully reflected in the current market price of that security. It is named weak form EMH because the security prices are the most publicly and easily accessible information. In comparison, the semi strong form EMH states that all publicly available information is already incorporated in the asset prices. All publicly available information is fully reflected in a security's current

market price. The public information includes not only past prices but also the various data reported in a company's financial statements, company's announcement, economic factors and others. This indicates that the company's financial statements cannot help in forecasting future price movements and in securing high investment returns. Finally, the strong form EMH stipulates that private information or insider information is quickly incorporated in the market prices. Therefore the information cannot be used to generate abnormal trading profits. Thus, all public or private information are fully reflected in a security's current market price. This implies that even the company's management or the insider is neither able to profit nor make gains from the inside information that they have.

According to Frank de Jong (2007), the main differences among the models are the chosen benchmark return model and the estimation interval. An abnormal return (AR) is defined as the return (R) minus a normal return (NR). The determination of the normal return requires the estimation of some parameters. This estimation is typically performed over an estimation period, $[T_1; T_2]$, which precedes the event period, $[t_1; t_2]$. The event is typically defined to occur at t = 0. The time index t counts "event time" which is the number of periods (days, months) that have passed from the event does not represent the usual calendar time. Figure 3 shows the time-line of an event study.

Figure 3: Time-Line of an Event Study



Source: Frank de Jong 2007

Frank de Jong (2007) says that in analysing abnormal returns, it is conventional to label the event date as time t = 0. Hence, $AR_{i;0}AR_{i;0}$ denotes the abnormal return on the event date and $AR_{i;t}AR_{i;t}$ denotes the abnormal return t periods after the event. If there is more than one event relating to one firm or stock price series, they are treated as if they affect separate firms. They consider an event period, running from t_1t_1 to $t_2.t_2$. In order to study stock price changes around events, each firm's return data can be analysed separately. However, this is not very informative because many stock price movements are caused by information that is unrelated to the event being studied. The effect of this unrelated information could be reduced by averaging the information over several firms, thus improving the accuracy of the study. The average abnormal returns from zero indicate abnormal performance because they are all centred around one event. The average of abnormal returns should reflect the effect of that event. The usual way to study performance over longer intervals is by means of cumulative abnormal returns, where the abnormal returns are aggregated from the start of the event period, t_1t_1, up to time t_2t_2. In event studies, the cumulative abnormal return (CAR) is aggregated over the cross-section of event studies to obtain the cumulative average

abnormal returns (CAAR). The CAAR estimates can be obtained by aggregating the's over time.

Methodology

This research employs the event study methodology to analyse the reaction of stock markets to the announcement of a *sukuk* issuance using the Cumulative Average Abnormal Return (CAAR).

Data Collection

Sukuk issuance data in Malaysia were obtained from the Bloomberg database, the Securities Commission of Malaysia, Bursa Malaysia, and Zawya Sukuk. The period of the study ran between 2004 and 2011, with three-year estimation windows, because a longer estimation period produces more accurate and robust beta value estimated. The data for stock markets are collected from the historical prices available on the DataStream database, excluding Saturdays and Sundays, giving a total of about 265 days a year.

This research proceeded with the investigation on the stock market reactions to the issuance of *sukuk* in Malaysia in the FTSE Bursa Malaysia Kuala Lumpur Composite Index (FTSEKLCI), the FTSE Bursa Malaysia Emas Shari'ah Index (FTSE EMAS), the FTSE Bursa Malaysia Hijrah Shari'ah Index (FTSE HIJRAH) and the Dow Jones Islamic Market Index (DJIM). The reactions of different stock markets were compared using the domestic index, the global index, and the Islamic index. For the domestic index, this study used the FTSEKLCI, that covered the period from 2004 to 2011. This study opted the DJIM index for the global Islamic index, and adopted both the FTSE EMAS and the FTSE HIJRAH indices for the local Shari'ah index.

The KLCI is now known as the FTSE Bursa Malaysia KLCI after enhancements were implemented on Monday, 6 July 2009. It was enhanced to ensure that KLCI remains robust in measuring the national economy with growing linkages to the global economy, as well as to provide global relevance, recognition and reach. The FTSE Bursa Malaysia Index was launched on 26 June 2006 followed by the FTSE HIJRAH and the FTSE EMAS on 22 January 2007 and 21 May 2007 respectively. The launch of the FTSE HIJRAH and the FTSE EMAS were in response to the increasing interest in Shari'ah-compliant investments. The FTSE EMAS comprises constituents of the FTSE Bursa Malaysia EMAS index that are Shari'ah-compliant according to the Securities Commission's SAC screening methodology and the FTSE's screens of free float, liquidity and inevitability. The FTSE HIJRAH is a tradable index which comprises the 30 largest companies in the FBM EMAS Index (Bursa Malaysia, 2012).

