



# Religious Investor Sentiment, Shariah Compliance Impact, and Theological Risk: Evidence from Bursa Malaysia

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**Abstract:** This study examines the financial implications of religious restrictions by analyzing how changes in the Shariah compliance status of stocks affect their price and trading volume. Employing the market model in an event study approach and using data from Malaysian firms between 2000 and 2016, the study focuses on 30 announcements from the Security Commission Malaysia's List of Shariah Compliant Securities (LSCS), resulting in 370 additions and 284 deletions from the compliance list. The findings indicate that the inclusion of stocks in the compliance list generates long-term demand driven by Islamic institutional and Muslim retail investors, leading to a permanent increase in abnormal returns and trading volume. Conversely, the removal of stocks from the compliance list induces short-term negative abnormal returns and increased trading volume, reflecting selling pressure. These results contribute to understanding the financial consequences of religious restrictions, highlighting the influence of Shariah compliance on stock market performance and investor behaviour.

**Keywords:** Islamic Finance, Shariah Compliant Stock, Islamic Stock, Index Effect, Malaysia

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Yaş, M., Mohd Rasid, E. S. M., Aysan, A. F. & Azmat, S. (2024). Religious Investor Sentiment, Shariah Compliance Impact, and Theological Risk: Evidence from Bursa Malaysia. *Turkish Journal of Islamic Economics*, 11(2), 38-58.



## Introduction

Theological risk remains an important part of the Islamic finance industry. This is more formalized in the equity markets, where the regulatory bodies maintain a list of Shariah-compliant stocks. To comply with the religious requirements and to remain on the list, firms have to abide by a rigorous set of financial and non-financial filters. Being on the Shariah compliance list means that Shariah-conscious investors would be able to invest in the stock. When a company is removed from the Shariah compliance list, religious investors are likely to reassess their portfolios and sell the stock. In this paper, our primary inquiry is focused on assessing the significance of returns and risks associated with being Shariah-compliant or non-compliant. This study examines, therefore, how additions and deletions to the list of Shariah-compliant stocks impact the stock trading volume and price over short- and long-term horizons. The results help us infer the significance of the theological risk in Islamic equity markets.

A growing body of literature focuses on the relationship between the stock market and an investor's religiosity. They show that Christian (Ariel, 1990), Chinese (Yen & Shyy, 1993), Jewish (Frieder & Subrahmanyam, 2004), and Hindu (Kumar, 2012) holidays affect trading volume and performance of listed securities during pre- and post-holiday days. Overall findings indicate that these sacred occasions generate a distinctive atmosphere that elicits a variety of sentiments, spanning from elation and appreciation to serenity and solidarity. Consequently, holy days influence the actions of investors and exert an impact on financial markets.

A limited number of studies also investigate the relationship between the announcement of the Shariah-compliant status of listed securities and their financial performance (Kassim, Ramlee, & Kassim, 2017; Labidi, Laribi, & Ureche-Rangau, 2022; Mazouz, Mohamed, & Saadouni, 2019; Ng & Zhu, 2016; Yazi, Morni, & Saw, 2015; Yildiz & Dia-Eddine, 2016). Researchers frequently substantiate the positive (negative) price response of included (excluded) stocks in Islamic stock indexes by presenting evidence from various regions, such as Malaysia (Kassim et al., 2017; Ng & Zhu, 2016), the GCC region (Labidi et al., 2022), and worldwide (Mazouz et al., 2019). On the contrary, Yildiz and Dia-Eddine (2016) examine the influence of additions and deletions on stock prices and trading volume in Turkey's Participation-30 index from 2011 to 2015, revealing a surprisingly negative response to index additions and a positive response to index deletions. Few of these studies investigated the impact of Islamic index revision on trading volume. Ng & Zhu (2016) and Yildiz & Dia-Eddine (2016) find that both stock additions and deletions

have a positive effect on trading volume. Labidi et al.(2022) document an asymmetric volume response for index additions and deletions where deleted stocks exhibit abnormal trading volume traded more. On the contrary, Kassim et al. (2017) find the trading volume of deleted stocks is below normal volumes after the announcement and change dates.

Motivated by mixed findings and the limited literature on the effects of revising Shariah-compliant indices, this study is to examine the impact of changes in the Shariah-compliant status of listed securities on stock prices and trading. The study utilizes a comprehensive dataset covering Malaysian stocks from 2000 to 2016. The analysis focuses on 30 announcements made by the Securities Commission Malaysia (SCM) regarding the Shariah-compliant status of listed companies, including 370 additions and 284 deletions from the LSCS. The study employs the market model and mean volume ratio (MVR) as part of the event study methodology to assess the impact of these announcements on stock prices and trading volume. The findings demonstrate that Islamic institutional and Muslim retail investors exhibit increased demand for newly added stocks, leading to a permanent rise in abnormal returns and trading volume. On the other hand, the removal of stocks from the LSCS creates short-term pressure, resulting in increased trading volume and decreased abnormal returns. Specifically, added stocks experience a 3.7% abnormal return over three months, while deleted stocks suffer a 3.4% abnormal loss within a month. These results indicate that the behaviours of Shariah-sensitive investors significantly influence the price and trading volume of listed securities that are added to or removed from the LSCS.

