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Financial Performance of Shariah-Compliant Investment: Evidence from Malaysian Stock Market

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Abstract

The present study examines the impact of the introduction of Shariah-compliant Index (SI) by Bursa Malaysia on the performance and liquidity of included shares. We use an event study methodology to estimate mean cumulative abnormal returns (MCARs) in the days surrounding the event. We, also, investigate changes in the volume of trade and bid-ask spread in windows surrounding the event day, as a proxy for changes in liquidity. Our findings show that, overall, introduction of SI had a positive impact on the financial performance of included shares. This is due to an estimated 21.73% MCAR, and 110.22% change in the volume of transaction during Day 16 to Day 135 after the event period. We, also, found 19.63 percentage changes in percentage bid-ask spread during the same period (Day 16 to Day 135). However, increase in the bid-ask spread is interpreted as a sign of increase in the cost of information asymmetry between market makers and informed traders, rather than an indication of decrease in market liquidity.

Keywords: Shariah-compliant investment, abnormal returns, event study, liquidity effects, asymmetric information.

I. Introduction

In April 17, 1999, the Kuala Lumpur Stock Exchange, now Bursa Malaysia [1], launched a new index named Sayariah (Shariah[2]) Index (SI) in order to facilitate participation in equity investments that are compatible with the Islamic principles of Shariah. Shariah-based equities are essentially shares of companies meeting Islamic jurisprudence criteria. The Bursa Malaysia SI is a weighted-average index and its component was initially made up of 276 Main Board companies designated as Shariah approved securities by the Shariah Advisory Council (SAC) of the Securities Commission of Malaysia. Investors seeking to make investments based on Shariah principles use SI as a benchmark towards making better informed decisions[3].

The global growth of Islamic capital market products and services has been tremendous in recent years. Today, a variety of products, infrastructures, institutions, and intermediaries, contribute to the development and greater depth of this market. The latent Islamic fund in global financial

[1] Bursa Malaysia is the premier secondary stock market in Malaysia. It is classified as one of the 16 emerging stock markets in the Asia Pacific region, with a market capitalization that exceeds $US260 billion.

[2] Islamic jurisprudence

[3] The index is periodically updated in line with SAC's guidelines in order to reflect the latest developments and changes in Shariah approved companies. The update usually takes place two times per year in April and in October.

institutions is said to be at $1.3 trillion, while the size of the Islamic financial market is estimated to be around US$230 billion, growing at a rate of 12% to 15% per year. The number of Shariah-compliant investment funds was estimated[4] at 126 in 2006, with US$16bn under their management. Compared to nine funds with a collective value of US$800 million in 1994, Islamic investment funds have grown at an average annual rate in excess of 28% during this period[5]. Within Islamic investment funds, the equity funds market is one of the fastest-growing sectors. Currently there are approximately 100 Islamic equity funds worldwide. The total assets managed through these funds exceed US$5 billion, growing by 12-15% per annum[6].

The first move in facilitating the development and innovation of Islamic financial products in Malaysia was to establish the Shariah Advisory Council (SAC) at the Security Commission (SC) soon after SC's own establishment in 1993. This initiative was the most important catalyst for the development of SI and other Islamic capital market products and services that followed[7]. Since then, Malaysia has established itself as a key player in the global Islamic sphere, where the Islamic capital market is specifically recognised as a hallmark of international financial success. According to Bursa Malaysia estimates, 36% of total listed Islamic equity funds are in this country. In the latest development, Bursa Malaysia, in co-operation with FTSE, introduced a new series of tradable equity indices called FTSE-Bursa Malaysia Emas Shariah Index and FTSE-Bursa Malaysia Hijrah Shariah Index[8]. This development helped to create more opportunities for investors seeking Shariah investments to benchmark their portfolios, and the asset managers to create new products serving the investment community[9].