The following are the introductions to these four indices:

i. FTSE Kuala Lumpur Composite Index (FTSE KLCI)

Kuala Lumpur Composite Index (KLCI), according to FTSE Group (2012), is a capitalisation-weighted stock market index. This index, which includes basic material, health care, technology, consumer goods, consumer service, financial, oil and gas, telecommunications and utility industries, was first introduced in 1986 and is now known as the FTSE Bursa Malaysia KLCI. The FTSE KLCI consists of 100 companies that cover around 81 per cent of the full market capitalisation of the FTSE Bursa Malaysia EMAS Index as of 30th April 2009. In accordance to the KLCI enhancement, FTSE KLCI is integrated with the internationally recognised index calculation formula, which increases transparency and makes the index more tradable.

ii. FTSE Bursa Malaysia Emas Shari'ah Index

FTSE Group (2012) states that the FTSE Bursa Malaysia Emas Shari'ah Index has been designed to provide investors with a broad benchmark for Shari'ah-compliant investments. This index includes general industries, mobile telecommunications, electricity, food producer, chemical, fixed line telecommunication, and oil and gas industries. Constituents are screened according to the Malaysian Securities Commission's Shari'ah Advisory Council (SAC) screening methodology. The index is designed for the creation of Shari'ah-compliant investment products and as a benchmark. The Shari'ah-compliant companies must not be involved in any financial services based on *riba* or interest, gambling, manufacture or sale of non-halal products or related products, conventional insurance, entertainment activities that are not permissible according to Shari'ah, manufacture or sale of tobacco-based products or related products, stock broking or share trading in Shari'ah non-compliant securities and other prohibited activities according to Shari'ah.

iii. FTSE Bursa Malaysia Hijrah Shari'ah Index

FTSE Group (2012) states that the FTSE Bursa Malaysia Hijrah Shari'ah Index has been designed to be used as a basis of Shari'ah-compliant investment products that meet the screening requirements of international Islamic investors. This index includes general industries, mobile telecommunications, electricity, food producers, fixed line telecommunications, oil and gas producers, automobiles and parts, construction and materials, health care, travel and leisure, utilities, and real estate industries. Companies on the index are screened by the Malaysian Securities Commission's Shari'ah Advisory Council (SAC) and a leading global Shari'ah consultancy, Yasaar Ltd, against a clear set of guiding principles. Constituents in the index are not permitted to be involved in any of the following core activities: banking or any other interest-related activities such as lender and brokerages (excluding Islamic financial institutions), alcohol, tobacco, gaming, arms manufacturing, life insurance, pork and non-halal production, packaging and processing, or any other activities related to pork and non-halal food.

iv. Dow Jones Islamic Market Index (DJIM)

The DJIM was established on 31 December 1995 and serves as an Islamic equity benchmark index. It is a subset of the Dow Jones Global indices (DJGI) family, which includes stocks from 34 countries and covers 10 economic sectors, 18 market sectors, 51 industry groups and 89 subgroups defined by the Dow Jones Global Classification Standard. The DJIM excludes any stock that belongs to a company with a primary business that is impermissible according to Shari'ah law. The purpose of the DJIM is to provide a definitive standard for measuring stock market performance for Islamic investors on a global basis, in accordance with Dow Jones Index's established index methodology and the Islamic investment guidelines established by the index's Shari'ah Supervisory Board. During the component selection process, each company in the index universe is examined based on its revenue allocation. If the company has business activities in any one of the following industry groups or subgroups defined by the Dow Jones Global Classification Standard, it is considered inappropriate for Islamic investment purposes and is excluded from the index.

Method: CAAR

Measuring Return (R_{mt})

In this model, R_{mt} is the return on the market portfolio, and the model's linear specification follows from the assumed joint normality of returns. This study defines a return as the difference between the stock market daily price at closing on that day and the stock market daily price at closing on the previous day, divided by the stock market daily price at closing on the previous day. The formula for measuring the return is as follows:

$$R_{mt} = \left[(P_{(t)} - P_{(t-1)}) / P_{(t-1)}\right] \quad (1)$$

where $P_{(t)}$ is the stock market daily price at closing. $P_{(t-1)}$ is the stock market daily price at closing on the previous day.