This study extends existing research in several ways. Firstly, the study employs the largest dataset by using all added and deleted Shariah-compliant securities between 2000 and 2016. Although Yazi et al. (2015), Kassim et al. (2017) and Ng and Zhu (2016) examined the impact of Shariah compliance announcements on stock performance in Malaysia, Yazi et al. (2015) used only one announcement in 2023 while Kassim et al. (2017) and Ng and Zhu (2016) both use announcements between 2007-2014 period. Secondly, revisions of the Islamic index occur often semi-annually and rarely quarterly all around the world. However, most studies focus on the impact of Islamic index revision in the short term (Kassim et al., 2017; Mazouz et al., 2019; Yildiz & Dia-Eddine, 2016). The uniqueness of data also allows us to analyze the impact of changes in the LSCS on long-term performance, up to three months, an aspect that has been largely overlooked in previous literature. Third, this study contributes to the literature on theological risk in Islamic finance

by suggesting that it remains significant in the Islamic equity markets (Azmat, Kabir Hassan, Ali, & Sohel Azad, 2021).

The rest of the paper is organized as follows: Section 2 discusses the literature review. The data is explained in Section 3. Section 4 analyzes the methodology. The results are presented in Section 5. Section 6 concludes the paper.

## Literature Review

This section discusses the multiple streams of literature. It starts with the impact of religious days on stock performance along with explaining the index effect. Then, the impact of Shariah screening and Islamic index revision on the performance of newly classified Shariah-compliant and non-compliant stocks is discussed.

### The Holy Day Effect

Early studies on the financial impact of religious days were mostly related to closed-market occasions such as Christmas and Good Friday. Thaler (1987) and Jacobs and Levy (1988) reported abnormal equity returns at the turn of the year, during the month, week, day, and around holidays. Much previous research has found strong evidence of abnormal returns prior to closed-market holidays. The issue, however, of positive sentiments during secular and religious holidays that cause abnormal returns remains unclear. Some research papers that investigate market anomalies during open-market holidays have made a significant contribution to determining whether a trading activity, including the abnormal return and trading volume, is solely affected by the nature of the occasion. Along this line, Frieder and Subrahmanyam (2004) conducted a study exploring the influence of the Jewish holidays Rosh Hashanah and Yom Kippur, as well as the Catholic Irish holiday St. Patrick's Day. Their findings indicate that stock returns exhibit noteworthy and positive patterns in the lead-up to Rosh Hashanah and St. Patrick's Day, but conversely, they display significant negative trends preceding Yom Kippur. Additionally, trading volume experiences a decline on Rosh Hashanah and Yom Kippur. In India, Kumar (2012) found out about the abnormal returns and volatility during the Hindu festival of Diwali on the Indian stock market.

The existing literature regarding the impact of Islamic religious holidays on stock market performance is scarce. Husain (1998) and Seyyed, Abraham, and Al-Hajji (2005) investigate the effect of Ramadan on the Karachi Stock Exchange and the Saudi Stock Exchange Tadawul, respectively. Both studies do not find any evidence of a significant abnormal return but do observe lower market volatility

during the month of Ramadan. Oguzsoy and Guven (2004) find that the Istanbul Stock Exchange experiences strikingly high returns on the last two days of Ramadan. Additionally, Al-Hajieh, Redhead, and Rodgers (2011) recorded a favourable return trend during the Ramadan period in a specific group of Middle Eastern countries from 1992 to 2007.

## Index Effect

A different strand of literature focuses on empirical studies of the index effect (Elliott, Van Ness, Walker, & Warr, 2006; Harris & Gurel, 1986; Shleifer, 1986). These studies investigate the relationship between index revision and stock performance. Shleifer (1986) and Harris and Gurel (1986) were the inaugural researchers to document notable positive stock price responses when new stocks were introduced into the S&P 500 Stock Index. Beneish and Whaley (1996) examine the effects of the new Standard and Poor's announcement policy implemented in October 1989 and find an abnormal price increase of 4% after the stock is included in the S&P 500 index. Kappou, Brooks, and Ward (2008) investigate a distinctive dataset involving the removal of international companies and their replacement with US companies. Their study reveals that the stocks removed from the index undergo a substantial and enduring decline in their prices.