The selection of Shariah-compliant companies takes place through a screening process based on two qualitative and quantitative parameters. The qualitative criteria, in evaluating the status of these companies, are to assure that they are not involved in the following activities:

Financial services based on riba (usury), gharar (conventional insurance), and maisir (gambling), production or trade of non-halal (prohibited) goods, such as alcohol and pork. For the companies comprising both halal and non-halal elements, SAC considers two additional criteria: First, the public perception of the company, which must be exemplary. Second, the core activity of the company must be considered to be in the public interest, with non-halal elements as a negligible part of their activity. (Watch paragraph breaks)

Quantitative parameters are mainly used to determine the level of mixed contribution from halal and non-halal elements towards revenue and profit of a company. According to these parameters, if the contribution from non-halal activities exceeds a benchmark, the company will not be classified as Shariah-compliant. For instance, the threshold for total debt to total asset ratio is 33%, for the account receivable to total asset ratio is 45%, and for non-operating interest income to revenue is equal to 5%[10]. For those companies whose revenue is tainted by an avoidable non-halal activity, a cleansing mechanism is also predicted to purify their profit. This mechanism requires that a percentage of such incomes to be paid to a charitable organisation, before the distribution of dividends to shareholders.

The present study investigates the impact of the introduction of Bursa Malaysia SI on the financial performance and liquidity of securities that are included in this index, as compared to the

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4 The World Islamic Funds and Capital Markets Conference, May 2006, Bahrain.

5 Islamic investment funds are mainly created for Muslems in alliance with international financial institutions in the United States, Europe and Asia. The performance of these funds are measured by several credible indices, including Dow Jones Islamic market index and the FTSE Global Islamic Index Series, in addition to SI..

6 www.failaka.com, July 2007.

7 This (This what? Add a summary noun here) followed by the establishment ofthe first Islamic unit trust (Arab-Malaysian Tabung Lttika) in 1993, the first full-fledged Islamic stock broking company (BIMB Securities Sdn Bhs) in 1994, and the introduction of Capital Market Master plan in 1996, etc.

8 The new indices launched in January 2007 and Kuala Lumpur Shariah Index (KLSI) was retired in 1 November 2007 (after being ran parallel with the new indices for several months).

9 Examples are exchange traded funds (ETFs) and structured products such as index-linked notes.

10 For certain business activities, such as banking, the role of financial ratios in distinguishing between Islamic and non-Islamic activities are more important than what?. For instance, Olson and Zoubi (2007) investigated the possibility of distinguishing between conventional and Islamic banks in the Gulf Cooperation Council (GCC) region on the basis of financial ratios alone. Their findings indicates that althoughthe two categories of banks have similar financial ratios, the best nonlinear classification technique (k-means nearest neighbors) is able to correctly distinguish Islamic fromconventional banks in out-of-sample tests at about an 87% success rate.

Bursa Malaysia Composite Index (BMCI). This study is important for several reasons. First, although Shariah-compliant investment is similar to Socially Responsible Investing (SRI), an area that has already attracted a great deal of research interest particularly the financial performance of these funds, certain differences are evident in the screening procedures that makes this study worthwhile. For instance, concerns about environmental issues are not as important in screening Shariah–compliant companies as for SRI funds. On the other hand, the subjectivity of Shariah-compliant companies to certain financial ratio tests is not relevant to conventional SRI companies[11]. Second, even within the context of conventional SRI, the empirical evidence on the financial performance of socially responsible investing are mixed and the current study is expected to shed more light on the dichotomy of these findings. Finally, academic research on the performance of Shariah-compliant investments is rare, and to the best of my knowledge, no similar study on the performance of SI has been conducted before.

There are several theoretical arguments that predict how the introduction of SI impacts the value and the liquidity of included shares. Conventional finance theories, based on the Efficient Market Hypothesis (EMH), suggest that securities are perfect substitutes for each other and their demand curve is horizontal. This implies that change in demand by investors in response to SI introduction should have no impact on the shares' financial performance. Given the implication of the horizontal demand curve assumption, many researchers have attempted to examine the empirical evidence on this basis. One of the earliest studies in this area was conducted by Scholes (1972). He tested two competing hypothesis. The substitution hypothesis (SH), which is consistent with the horizontal demand curve assumption, and the price pressure hypothesis (PPH), which is based on the assumption that demand curve for securities is downward sloping[12]. Scholes (1972) also provides the information hypothesis (IH) as a resolution of some of the differences between SH and PPH. Under IH security prices change but fully adjust to the expected value of information with no inducement in the form of subsequent abnormal profit for share purchasers.