This research examined three-day [−1,+1], five-day [−2,+2], seven-day [-3,+3] fifteen-day [-7,+7], thirty one-day [-15,+15] and sixty one-day [-30,+30] event windows for symmetric event windows. This study also investigates five-day [-1,+3] and [-3,+1], seven-day [-2,+4] and [-4,+2], nine-day [-3,+5] and [-5,+3], eleven-day [-3,+7] and [-7,+3], fifteen-day [-4,+10] and [-10,+4], thirty one-day [-10,+20] and [-20,+10]; and sixty one-day [-20,+40] and [-40,+20] for asymmetric event windows. The average abnormal daily return was calculated and the cumulative average abnormal return (CAAR) is found by summing daily excess returns over the respective event windows. Sixty-one days, 30 days before the announcement day and 30 days after the announcement day, are chosen to facilitate the event window analysis in the emerging market. This time period is chosen because any period shorter than 61 days is insufficient to test the effect of the event, as the volatility of the stock is low. However, in a period of more than 61 days, the effect of the event could not be seen, as there may be other factors that may trigger the effect (Ashhari, et al., 2009).

Daily Return of Stock Market

The daily return of any stock was calculated using the following formula:

$$R_{it} = \ln\ (P_{it}/P_{i(t-1)}\ ) \quad (2)$$

where R_{it} is the return on security *i* for day *t.* P_{it} is the price of share *i* for day *t* and $P_{i(t-1)}$ is the price of share *i* on the day before day *t.*

Market Model Expected Stock Return

This research also filtered the sample size to reduce the selected companies to those that had at least 100 days of stock return observation. The following formula was used to calculate the market model's expected stock return:

$$E(R_{it}) = \alpha_i + \beta_i\ (R_{mt}) + \epsilon_{it} \quad (3)$$

where α_i is a market model parameter, β_i is a market model parameter, R_{mt} is the return on market index for day *t*, $E(R_{it})$ is the market model's expected stock return and ϵ_{it} is the error time.

The parameters for the estimation period were estimated using the ordinary least squares (OLS) method. This study used standard OLS regressions to estimate the market model which represents a potential improvement over the traditional constant-mean-return model because by removing the portion of the return that is related to variation in the market's return, the variance of the AR is reduced. This can increase the ability to detect event effects. To test for the existence of abnormal returns, a benchmark for normal returns is required. Therefore, a parameter estimation period as suggested by Brown and Warner (1985) was used to calculate a stock's β value.

The β value is the slope coefficient obtained by regressing the index's returns to the stock's returns, and is also a measure of the stock's volatility compared to the market. The value of β needs to be adjusted to avoid biasness. The information on the true value of β for a security is important to forecast the future β, which enables market risk for a future time period to be estimated.

Abnormal Return ($\mathbf{AR_{it}}$)

To calculate the difference between the actual returns and the expected returns predicted by the market model, the abnormal return ($\mathrm{AR_{it}}$) was obtained from the following formula:

$$\mathrm{AR_{it}} = \mathrm{R_{it}} - \mathrm{E(R_{it})} \quad \text{or}$$
$$\mathrm{AR_{it}} = \mathrm{R_{it}} - [(\alpha_i + \beta_i \mathrm{R_{mt}}) + \in_{it}] \qquad (4)$$

$\mathrm{R_{it}}$ is the return on share *i* in period *t,* $\mathrm{R_{mt}}$ is the return on market index during period t, $\mathrm{E(R_{it})}$ is the market model's expected stock return, $\mathrm{AR_{it}}$ is abnormal return and $\in_{it}$ is the error time.

Average Abnormal Return ($\mathbf{AAR_t}$)

The average abnormal return ($\mathrm{AAR_t}$) is calculated after computing the abnormal returns for all stocks in the sample. In this study, it was calculated by taking the cross-sectional mean of the daily abnormal return:

$$\mathrm{AAR_t} = \frac{1}{\mathrm{N}} \sum_{\mathrm{i=t}}^{\mathrm{N}} \mathrm{AR_{it}} \qquad (5)$$

$\mathrm{AAR_t}$ is the average abnormal return for day *t* , $\mathrm{AR_{it}}$ is the abnormal return of share *i* for day *t* and N is the number of securities in the sample.