## Shariah Screening and Islamic Index Effect

The literature on Islamic indices remains limited. Labidi et al. (2022) analyzed the impact of DJIM-GCC index revision on stock prices and trading volumes from 2012 to 2020, finding a positive (negative) price reaction for added (deleted) stocks and an asymmetric volume response. Yildiz and Dia-Eddine (2016) investigated the effect of index additions (deletions) on the stock price and trading volume of the Participation-30 index in Turkey from April 2011 to June 2015, using event study methodology. Their results indicate that stock prices generally respond negatively to index additions and positively to index deletions while trading volumes of added and deleted stocks are positively affected on the announcement day. Mazouz et al. (2019) examined the short-term effects on the price of ethically screened stocks in the Dow Jones Islamic Market World Index (DJIMWI) quarterly revisions and, found significant price reactions for ethically screened stocks following additions and deletions.

Several studies attempted to explore the Islamic index effect in Malaysia. Bacha and Abdullah (2001) analyzed the consequences of stock inclusion and exclusion

from the LSCS on stock prices and trading volume, utilizing a sample of 39 inclusions and 21 exclusions. The study revealed that deletions had a negative impact on both stock prices and trading volume, while inclusions had a positive impact on both variables. Yazi, Morni, and Saw (2015) investigated the impact of changes in the LSCS announcement and Shariah index revision in Malaysia, focusing on the major Shariah screening revision that took place on November 29, 2013, involving additions and deletions of stocks from the List of Shariah Compliant Securities. Their findings indicated the presence of a high abnormal return (loss) for added (deleted) stock behaviour shortly before and after the announcement date. Ng and Zhu (2016) explored the index revision of the FTSE Bursa Malaysia EMAS Shariah Index between 2007 and 2014, observing increased trading volume and abnormal returns for added stocks. Kassim, Ramlee, and Kassim (2017) analyzed constituent changes in the FTSE Bursa Malaysia EMAS Shariah Index during the major Shariah screening revision on November 29, 2013, to explore the impact of stock additions and deletions. Their results indicated an insignificant effect on both the price and trading volume of added stocks during the period before the revision, while deleted stocks experienced losses in the short term. Subsequently, after the revised screening, the index additions (deletions) showed significant abnormal returns (losses) and high trading volume.

This study differs from previous studies in a number of ways. Firstly, it utilizes an extensive dataset encompassing all added and deleted Shariah-compliant securities between 2000 and 2016, making it the largest dataset employed in this context. Secondly, while prior studies have predominantly focused on investigating the short-term performance of stocks following Islamic index revisions, this study extends its analysis to consider the long-term performance, up to three months, a relatively understudied aspect. Thirdly, this research adds to the growing body of literature concerning theological risk in Islamic finance, highlighting its continued significance in the Islamic equity markets (Azmat et al., 2021).

### **Hypotheses Development**

When SCM announces a stock that was previously Shariah-compliant as Shariah non-compliant or vice versa, it is expected that investors or fund managers seeking Shariah-compliant investments would adjust their portfolios by buying Shariah-compliant stocks and selling Shariah non-compliant ones. This rebalancing activity would exert pressure on Shariah-compliant (Shariah-non-compliant) stocks, resulting in abnormal returns (losses) for these stocks. This phenomenon aligns

with the Price Pressure Hypothesis (PPH) proposed by Harris and Gurel (1986), which suggests that newly added stocks (newly listed Shariah-compliant stocks) experience temporary price increases due to the excess demand from Islamic institutional and Muslim retail investors seeking to rebalance their Shariah-compliant portfolios.

Another explanation of the market anomaly related to the Shariah-compliant status of securities is consistent with the Imperfect Substitutes Hypothesis (ISH) introduced by Shleifer (1986). This hypothesis posits that stocks added to the list of Shariah-compliant securities are no longer close substitutes for Shariah non-compliant stocks. Consequently, price increases for added stocks are expected to be more permanent, assuming a downward-sloping demand curve for Shariah-compliant stocks.

Furthermore, The Investor Awareness Hypothesis (IAH), as proposed by Merton (1987) and Polonchek and Krehbiel (1994) posits that when a stock is added to the LSCS, awareness among Islamic institutional and Muslim retail investors about the newly listed Shariah-compliant stock will increase significantly. This heightened awareness would attract new potential investors to the company, leading to a permanent appreciation of the stock price. Conversely, deleted stocks may not experience a permanent negative price change as investors are already familiar with them.

Moreover, information about the compatibility of securities with Shariah rules and principles is essential for Muslim investors and Islamic financial institutions in making investment decisions. Akerlof's (1970) Theory of Asymmetric Information highlights that the lack of information about the quality and features of a product can be costly and challenging for traders. Thus, SCM's announcements regarding the Shariah-compliant status of securities can reduce information asymmetry, positively impacting the stock market.

Furthermore, the Liquidity Cost Hypothesis (LCH) proposed by Amihud and Mendelson (1986) and Beneish and Whaley (1996) posits that added stocks would have higher analyst coverage, liquidity, and lower systematic risk due to the costly nature of obtaining information about these stocks. Higher liquidity is associated with lower bid-ask spreads, leading to reduced transaction costs, and stocks with more available information generally exhibit lower systematic risk. Therefore, newly classified Shariah-compliant stocks may experience higher liquidity, lower systematic risk, and increased analyst coverage, resulting in a permanent price increase.