Index additions and deletions are generally assumed to be information free events, since financial authorities are allowed to use public information when including and deleting stock in the indices. This implies that an information free event should not be able to influence share prices in an efficient market. However, SI introduction was a new phenomenon in the Malaysian market and can't be considered a totally information free event. The accreditation of stocks by SAC for the first time conveyed certain information about the longevity and future prospects of the firms that weren't publicly available to the market before. In addition, since cross demand elasticity between Shariah-complaint securities and shares of conventional firms are low, it is likely that the demand curve for these securities are downward sloping, implying that change in demand can affect share prices.

Information conveyed to the market because of SI introduction could affect both expected cash flows and the required rate of returns of the firms. For instance, cash flow of companies did change if inclusion of shares in SI conveyed some favourable information about the ability of firms to attract more capital from new investors. Islamic financial products could attract both Muslim savings, as well as conventional and other ethical based investors. The flow of additional capital, in return, enhanced companies' growth, pushing share prices upward.

The introduction of SI could also force the required rate of return on equities to change for several reasons. First, a rate change could occur if change in trading volume or bid-ask spread caused a change in liquidity of shares. Second, a rate change could occur if greater interest in the SI firms engendered greater information production results in lower information asymmetry, or attracted uninformed investors causing higher level of information asymmetry. The third cause of change in the required rate of return could be attributed to Merton's (1977) market segmentation hypothesis. Since SI is always a subset of the wider market index (KLCI), it limits the range of choice and associated risks

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[11] Socially responsiblefixed-income securities are foundin conventional financial markets, while, at least in theory, they are totally banned by Shariah.

[12] Generally speaking, PPH considers the price change to be a short runphenomenon, whereasreversing occurs in the long run. However, if the cross elasticity of demand between securities is low,price reversals are not expected to take place, with the new price reflecting a new equilibrium distribution of security holders. The later phenomenon is investigated under the Imperfect Substitution Hypothesis (ISH).

and rewards that the SI investors expect. As a result, fund managers that mimic SI may demand a premium for the nonsystematic risk that they bear. This can decrease the breadth of ownership in these funds, causing increase in the required rate of return. Finally, since constraints on Shariah-compliant companies in using debt would restrict their growth more on internally-generated equity funds, it has inflating effects on the firms' waited average cost of capital (WACC)[13].

To sum up, if the inclusion of stocks in SI conveys a favourable signal to the market, financial theory predicts that share prices would increase under a downward sloping demand curve assumption. Under the assumption that demand for securities are horizontal, inclusion of stocks in SI can have a multitude of positive or negative impacts on the expected future cash flow and the required rate of return from shares. Therefore, it is not possible to clearly predict how the financial performance and liquidity of shares included in SI change, as it largely depends on how the net effects of the influential factors are revealed through our empirical investigation.

II. Literature Review

There are two interrelated strands of literature that are relevant to our study. The first group comprises investigations of the financial performance of SRI funds. The main question raised by most of these investigations is whether SRI funds outperform regular conventional funds. The answer to this question has been controversial so far. For instance, a survey of literature on all SRIs during the period 1972-2000 by Margolis & Walsh (2001) suggests that "there is a positive association, and certainly little evidence of negative association, between a company's social performance and its financial performance." (ibd. P. 10). An "award winning" paper by Orlitzky et al. (2003), who performed a survey of all known 52 studies between 1972 and 1997 on the relationship between corporate social performance and corporate financial performance, also found a positive relationship between social responsibility and financial rewards across all of the industries and the study groups. These studies argue in favor of a direct relationship between SRI and the financial performance of companies based on the claims of enhanced productivity of the workforce, greater customer loyalty, fewer litigation cases, less environmental remediation costs, improved brand reputation, and better risk management.