Cumulative Average Abnormal Return ($\mathbf{CAAR_t}$)

After the ($\mathrm{AAR_t}$) is known, the cumulative average abnormal return ($\mathrm{CAAR_t}$) is calculated. This research obtained the cumulative average abnormal return (CAAR) by summing the daily excess returns over the respective event windows. CAAR was calculated using the following formula:

$$\mathrm{CAAR_t} = \sum_{\mathrm{t-k}}^{\mathrm{t}} \mathrm{AAR_t} \qquad (6)$$

Where k is the number of event days before day *t* , $\mathrm{CAAR_t}$ is the cumulative average abnormal return and $\mathrm{AAR_t}$ is the average abnormal return. CAAR needs to be tested for their statistical significance by using t-test. CAAR is important to define whether the Malaysian stock market and the global Islamic index reacted positively or negatively when *sukuk* was issued after the 2008 financial crisis.

Results and Discussion

The results of stock market reactions to *sukuk* issuance in Malaysia for the period under this study on the 50 selected companies are presented in Table 3. The reactions are categorised based on symmetric (six events) and asymmetric (13 events) event windows. The event windows range from 3 to 60 days in length to capture both the immediate and the long term responses, respectively. The analysis for each index is further divided into three distinct

periods, each representing pre-crisis events (2004 – 2006), the crisis period (2007 -2008) and the post-crisis period (2009 – 2011). Table 4 summarises the findings of Table 3 based on the average values of significant findings to compare the reactions of the different indices.