Despite early empirical studies investigating price changes in the absence of new information, focusing on block trades, index effects, equity issues, and stock splits, the literature on the impact of changes in the Shariah index or the List of Shariah Compliant Securities on price and trading volume remains limited. Therefore, this study aims to fill this research gap by examining the impact of changes in LSCS on price and trading volume over various time horizons. Based on the aforementioned arguments, our study formulates two hypotheses to explore the potential market anomalies associated with Islamic index revisions.

**H1:** *The incorporation of stocks into the List of Shariah-compliant Securities (LSCS) is associated with short-term rises in stock prices, whereas removals from the LSCS may result in short-term declines in stock prices.*

**H2:** *Both the addition of stocks and their removal from the List of Shariah-compliant Securities (LSCS) are linked to increased stock trading volume in both the short term and the long term.*

## Data

This section discusses the Shariah screening criteria employed to generate the LSCS. Subsequently, it elaborates on the data and sample selection process.

### Data and Sample Selection

The dataset includes daily returns and daily trading volume of added and deleted companies from the LSCS, enabling the examination of abnormal trading volume and returns during the post-announcement period. The study encompasses 30 LSCS announcements, making it the most extensive dataset utilized for the event study analysis spanning from November 2000 to May 2015. A total of 843 stock additions and 398 deletions from the LSCS are considered. To align with prior research, listed companies that underwent recent IPOs, stock splits, M&A activities, delisting, liquidation proceedings, trading halts, name changes, and divestitures during the observation period are excluded from the sample, as such events may result in abnormal returns and trading activities (Azevedo, Karim, Gregoriou, & Rhodes, 2014; Bildik & Gülay, 2008; Chen, Noronha, & Singal, 2004; Denis, McConnell, Ovtchinnikov, & Yu, 2003). Consequently, the final dataset comprises 370 additions and 284 deletions during this specified period.



## Methodology

This section discusses the event study methodology and how to calculate abnormal returns to test Hypotheses H1. Then, it examines the methodology for estimating the abnormal trading volume to test Hypotheses H2.

### Abnormal Return

This study uses an event study methodology to analyze the price effect of the revision of the LSCS. The market model is employed to calculate the abnormal returns of listed companies, aiming to investigate the impact of the LSCS announcement on the prices of added and deleted stocks. Abnormal returns are estimated using the following equation:

$$AR_{i,t} = R_{i,t} - E(R_{i,t} | X_t) \quad (1)$$

Where abnormal return for security  $i$  at the time  $t$  ( $AR_{i,t}$ ) is the difference between a security's actual returns  $R_{i,t}$  and the expected return  $E(R_{i,t} | X_t)$ . The expected return is computed over an estimation window using the market model:

$$E(R_{i,t} | X_t) = \hat{\alpha}_i + \hat{\beta}_i R_{m,t} \quad (2)$$

where  $R_{m,t}$  is the market return observed in  $t$ .

The average abnormal return ( $AAR_t$ ) of added and deleted stocks during time  $t$  is calculated by the sum of abnormal return for all securities  $j$  divided by the number of securities  $N$  as follow:

$$AAR_t = 1/N \sum_{j=1}^N AR_{(j,t)} \quad (3)$$

The average abnormal returns are summed over the event window (from day  $i$  to  $T$ ) to obtain a cumulative average abnormal return  $CAAR_{(i,t)}$  as follow:

$$CAAR_t = 1/N \sum_{(t=i)}^T AAR_{(t)} \quad (4)$$

The majority of research findings indicate that the estimation window typically spans from 30 days to 100 days (Bildik & Gülay, 2008; Cox & Peterson, 1994; Yazı et al., 2015). Consequently, this study defines the estimation window as ranging from 60 trading days prior to the announcement date [AD-60] to 6 trading days preceding the announcement day [AD-6], denoting the event window as [-60, -6].

Regarding the length of the event window, various event windows have been utilized to understand the impact of events on security prices. For instance, Chakrabarti et al. (2005) use the event window [0, +1], Bildik and Gülay (2008) use

[-10, +10], Yildiz and Dia-Eddine (2006) use [-5, +5], and Kassim, Ramlee, and Kassim (2017) use [-60, +10]. Therefore, this research employs an estimation window to compute abnormal returns within specific event windows, including the Pre-announcement Period [AD-5, AD-1], the Announcement Day (AD), the Short-Term Post-announcement Period (ranging from AD+1 to AD+5), and the Long-Term Post-announcement Period [AD+10, AD+60].