On the other hand, Geczy et. al (2005), who examined the performance of SRI portfolios compare with portfolios from a broader fund universe, concluded that SRI portfolios, including socially responsible mutual funds, underperformed by as much as 3.6% per year. Another study by Girard, Stone and Rahman (2005), who investigated the performance of 117 US ethical mutual fund mangers during 1984-2003, found that these fund managers show poor selectivity and market timing ability compared to Lippers active benchmark indices. They also found that non systematic risk is significantly different from zero, because these funds bear a cost for their lack of diversification.

The second strand of literature comprises of papers that are specifically related to the performance of Islamic funds or indices. For instance, Hakim and Rashidian (2002) used a cointegration technique to compare the performance of the Dow Jones Islamic Market Index (DJIMI), with Wilshire 5000 Index using data for period 10/12/1999 - 9/4/2002. Their findings reveal that on a risk-return basis, there is no loss from the screening process used for DJIMI stocks, and Muslim investors are not worse off by investing in an Islamic index as a subset of a much larger market portfolio[14]. In another study, Ludwigh (2005) compared the performance of the Amana Islamic Income Fund with the performance of S&P 500, and a SRI fund tracked by Bloomberg during 2004-2005. Their findings suggest that the Amana fund value rose by 25%, compare to a 9% increase in the S&P 500, and -3.3% for the average SRI fund tracked by Bloomberg during the same period.During the period 1995-1999, however, the Amana fund averaged 17% annual return, compare to 28% return for S&P 500. In a more sophisticated study, Warrick and Yaksick (2004) compared the performance of

[13] According to the Miller Modigliani proposition I, in a world with taxes, there is an inverse relationship between this variable and the level of debt i n the capital structure of a company. With limited debt in the capital structure of companies, one would expect the WACC to increase.

[14] Wilshire 5000.

Dow Jones Islamic Market Titans 100[15], with the Dow Jones World Index for the 1996-2002 periods. Their findings show that the Islamic index underperformed, by -0.32% per year compared to +2.32% for the unscreened index. The authors conducted a holdings-based attribution for period 2001-2003 1Q using the Northfield Global Equity Risk factor model[16]. During this sub-period the Islamic Market Titans outperformed the Dow Jones World Index by 30 bps / month, despite negative returns impact (-17 bps/month) from model factors (size, dividend yield, oil prices, etc.). Stock-specific returns totally offset the negative factor impact. The authors then attempted to optimize the Islamic product to the Dow Jones World Index using the risk model in a standard mean-variance optimisation and back-tested it over the full 1996-2002 time period.This optimised portfolio beat the benchmark by 9 bps / month, again with strong stock-specific returns offsetting negative factor returns. The observed tracking error, however, was slightly below 4%, considered by the author to be too high or an enhanced index fund.

III. Methodology and Data

Data

Data for the current study consists of daily stock prices, bid-ask spread and volume of trade for 188 publicly traded companies in our sample, which were collected from DataStream. The rest of the data, such as the details of companies that were originally included in the index, have been collected from Bursa Malaysia. The number of companies that were initially included in SI was 276. However, due to a lack of data or infrequent trading, we have to omit 88 firms from our data set.

Measure of Abnormal Returns

Financial performance of shares included in SI was measured by estimating abnormal returns on this index. An event study methodology was adopted for the analysis, where the event is defined as the day the Bursa Malaysia SI was launched. The market model was the adopted approach for this analysis, with the Kuala Lumpur Composite Index as a proxy for market portfolio. The advantage of the market model is that it controls for the effect of market movements through the market portfolio, and also allows for an individual security's responsiveness, as measured by beta.