Table 3: Stock Market Reactions on Different Indexes Following Sukuk Issuance

MALAYSIAN SUKUK ISSUANCE BY LISTED COMPANIES (2004 – Post 2008 Crisis)														
No	Event Window	Types of Events	CUMULATIVE AVERAGE ABNORMAL RETURN (CAAR)											
			FTSE KLCI INDEX			EMAS SHARI'AH INDEX			HIJRAH SHARI'AH INDEX			DOW JONES ISLAMIC INDEX		
			2004-2006	2007-2008	Post Crisis	2004-2006	2007-2008	Post Crisis	2004-2006	2007-2008	Post Crisis	2004-2006	2007-2008	Post Crisis
1	[-1,+1]	Symmetric event windows	0.0018	-0.0077**	-0.0056**	FTSE Bursa Malaysia Emas Shari'ah Index was launched on 21 May 2007	-0.0100***	-0.0058**	FTSE Bursa Malaysia Hijrah Shari'ah Index was launched on 22 January 2007	-0.0096***	-0.0061**	0.0067**	-0.0110***	-0.0057**
			(.796)	(-2.507)	(-2.145)		(-3.237)	-2.202		-3.119	-2.267	2.426	-3.566	-2.145
2	[-2,+2]		-0.0006	-0.0121**	-0.0077		-0.0138**	-0.0079		-0.0142**	-0.0069	0.0079	-0.0178***	-0.0079
			(-.157)	(-2.090)	(-1.594)		-2.424	-1.566		-2.210	-1.396	1.561	-2.835	-1.594
3	[-3,+3]		0.0089*	-0.0167**	-0.0044		-0.0203***	-0.0048		-0.0241**	-0.0036	0.0201***	-0.0228***	-0.0045
			(1.820)	(-2.226)	(-.738)		-2.726	-.764		-2.617	-.589	3.189	-2.692	-.738
4	[-7,+7]		-0.0085	-0.0140	-0.0073		-0.0208*	-0.0074		-0.0318**	-0.0063	-0.0034	-0.0132	-0.0075
			(-.823)	(-1.129)	(-.847)		-1.671	-.819		-2.562	-.722	-.289	-1.114	-.847
5	[-15,+15]		-0.0049	0.1427***	-0.0254**		0.1341***	-0.0279**		0.1163***	-0.0274**	0.0058	0.1359***	-0.0259**
			(-.261)	(4.388)	(-2.157)		4.078	-2.315		3.445	-2.317	.277	4.398	-2.157
6	[-30,+30]		-0.0056	0.1049***	-0.0586**		0.0978**	-0.0615***		0.0790**	-0.0621***	0.0097	0.0843**	-0.0597**
			(-.161)	(2.753)	(-2.608)		2.480	-2.681		2.000	-2.711	.269	2.323	-2.608
7	[-1,+3]	Asymmetric event windows	0.0110**	-0.0068	-0.0064		-0.0107*	-0.0070		-0.0147**	-0.0069	0.0209***	-0.0085	-0.0065
			(2.619)	(-1.145)	(-1.232)		-1.837	-1.276		-2.077	-1.280	4.160	-1.334	-1.232
8	[-3,+1]		-0.0003	-0.0177***	-0.0036		-0.0196***	-0.0036		-0.0190***	-0.0028	-0.0127***	-0.0162**	-0.0037
			(-.087)	(-4.234)	(-1.013)		-4.601	-1.010		-3.887	-.769	-2.999	-2.639	-1.013
9	[-2,+4]		-0.0029	-0.0158**	-0.0071		-0.0200***	-0.0075		-0.0255***	-0.0068	0.0013	-0.0187**	-0.0072
			(-.470)	(-2.390)	(-1.296)		-3.080	-1.312		-3.401	-1.200	.188	-2.591	-1.296
10	[-4,+2]		-0.0019	-0.0142**	-0.0076		-0.0172***	-0.0074		-0.0180**	-0.0066	0.0159**	-0.0228***	-0.0077
			(-.473)	(-2.236)	(-1.365)		-2.759	-1.279		-2.572	-1.160	2.614	-3.394	-1.365
11	[-3,+5]		-0.0007	-0.0184**	-0.0077		-0.0239***	-0.0079		-0.0284***	-0.0062	0.0098	-0.0267***	-0.0078
			(-.085)	(-2.539)	(-1.224)		-3.292	-1.218		-3.442	-.977	1.142	-3.509	-1.224
12	[-5,+3]		0.0055	-0.0360**	-0.0048		-0.0406***	-0.0050		-0.0461***	-0.0044	0.0165**	-0.0374**	-0.0049
			(.865)	(-2.612)	(-.764)		-2.942	-.756		-3.061	-.673	2.035	-2.551	-.764
13	[-3,+7]		-0.0028	-0.0108	-0.0069		-0.0168**	-0.0070		-0.0231***	-0.0056	0.0042	-0.0154**	-0.0071
			(-.356)	(-1.403)	(-.911)		-2.202	-.896		-2.873	-.728	.507	-2.032	-.911
14	[-7,+3]		0.0032	-0.0199	-0.0048		-0.0242*	-0.0052		-0.0328**	-0.0044	0.0126	-0.0207	-0.0049
			(.412)	(-1.581)	(-.697)		-1.915	-.705		-2.441	-.613	1.307	-1.594	-.697
15	[-4,+10]		-0.0090	-0.0214*	-0.0156*		-0.0282**	-0.0161*		-0.0361***	-0.0151	-0.0027	-0.0250**	-0.0159*
			(-.770)	(-1.774)	(-1.679)		-2.366	-1.664		-2.879	-1.600	-.218	-2.308	-1.679
16	[-10,+4]		-0.0118	-0.0033	-0.0080		-0.0093	-0.0087		-0.0187	-0.0073	-0.0070	-0.0153	-0.0081
			(-1.192)	(-.281)	(-1.121)		-.779	-1.134		-1.585	-1.007	-.587	-1.341	-1.121
17	[-10,+20]		0.0184	0.0402**	-0.0358***		0.0289	-0.0399***		0.0136	-0.0386***	0.0349	0.0364**	-0.0365***
			(.894)	(2.181)	(-2.823)		1.574	-3.032		.752	-3.020	1.559	1.987	-2.823
18	[-20,+10]		-0.0499**	0.1038***	-0.0216**		0.0985***	-0.0219*		0.0801**	-0.0211*	-0.0499*	0.0998***	-0.0220**
			(-2.037)	(3.270)	(-1.979)		3.051	-1.922		2.441	-1.905	-1.984	3.332	-1.979
19	[-20,+40]		-0.0641	0.0903***	-0.0245		0.0836**	-0.0290		0.1219***	-0.0267	-0.0486	0.0767**	-0.0250
			(-1.640)	(2.777)	(-1.079)		2.538	-1.242		3.011	-1.149	-1.249	2.468	-1.079
20	[-40,+20]		0.0022	0.1737***	-0.0741***		0.1597***	-0.0770***		0.1361***	-0.0771***	0.0088	0.1588***	-0.0756***
			(.069)	(4.165)	(-4.576)		3.740	-4.645		3.189	-4.698	.271	3.978	-4.576

Note: t-statistics are in parentheses, *Significant at 10%, **Significant at 5%, ***Significant at 1%