### Abnormal Trading Volume

Trading volume ratios, namely Base Relative Volume Ratio (BVR) and Mean Volume Ratio (MVR) were computed to determine whether trading activity increases in response to the release of new information by a method also employed by Harris and Gurel (1986) and Beneish and Whaley (1996). The formula for calculating volume ratios is as follows:

$$\overline{BVR}_i = \frac{1}{k-j} \sum_{AD-k}^{t=AD-j} \left( \frac{V_{i,t}}{V_{m,t}} \right) \quad (5)$$

where the Base Relative Volume Ratio denoted as  $(\overline{BVR})_i$  is the average stock-to-index trading volume to average daily trading volume over the k-j trading days prior to the announcement day between the period AD-k and AD-j have been computed. Volume Ratio (VR) for a listed company i at time t denoted as is calculated as follows:

$$VR_{i,t} = \frac{V_{i,t}/V_{m,t}}{\overline{BVR}_i} \quad (6)$$

where  $V_{(i,t)}$  and  $V_{(m,t)}$  are the trading volume of company i and the corresponding FTSE Bursa Malaysia KLCI volume at each day t of the event window.

$$MVR_t = \frac{1}{N} \sum_{i=1}^N VR_{i,t} \quad (7)$$

where  $MVR_t$  is the Mean Volume Ratio across firms at each day t of the event window and N is the number of companies in the sample.

There is no uniform agreement on the length of the period for BVR. Chakrabarti, Huang, Jayaraman, and Lee (2005) use 149 days, Bildik and Gülay (2008) use 30 days, Yıldız and Dia-Eddine (2006) use 119 days, and Kassim, Ramlee, and Kassim (2017) use 60 days for computing BVRs. In the study, the period for BSV starts from 60 trading days before the announcement date and ends 20 trading days before the announcement date as the period of [60, -20].

In this study, the Mean Volume Ratio (MVR) is computed from 5 trading days prior to the announcement date [AD-5] to 60 trading days following the announcement date [AD+60], encompassing the event window [-5, +60]. This analysis is conducted to examine trading volume anomalies during both the pre-announcement and post-announcement periods. Abnormal trading volume in the pre-announcement phase is evaluated by examining the event window [-5, -1]. To assess abnormal trading volume, the same timeframes are utilized, specifically the Pre-announcement Period [AD-5, AD-1], Announcement Day (AD), Short-Term Post-announcement Period [AD+1, AD+5], and Long-Term Post-announcement Period [AD+10, AD+60].

## Findings and Discussions

This section presents the empirical findings for the cumulative abnormal returns and abnormal trading volume, followed by theoretical discussions of the results. Finally, the section discusses the impact of inclusion and exclusion on the link between return and trading volume.

### Abnormal Return

Table 1 presents the empirical results of the Cumulative Average Abnormal Return (CAAR) for both added and deleted stocks. In the pre-announcement period, both added and deleted stocks exhibited negative performance, with statistically significant CAARs of -1.56% and -1.6%, respectively, within the event window [-5, -1]. Moving to the post-announcement period, the CAARs of added stocks fluctuated around 0 and were not statistically significant in the short term. However, one month after the announcement, the CAARs of added stocks experienced a rapid increase, reaching 1.78% and 3.76% for the one-month [0, +20] and three-month [0, +60] event windows, respectively.

Regarding deletions from LSCS during the post-change period, a significantly negative impact on stock returns was observed in the short term, particularly with CAARs of -1.29% in the one-day [0, +1], -1.41% in the three-day [0, +3], and -1.19%

in the four-day [0, +4] event windows. However, interestingly, price reversal for the removed stocks was evident from 20 trading days to 60 trading days after the announcement [+20, +60]. Consequently, the CAAR of removed stocks increased from -3.40% in the one-month [0, +20] to 2.97% in the three-month [0, +60] event windows, but the result was not statistically significant.

**Table 1**

*Cumulative Average Abnormal Return (CAAR)*

		Addition			Deletion		
		CAAR	p: n	t-statistic	CAAR	p: n	t-statistic
Pre-AD	[-5, -1]	-0.0153***	151: 219	-3.59	-0.0160***	122: 165	-2.70
	[-4, -1]	-0.0139***	150: 220	-3.66	-0.0164***	121: 166	-3.10
	[-3, -1]	-0.0079**	156: 214	-2.40	-0.0173***	124: 163	-3.77
	[-2, -1]	-0.0053**	178: 192	-1.98	-0.0119***	137: 150	-3.17
	[-1, -1]	-0.0028	182: 188	-1.45	-0.0063**	145: 142	-2.36
AD	[0, 0]	0.0006	200: 170	0.34	-0.0074***	124: 163	-2.80
Short-Term	[0, +1]	0.0026	192: 178	0.96	-0.0129***	122: 165	-3.45
	[0, +2]	0.0064	190: 180	1.95	-0.0117**	125: 162	-2.54
	[0, +3]	0.0010	186: 184	0.2645	-0.0141***	115: 172	-2.66
	[0, +4]	0.0052	191: 179	1.22	-0.0119**	126: 161	-2.00
	[0, +5]	0.0044	193: 177	0.94	-0.0095	121: 166	-1.46
Long-Term	[0, +10]	0.001	192: 178	0.1549	-0.0237***	114: 173	-2.69
	[0, +20]	0.0178**	191: 179	2.04	-0.0340***	103: 184	-2.79
	[0, +60]	0.0376***	193: 177	2.53	0.0297	136: 151	1.43

Notes: p:n denotes the number of positive and negative Cumulative Averaged Abnormal Returns (CAAR) for stocks respectively while \*, \*\*, and \*\*\* denote the statistical significance at the 0.1, 0.05 and 0.01 levels, respectively.