It is assumed that capital market in Malaysia is reasonably efficient to respond to the impact of new information (events), influencing future profits of the firms. MacKinlay (1997) provides an overview of the literature on event studies. For each event we estimated the market model over day's t = - 125 to t = - 16 and day t = +16 to t = +125, as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

where:

- R_{it} is the return on firm i at time t.
- R_{mt} is the corresponding return on the Bursa Malaysia Composite Index at time t.
- α_i is the intercept term.
- β_i is a parameter that measures the sensitivity of R_{it} to the market index.
- ε_{it} is a random variable that by construction has an expected value of zero, and is assumed to be uncorrelated with R_{mt}.

Beta was estimated by using the Scholes and Williams (1977) estimation as follows:

$$\hat{\beta}_j^* = \frac{\hat{\beta}_{j}^{-} + \hat{\beta}_j + \hat{\beta}_j^{+}}{1 + 2\hat{p}_m} \quad (2)$$

where:

[15] A global Islamic market index.

[16] See www.northinfo.com for a full discussion of this model

- $\hat{\beta}_{\bar{j}}$ is the OLS slope estimate from the simple linear regression of R_{jt} on R_{mt-1}.
- $\hat{\beta}_j^+$ is the OLS estimate from the regression of R_{it} on R_{mt+1}.
- $\hat{p}_m$ is the estimated first-order autocorrelation of R_m.

As in OLS, the intercept estimator forces the estimated regression line through the sample mean:

$$\hat{\alpha}_j^* = \overline{R_{jEst}} - \hat{\beta}_j^* \overline{R_{mEst}}. \tag{3}$$

where:

- $\overline{R_j}$ is the mean return of stock j over the estimation period,
- $\overline{R_{mEst}}$. is the mean market return over the estimation period.

Using the estimates from equation (1), the abnormal returns of each security over a test period run from T = - 15 days prior to the event date, to T = + 15 trading days after the event date. Abnormal returns for longer sub-periods around the event date shall also be reported[17].

Daily abnormal returns for security i on day T of the test period (T = -15 to T = + 15) is as follows:

$$AR_{it} = R_{it} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{mt}\right) \tag{4}$$

where the coefficients $\hat{\alpha}_i$ and $\hat{\beta}_i$ are ordinary least squares estimates of α_i and β_i.

In addition, the average abnormal return (or average prediction error) AAR_t was calculated.

The daily abnormal returns were averaged using the below formula:

$$AAR_T = \frac{\sum_{j=1}^{N} A_{jt}}{N} \tag{5}$$

where T is defined as the trading days before the event date (trade date), which is T = -15 trading days.

Over an interval of two or more trading days beginning with day T_1, and ending with T_2, the cumulative average abnormal return is as follows:

$$CAAR_{T_1,T_2} = \frac{1}{N}\sum_{j=1}^{N}\sum_{t=T_1}^{T_2} A_{jt} \tag{6}$$

For each day in the event period, the cross-sectional variance of the standardised abnormal return is then calculated as follows:

$$S_{SAR_T}^2 = \frac{1}{N-1}\sum_{i=1}^{N}\left(SAR_{it} - \frac{1}{N}\sum_{j=1}^{N} SAR_{jt}\right)^2 \tag{7}$$

The standardised cross-sectional test statistic is thus:

$$Z_T = \frac{TSAR_t}{N^{\frac{1}{2}}\left(S_{SAR_t}\right)} \tag{8}$$

The individual standardised cross-sectional test for market model abnormal returns is reported to perform well, even if there is an increase in the variance within the event period.Boehmer, Musumeci, and Poulsen (1991) report on this finding, and as such, it is a more appropriate test for our sample which consists of some small, thinly traded companies. In addition, the actual trade itself may result in an increase in the volume of trades, leading to an increase in return volatility.

[17] Estimation periods were adjusted for longer event periods.

Measure of Change in Liquidity

In this section, we discuss the methodology we used to investigate changes in the liquidity of shares included in SI. Finance theory suggests that liquidity is a priced factor in expected asset returns to compensate investors for the expected trading difficulty. According to Amihud and Mendelson (1986, 1988) increases in stock liquidity is positively related to a firm value, because assets in place are discounted at a lower cost of capital when stock liquidity improves (Becker-Blease and Paul, 2006).