Source: Author's calculation

Table 4: Summary of Cumulative Average Abnormal Return on Stock Market Reactions

Indicators	Malaysian Sukuk Issuance by Listed Companies											
	Cumulative Average Abnormal Return (CAAR)											
	FTSE KLCI			EMAS SHARI'AH			HIJRAH SHARI'AH			DOW JONES ISLAMIC		
	2004-2006	2007-2008	Post Crisis	2004-2006	2007-2008	Post Crisis	2004-2006	2007-2008	Post Crisis	2004-2006	2007-2008	Post Crisis
Average Overall	-0.1119	0.4407	-0.3375		0.3272	-0.3585		0.2050	-0.3420	0.0508	0.3207	-0.3441
Average Significant	-0.0100	0.0330	-0.0337		0.0171	-0.0357		0.0117	-0.0387	0.0025	0.0236	-0.0345
Average Symmetric	-0.0015	0.0329	-0.0182		0.0278	-0.0192		0.0193	-0.0188	0.0078	0.0259	-0.0185
Average Asymmetric	-0.0074	0.0174	-0.0163		0.0114	-0.0174		0.0064	-0.0164	0.0003	0.0118	-0.0166
Minimum	-0.0641	-0.0360	-0.0741	-	-0.0406	-0.0770	-	-0.0461	-0.0771	-0.0499	-0.0374	-0.0756
Maximum	0.0184	0.1737	-0.0036		0.1597	-0.0036		0.1361	-0.0028	0.0349	0.1588	-0.0037
No of Significant (+ve)	2	6	0		5	0		5	0	5	6	0
No of Significant (-ve)	1	9	7		13	7		13	6	2	10	7

Note: The average values are calculated based on the significant findings from Table 4. n = 50 companies.
Source: Author's calculation

Table 3 shows 20 event windows separated by symmetric and asymmetric events. The minimum event was 3 days [-1,+1] and the maximum event was 61 days: [-30,+30], [-20,+40] and [-40,+20]. The announcement day (day 0) is defined as the day the *sukuk* offering was first made known to the public. This is supported by Ashhari et al (2009), that mentioned the effects of the events may not be visible for periods of more than 61 days, as other factors may trigger the effects.

In this study, there were six symmetric 3, 5, 7, 15, 31 and 61-day events. A symmetric event is when there is the same number of days before and after the announcement of *sukuk* issuance. There were 14 asymmetric events from 5 days to a maximum of 61 days. The events were separated in order to study market efficiency in Malaysia. In an efficient market, the closing price of the stock market fully reflects all available information. The stock prices should approximately follow a random walk as future changes in stock prices should be unpredictable.

Table 3 shows that there are similar patterns in the results following the information of *sukuk* issuances across the four indices. The FTSE KLCI and DJIM indices show they were sharing the same asymmetric event [-10,+20], with a maximum value of CAAR 10 days before and 20 days after the *sukuk* announcement. The maximum value of CAAR before the crisis on FTSE KLCI was 0.0184, which was lower than the maximum value of DJIM at 0.0349, with both showing positive but insignificant results. The positive response to these two indices before the crisis showed the *sukuk* investors' confidence about investing in *sukuk* in both local and global markets. Table 4 shows two positive and significant FTSE KLCI results and five positive and significant DJIM results before the crisis. Both indices had a larger number of positive significant results compared to negative significant results before the crisis. Thus, the stock markets reacted positively before the 2008 financial crisis based on the CAAR estimated, is accepted.

During the crisis, the four indices shared the same event for the maximum value of CAAR. All indices showed positive and significant results of 1% on the asymmetric event [-40,+20]. The FTSE KLCI had the highest value among these indices which was at 0.1737. The FBM HIJRAH yielded the lowest result of 0.1361. These results show that in all four indices, an asymmetric event with more days before the announcement is the most significant. The results also indicate that short events show negative results in both symmetric and asymmetric events. However, long term events, both symmetric and asymmetric events, produce positive and significant results. This means the markets react negatively following negative information, such as during the 2008 global financial crisis.

According to Table 3, all four indices show the same pattern with negative results in short events and positive results in long events during the crisis. Overreaction or delayed reactions occur in longer events which show an inefficient market or weak-form efficiency that do not react to all public information. These overreactions, which presumes that investors overreact to positive and negative shocks and correct their behavior, may suggest that the market took longer to process the crisis information. This is because the previous empirical evidence shows that significant negative returns are associated with negative news. These results support Cahyadin and Milandari (2009) who found that the Dow Jones Islamic Market Index and FBM Emas Shari'ah Index had weak-form efficiency.