As presented in Table 1, the stocks excluded from the LSCS exhibit significantly negative Cumulative Average Abnormal Returns (CAARs) in the pre-announcement period. This finding suggests that investors may have predicted or possessed insider information regarding the stock exclusions from the LSCS. The Shariah Advisory Council (SAC) of SCM mandates Shariah-sensitive investors and Islamic financial institutions to divest from newly classified Shariah-noncompliant securities in their portfolios within one month. Consequently, this result aligns with the Price Pressure Hypothesis (PPH), as it is expected that increased selling of stock following the an-

nouncement day would lead to a decline in the stock price. Furthermore, the CAARs of added stocks are also negative during the pre-announcement event windows, indicating that investors have relatively low expectations for the added stocks.

On the announcement day (AD), the CAARs of added stocks show a positive trend, while the CAARs of deleted stocks exhibit a negative trend. These findings lend support to the hypothesis that even in the absence of any financial information conveyed through the release of the LSCS, Shariah-sensitive investors and managers of Shariah-compliant portfolios exert significant pressure to buy (or sell) Shariah-compliant (or non-compliant) stocks to rebalance their holdings and ensure compliance with Shariah principles, thereby avoiding any profit derived from prohibited elements in their investments (Labidi et al., 2022; Mazouz et al., 2019). Consequently, these results imply that the non-financial aspect of Shariah-compliant investment significantly influences investor decisions to buy or sell Shariah-compliant (or non-compliant) stocks. In other words, the capital markets in Malaysia are responsive to the release of information on changes in the LSCS.

The empirical findings presented in this study offer valuable insights into the short-term and long-term impacts of additions to and deletions from the LSCS on stock prices. These results are in line with the research findings of Bacha and Abdullah (2001), Yazi, Morni, and Saw (2015), Labidi et al. (2022), and Ng and Zhu (2016), which provide further support for the empirical results obtained in this study. Consequently, our first hypothesis, H1, is confirmed, demonstrating that the demand curve for added stocks is downward sloping in the long run, leading to permanent excess returns.

There exist several theoretical justifications for the long-term downward-sloping demand curve observed for newly classified Shariah-compliant firms. The exclusive pursuit of financial returns alone cannot fully account for the decision-making process of Islamic institutional and Muslim retail investors, as they often consider a trade-off between financial gains and heavenly rewards (McGowan and Muhammad, 2010). Consequently, Shariah-non-compliant stocks do not serve as close substitutes for the recently categorized Shariah-compliant securities. In other words, the long-run demand curve for added stocks exhibits a downward slope and is not perfectly elastic. This finding aligns with the Imperfect Substitutes Hypothesis (ISH) and is consistent with previous studies by Shleifer (1986), Beneish and Whaley (1996), Lynch and Mendenhall (1997), Blume and Edelen (2001), and Wurgler and Zhuravskaya (2002). Another explanation for the long-term price increase of added stocks stems from the liquidity cost hypothesis (LCH). A sustained enhance-

ment in the liquidity of newly classified Shariah-compliant stocks, as indicated by higher trading volume, results in reduced transaction costs and ultimately leads

The empirical results demonstrate that the Cumulative Average Abnormal Returns (CAARs) of stocks excluded from LSCS are significant and negative during the short-term event windows. This finding supports our first hypothesis, H1. It is essential to consider that Islamic institutional investors are advised to adhere to SCM's guidance, disposing of Shariah-noncompliant stocks from their portfolios within the one-month grace period. Additionally, after the disposal of such securities following the announcement day, Islamic institutional investors must donate any capital gain or dividend they received from newly classified Shariah-noncompliant companies. As a result, the stocks removed from LSCS experience a negative price change in the short-term event windows, but this effect is not significant in the long-term event windows. This finding is consistent with the results of prior studies by Bacha and Abdullah (2001), Yazi, Morni, and Saw (2015), and Ng and Zhu (2016), providing empirical evidence of a return reversal after one month. The observed excess pressure generated by Islamic institutional and Muslim retail investors to sell securities of newly classified Shariah-noncompliant companies during the rebalancing of their Shariah-compliant portfolios leads to temporary imbalances in the supply and demand of deleted stocks, resulting in negative abnormal returns in the short-term. However, this effect dissipates once the excess demand is satisfied. Therefore, our finding is theoretically aligned with the Price Pressure Hypothesis (PPH) and corroborates the findings of Harris and Gurel (1986), Beineish and Whaley (1996), and Lynch and Mendenhall (1997).