Several proxies are commonly used in the literature to measure the liquidity of the stock market, including bid-ask spread and the volume of transaction. Bid-ask spread represents the difference between the prices quoted by a middle man or market-maker to the buyer and seller of a security. Drop in spread signals improvement in market liquidity. A problem with using bid-ask spread for this purpose is that if the dealer suspects informational trading, the bid-ask spread will widen without a change in liquidity, or even when liquidity increases. Market turnover and the number of market participants who are actively engaged in trading a security are also used for measuring the liquidity of the stock market.

The present study uses the bid-ask spread and the volume of trade to measure changes in market liquidity during the periods surrounding SI additions. We follow the methodology applied by Hegde and McDermott (2003), computing the percentage change in the Percentage Spread[18], and the percentage change in the Volume. The data collected to compute these variables are refined in several ways. We omit trades and quotes if they are flagged as out of time sequence or involve either an error or a correction. We omit quotes if either the bid or the ask price is equal to or less than zero; we omit trades if the price or volume is not greater than zero, and we omit trades and quotes made before-the-open and after-the-close.

We define the quoted Percentage Spread as the difference in the ask price and the bid price, for each firm, divided by the midpoint of the spread:

$$\text{Percentage Spread} = \frac{\text{Ask Price - Bid Price}}{\text{Midpoint}} \tag{9}$$

The midpoint of the spread is defined as the mean of the ask price and the bid price, for each firm:

$$\text{Midpoint} = \frac{(\text{Ask Price} + \text{Bid Price})}{2} \tag{10}$$

Volume was computed as the daily average of the transaction size.

IV. Empirical Results

In order to determine the financial performance of SI shares, we have analysed mean cumulative abnormal returns (MCARs) over differing event windows. Table 1 presents the overall MCARs for companies in the sample prior to, and after the event. Results indicate that market reaction to the launch of SI in the Short-Term is negative. This is reveled in estimated -0.48% MCARs during Day -15 to Day -1 and -3.39 during Day 0 to day 15. The result for pre-event period is significant at the 5% level, only according to the generalised sign test.

Over a longer period, however, the market shows positive reaction to the introduction of SI and MCARs becomes increasingly positive. Results in table 1 reveal that from Day 15 to Day 45 abnormal return accumulate by 6.44%, continuously rises to 13.95% during Day 16 to Day 60, and goes further up to 21.73% by the Day 135. All these figures are statistically significant at 0.1% level.

A negatively estimated MCARs in the short term is probably attributed to the sale of shares by certain investors who had negatively reacted to the SI introduction because of their concerns about future prospects of their investments. However, as they were substituted by a new breed of investors

[18] Hegde and McDermott (2003) also calculate a percentage effective spread in order to account for trades that occur inside the bid and ask quotes, however, we could not do that due to the lack of available data.

who were anxious to buy Shariah-compliant shares, demand increased and share prices started to rise, causing MCARs to become positive in the longer term.

The robustness of estimated MCARs are examined by applying precision-weighted average return (PWAR), the Patell (1976) test, and the generalized sign test for the statistical significance of these residuals. Patell's (1976) residual test standardises the event-date prediction error for each stock by its standard deviation. This makes the abnormal return for each firm comparable in terms of significance, preventing those with larger returns to skew the results. The generalized sign (Z) test is estimated to determine the fraction of positive and negative average abnormal returns. The null hypothesis for Z is that the fraction of positive (negative) returns in event window is the same as in the estimation period[19]. The precision-weighted return and the Z-statistic use the same relative weight (inverse proportion to the standard deviation). The findings for the PWAR, Patel-test and generalized sign test in panel B in table I are generally consistent with estimated MCARs around and after the event date in Panel A, suggesting that results are robust.

Table II presents the percentage change in the bid-ask spread and the volume of transaction over two time horizons. We measured the base period liquidity for these variables over the Day -135 to Day -16 (120 days) window before the inclusion. The short term measure for the pre-inclusion window is over Day -1 to Day -15 and for the post-inclusion window is during Day +1 to Day +15. Long-term inclusion starts from Day 16 and extend to ranges of Day 45 to Day 135.