All four indices also share the same event as the minimum value of CAAR which was the asymmetric event [-5,+3]. Among the four indices, FBM HIJRAH scored the lowest at -0.0461 with 1% significance and the highest was FTSE KLCI with 5% significance. The asymmetric event [-5,+3] had the worst result of all four indices. These negative and significant results were due to negative information during the crisis. Accordingly, Table 4 also shows that all four indices respond more to negative than positive significant results during the crisis. The FBM EMAS and FBM HIJRAH show the highest number of negative and significant results compared to the other two indices, with 13 such results. Thus, the stock markets reacted negatively and significantly during the 2008 financial crisis based on the CAAR estimated.

The period after the crisis showed that all event windows, both symmetric and asymmetric events, reacted to negative results on all four indices. All events showed no positive results after the crisis. After the crisis, markets showed negative results following negative information. All indices indicated negative and significant results, with no positive and significant results. All indices also shared the same event as the maximum results of CAAR, which was on the asymmetric event [-3,+1]. This showed that short events yielded the maximum results after the crisis. Moreover, after the crisis, the same event had a minimum value of CAAR on all the four indices on the asymmetric event [-40,+20]. All indices were negative with significant results of 1% on this event. The lowest value of CAAR after the crisis was on FBM HIJRAH, which was -0.0771 with 1% significance. This meant the markets took a longer time to process negative news. After the crisis, *sukuk* investors' confidence was lower than before the crisis happened. These results are acceptable for hypothesis that stock markets responded negatively and significantly following sukuk issuance after the 2008 financial crisis based on the CAAR estimated.

A summary of eight indicators is shown in Table 5. During the crisis, all four indices showed positive results in all indicators except the minimum indicator. Nevertheless, after the crisis, all four indices showed negative results in all indicators, hence sharing the same pattern. However, before the crisis the FTSE KLCI had showed negative results except on the maximum indicator and the DJIM had showed positive results except on the minimum indicator. None of all these four indices showed positive and significant results after the crisis. The results show that asymmetric events reacted better than symmetric events considering all the maximum values of CAAR came from the asymmetric events in all three periods, before, during and after the crisis.

Conclusion

This research has discovered that stock markets reacted positively before the 2008 financial crisis based on CAAR estimates. They then, based on CAAR estimates, reacted negatively and significantly during and after the global financial crisis. All indices showed the same pattern of results and thus the thesis hypothesis was accepted. The researcher found that the FTSE KLCI was the best index compared to the other indices. Although the FTSE KLCI combined Islamic and conventional listed companies, this study focused on 50 listed companies that had issued *sukuk* in Malaysia. As the new Islamic benchmark in Malaysia, the FBM EMAS and the FBM HIJRAH did not cover the early period of study before the crisis happened, hence was not entitled to be the best index. Meanwhile, the DJIM index as the global Islamic index was used to show the effect of the financial crisis on the global market. By doing so, the researcher suggests referring to the reactions of FTSE KLCI as the indicator index following *sukuk*

issuances in Malaysia. Considering that the FTSE KLCI covered all periods of study, it could be used as the main index in Malaysia to investigate market reaction on *sukuk* issuances.

All indices in this study showed weak-form efficiency. Weak-form efficiency occurs when stock prices reflect all the information found in past stock prices. Stock prices reacted so fast to past information that no investor could earn an above-average risk-adjusted return by acting on this level of information. Thus, the security market was inefficient and that resulted in stock prices to not accurately reflect new information. The researcher finds that this might have resulted from: 1) investors were unable to interpret the new information correctly; 2) investors had no access to new information; 3) the transaction cost in trading security was an obstruction to free trading; 4) investors were affected by short-sale restrictions; and finally, 5) investors might have been misled by the change in accounting principles.

The results showed that during the 2008 crisis, the market reacted negatively as it was impacted by negative information. There were overreactions in the market which took a longer time to absorb negative news because of the lack of information among *sukuk* investors and issuers. Nevertheless, the results showed positive reactions after the crisis, indicating that the overreactions during the crisis had recovered slowly. In conclusion, this analysis provides valuable information and guidelines to issuers, policy makers, regulatory bodies, and investors, both Muslim and non-Muslim, and it has potential to draw them to Islamic bonds.

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