### Abnormal Trading Volume

Table 2 presents the empirical findings of the mean volume ratios (MVRs) for added and deleted stocks in both the pre-announcement and post-announcement periods. The MVRs of both added and deleted stocks are statistically significantly lower than the normal level during the five days preceding the event.

In the post-announcement period, the trading volume of added stocks exhibits a gradual increase, while the MVRs fluctuate around 1 and are not statistically significant in the short-term event windows [0, +1], [0, +2], [0, +3], [0, +4], and [0, +5]. However, during the long-term event windows, the trading volume of added stocks surpasses the average level and is statistically significantly different from 1. The MVRs of added stocks are 36.9% and 79.9% higher than the normal level in the one-month [0, +20] and three-month [0, +60] event windows, respectively.

On the announcement day, the trading volume of deleted stocks experienced an increase of 11%, though it is not statistically significant. During the post-change period, the trading volume of deleted stocks exhibits moderate growth. While the MVR fluctuates within the one-week [0, +5] event window, the MVRs of deleted stocks are 1.24 and 1.63 in the one-month [0, +20] and three-month [0, +60] event windows, respectively. In other words, the trading volume of deleted stocks is between 24.1% and 62.8% higher than the normal level and significantly different from the normal level.

**Table 2**

*Mean Volume Ratios (MVRs)*

		Addition		Deletion	
		MVR	t-statistic	MVR	t-statistic
Pre-AD	[-5, -1]	0.8500***	-4.25	0.8937**	-2.15
	[-4, -1]	0.8414***	-4.37	0.8463***	-3.16
	[-3, -1]	0.8313***	-4.36	0.8271***	-3.42
	[-2, -1]	0.8233***	-3.38	0.8992	-1.64
	[-1, -1]	0.8741**	-1.99	0.9962	-0.04
AD	[0, 0]	0.9164	-1.22	1.1166	0.89
Short-Term	[0, +1]	0.9382	-1.04	1.0253	-0.78
	[0, +2]	0.9830	-0.21	0.9695	0.69
	[0, +3]	0.9693	-0.38	0.9562	-0.57
	[0, +4]	0.9942	-0.07	0.9878	-0.14
	[0, +5]	1.0079	-0.09	1.0589	0.56
Long-Term	[0, +10]	1.0595	0.70	1.1134	1.11
	[0, +20]	1.3691***	3.54	1.2415***	2.94
	[0, +60]	1.7990***	3.71	1.6282***	4.36

Notes: MVR stands for the Mean Volume Ratios where t values measure whether the mean of volume ratios are different from one, respectively. \*, \*\*, and \*\*\* denote the statistical significance at 0.1, 0.05 and 0.01 levels, respectively. The t-statistics value corresponds to the result of null hypothesis testing for

The analysis of mean volume ratios (MVRs) during the post-announcement period aims to ascertain the duration for which trading volume remains elevated



above the normal level. The empirical results in Table 2 reveal that in the short term, the MVRs of both added and deleted stocks do not exhibit statistically significant differences from one. This indicates that the market does not show immediate sensitivity to the announcement of stock additions to the LSCS. However, in the one-month  $[0, +20]$  and three-month  $[0, +60]$  event windows, the trading volumes of newly added and deleted stocks are significantly higher than the normal level, signifying a sustained rise in trading volume over time. Several theoretical explanations exist for this permanent increase in the trading volume of added and deleted stocks.

According to the Liquidity Cost Hypothesis (LCH), the inclusion of newly classified Shariah-compliant securities leads to greater analyst coverage, enhanced liquidity, and a lower required rate of return. With the announcement enabling Islamic institutional and Muslim retail investors to invest in these newly classified Shariah-compliant stocks, a larger number of investors engage in trading activities involving the added stocks. The resultant higher trading volume and improved liquidity contribute to reduced transaction costs, further stimulating demand for these added stocks. Consequently, our finding of the permanent increase in trading volume for added stocks aligns with attention, information cost, and liquidity-related explanations (Amihud & Mendelson, 1986; Hegde & McDermott, 2003).

The Imperfect Substitutes Hypothesis (ISH) posits that Shariah-compliant stocks cannot be easily replaced by Shariah-non-compliant stocks, resulting in a downward-sloping long-run demand curve. Consequently, the excess demand generated by Islamic institutional and Muslim retail investors would cause a permanent increase in the trading volume of newly added stocks over time (Bildik & Gülay, 2008; Shleifer, 1986).

According to the Liquidity Cost Hypothesis (LCH), excluded stocks experience lower liquidity, limited accessibility to information, and higher transaction costs, leading to reduced investor interest in trading these stocks. Furthermore, the Imperfect Substitutes Hypothesis (ISH) contends that excluded stocks face a sustained decrease in demand, as Islamic institutional investors and Muslim retail investors avoid holding Shariah-noncompliant securities in their portfolios. Consequently, neither ISH nor LCH can fully explain the trading volume effect for excluded stocks in the long term. Conversely, it is plausible that removed stocks may be temporarily undervalued due to selling pressure and limited liquidity. Consequently, conventional investors may gradually purchase these undervalued securities, resulting in increased trading volume above the normal level in the long run.