Evidence in table II shows that over a short period increase in volume of trade accompanied by decrease in bid-ask spread indicates improvement in market liquidity immediately before and after the inclusion of stocks in SI index. In the pre-inclusion window, we find a 5.3% decrease in the daily average of Percentage Spread during Day -15 to day -1. This decrease, however, diminishes to a daily average of 2.1% during Day 1 to Day 15. A percentage increase in Volume of Transaction during corresponding periods was 2.9% during Day -15 to Day -1 and 71.9% during Day 0 to Day 15. Changes in this variable is statistically significant (at 0.1%) in later period only.

Results in table II for longer term periods reveal that an increase in the volume of transaction is accompanied by an increase in bid-ask spread. The estimated percentage change in average daily Percentage Spread varies from 9.1% for Day 16 to Day 45, to 19.6 from Day 16 to Day 135. An increase in the daily average Volume of Transaction is 98.2% from Day 16 to Day 45, goes up to 201.83% from Day 16 to Day 75, before it stabilizes at 110.2% from Day 16 to Day 135.

The contrast between the short-term and the long term effects of SI introduction on MCAR and bid-ask spread requires closer examination of findings in table I and II. To start with, we emphasis that change in the volume of transactions was positive in the short term as well as in the long term, while changes in MCAR and in bid-ask spread were negative only in the short-term. Widening the bid-ask spread in longer term should not be interpreted as an indication of decrease in liquidity, but an increase in the information asymmetry and the cost of adverse selection problem.

Table 1: Cumulative Excess Return and Relevant Statistics Pertaining to Introduction of Shariah-compliant Index by Bursa Malaysia

Panel A

	Mean Cumulative Abnormal	Precision Weighted	Negative:
Days	**Return**	**MCARS**	**Positive**
Short-Term			
(-15,-1)	-0.48%	-0.45%	82:10$^{<}$
(0, +15)	-3.39%	-1.77%	76:11$^{<<}$
Long -Term			
(+16,+45)	6.44%	5.64%	109:7$^{>}$
(+16,+60)	13.95%	11.37%	114:7$^{>>}$
(+16,+75)	13.51%	10.74%	117:7$^{>>>}$
(+16,+135)	21.73%	17.75%	122:6$^{>>>}$

Thee symbols $, * ,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

[19] For examples of how Z is used see Cowan (1992).

Panel B

	Patell	CSectErr	Generalized
Days	**Z**	**t**	**Sign Z**
(-15,-1)	-0.588	-0.815	-1.858*
(0,+15)	-2.216*	-3.351***	-2.735**
(+16,+45)	5.100***	5.102***	2.092*
(+16,+60)	8.397***	6.465***	2.823**
(+16,+75)	6.938***	6.689***	3.262***
(+16,+135)	8.095***	7.384***	3.993***

The symbols $, *,**, and *** denote statistical significance at the 0.10, 0.05, 0.01 and 0.001 levels, respectively, using a 1-tail test.

Table II: Average Daily Percentage Changes in Percentage Spread and in the Volume of Trade Due to Introduction of Shariah-compliant Index

Short-Term	**% Δ in Percentage Spread**	**% Δ in Spread Volatility**	**% Δ in Volume**
Days -15 to -1	-5.308*** (6.069)	-34.13	2.920 (0351)
Days +0 to +15	-2.089** (1.930)	-10.60	71.898*** (6.563)
Long-Term			
Days +16 to +45	9.100*** (9.196)	32.77	98.175*** (7.403)
Days +16 to +60	11.607*** (12.101)	48.55	199.635*** (14.461)
Days +16 to +75	16.185*** (12.283)	136.34	201.825*** (15.014)
Days +16 to +135	19.627*** (21.382)	120.04	110.219*** (9.256)

According to the market microstructure models, the bid-ask spread has three components: order processing cost, adverse selection cost, and inventory cost associated with a holding suboptimal portfolio. These components are directly affected by an increase in information asymmetry between market makers[20] and traders. During event periods, if asymmetry of information increases, liquidity suppliers widen the spread in order to protect themselves against the temporary information advantage held by (the or a) processor of public information. Many researchers in this area, such as Kyle (1985), Glosten & Milgrom (1985), and Easley & O'Hara (1987), address the importance of asymmetric information in determining a market maker's behavior around event periods. At the same time, works by Venkatesh & Chiang (1986), Rendelman et. al (1982), and Aharsony & Swary (1980) provide empirical evidence of the widening of gap between bid-ask prices around the announcement of firm specific events (such as earning, dividend, and merger announcements) with the potential of revealing important information.

In the case of SI introduction, it is possible that market makers interpret an increase in the volume of trade around event period as a signal for good news. Suspecting that informed investors[21] use this information to make money at their expense, they widening the bid-ask spread to compensate themselves for bearing this cost. Some studies, such as that by Stoll (1989) reports as much as 43% of bid-ask spread is due to the adverse selection cost. Bangia, et. al (1998), also, suggests that the liquidity risk uncertainty of spread is an important component of bid-ask spread for thinly traded or emerging market stocks and comprises 25% to 30% of market risk.

[20] The Malaysian stock market, similar to many other small markets in emerging economies, is dominated by state linked companies with thinly traded shares, and a number of family controlled companies that have a very small number of their shares held by outsiders. This market has no official market making model, where liquidity is provided by unofficial market makers, known as syndicates. The trade of market makers comprises about one third of total market trading volume.

[21] Market makers can't distinguish between informed and uninformed traders.

V. Concluding Remarks

The present study examines the impact of the introduction of Shariah-compliant index (SI) by Bursa Malaysia on the performance and liquidity of included shares. We use an event study methodology to estimate mean cumulative abnormal returns in the days surrounding the event. We also investigate change in liquidity of included stocks by comparing percentage change in bid-ask spread and the volume of transaction after the event, to a base period before the event. Our findings provide evidence of significant negative abnormal returns from 15 days prior to the event to 15 days after the event. We have also found a significant percentage decrease in the bid-ask spread over the same time interval. However, over longer periods cumulative abnormal returns become positive and increase over time. Estimated MCARs are robust to alternative measures of statistical significance tests.

Change in bid-ask spread also becomes positive and increases over longer periods. Change in the volume of trade has been consistently positive both in short and in longer terms. Based on these findings, we have concluded that, the market reaction to the introduction of SI has been generally positive. This conclusion is made, despite negative mean cumulative abnormal returns we found in immediately prior and after the event day, and increases in the bid-ask spread in the longer period after the event. In our view, positive change in bid-ask spread, despite a substantial increase in the volume of trade in the longer term is attributed to the increase in liquidity risk and asymmetric information costs around the event period. According to the adverse selection models, if market makers can't distinguish between informed and uninformed traders in the market, they interpret increase in the volume of trade around the event day as a signal for good news, revising their bid-ask spreads upward. This is because they suspect that informed traders attempt to use this information to make money at their expense. As a result, increase in bid-ask spread is not interpreted as an indication of reduction in the market liquidity, rather due to the market makers' reaction to increase in asymmetric information.

Our study can be extended in terms of further research. One possible extension of current research is to examine the impact of addition and deletion of stocks to Sharaih Index when this index is updated in April and in October of each year. Based on the findings of this paper, the addition of new stock to SI in these semi-annual intervals is expected to enhance return and liquidity of these shares, while deletion of old stocks from this index is expected to reduce their return and liquidity.

A further extension of current study is to investigate the impact of the newly introduced FTSE-Bursa Malaysia Emas Shariah Index and FTSE-Bursa Malaysia Hijrah Shariah Index on the financial performance of securities that are included in this index. In contrast to SI, these indices are tradable. As a result and their introduction is expected to have even stronger impact on the performance and liquidity of included shares.

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