In conclusion, the empirical findings indicate that the effects on trading volumes align with the ISH and LCH theories, which suggest that trading volumes tend to rise in the long term following stock additions. Moreover, the results on the long-term impact on trading volume support Hypothesis H2 and are consistent with previous studies such as Amihud and Mendelson (1986), Beneish and Gardner (1995), Booth and Chua (1996), Liu (2006), and Bildik and Gülay (2008).

### **Return and Trading Volume Relationship**

The examination of abnormal returns and abnormal trading volumes provides valuable insights into the theoretical underpinnings of the short-term and long-term effects on trading volume and price changes for added and deleted stocks. The short-term price increases and trading volume of added stocks align with the Price Pressure Hypothesis (PPH), which suggests a downward-sloping demand curve in the short run. However, the long-term price and trading volume effects of added stocks can be attributed to the ISH and LCH. The ISH predicts a permanent price effect by assuming a downward-sloping demand curve in the long term, while LCH posits that additions to the LSCS lead to long-lasting stock liquidity enhancement, resulting in permanent increases in both stock price and trading volume.

The short-term price declines of deleted stocks are consistent with PPH. However, the MVR of deleted stocks is 62.8% higher than the normal level in the three-month period, which cannot be explained by PPH or ISH. In the long run, the rise in trading volume and peculiar return of deleted stocks can be attributed to the eagerness of traditional investors to purchase undervalued stocks that have been removed from the market.

### **Conclusion and Policy Recommendations**

This study investigates the impact of changes in the LSCS on stock prices and trading volume during the period from 2000 to 2016. The short-term effect of adding equities to the LSCS does not have a significant influence on their prices and trading volume since investors may not immediately adjust their portfolios to include Shariah-compliant stocks. During the pre-announcement period, the Cumulative Average Abnormal Returns (CAARs) of added stocks were close to zero and not statistically significant. However, over the long term, there is evidence of abnormal returns for added stocks, indicating increased demand from Islamic institutional and Muslim retail investors.

The CAARs of newly added stocks rise gradually, and trading activity remains elevated for one to three months after the announcement. On the other hand, deleted stocks exhibit negative short-term abnormal returns. The Shariah Capital Market (SCM) encourages Islamic institutional investors to sell Shariah-noncompliant stocks within a month, and they are required to donate capital gains and dividends from such stocks. As a result, selling pressure may cause a discount on newly excluded stocks. Over the long term, conventional investors may buy undervalued stocks, leading to a price increase for deleted stocks.

Overall, the results indicate that adding stocks experiences long-term abnormal returns, while deleted stocks suffer short-term abnormal losses following the LSCS announcement. Moreover, the LSCS adjustments lead to increased trading activity in both added and deleted stocks in the short and long term, thereby elevating theological risk for enterprises and investors. This study emphasizes the significance of religious risk in Islamic equity markets, and it underscores the influence of Shariah screening criteria and changes to the list of Shariah-compliant stocks on the performance of Islamic equity markets.

After studying the impact of LSCS amendments on financial markets, this study has major implications for listed firms, investors, and regulators. First, being listed in an LSCS improves a firm's performance and liquidity. Second, the analysis found that index stocks had an anomalous return over time. If fund managers buy Shariah-compliant shares in the pre-announcement phase, they can seek long-term profits. According to the data, omitted stock prices fell sharply in the near run. If fund managers build an internal Shariah screening division to foresee stock deletions from the LSCS before the announcement, they can sell short possibly excluded stocks to profit soon after the changes in the LCSC. Fund managers can also buy underpriced securities following the one-month disposal period for fast-profit. The study emphasizes that SCM's regulation requires it to dispose of any Shariah-non-compliant securities fund managers currently hold in their portfolios within a one-month increase in selling activity, which harms market liquidity and results in poor performance of Islamic funds which hold newly classified Shariah non-compliant securities in their portfolios. If SCM extends the disposal period, it can reduce liquidity risk and abnormal loss by easing pressure to sell excluded stocks.

A significant limitation of this study is related to the study sample. Data beyond 2015 was not included due to the occurrence of the 1MDB scandal and political instabilities in 2015, as well as the subsequent COVID-19 pandemic crisis in

2020, both of which had substantial impacts on the stock market performance in Malaysia. Consequently, the exclusion of data from these periods was deemed necessary to mitigate potential confounding effects. Furthermore, the investigation of whether index effect anomalies persist or dissipate, as discussed in the literature (Marquering, Nisser, & Valla, 2006; Soe & Dash, 2008) or the excess returns of a stock added to a leading index, is one of the most researched pricing anomalies in finance. Is the index effect shrinking? To answer this question, we study the index effect for headline indices of five of the biggest equity markets in the world: U.S. (S&P 500, was not pursued through the examination of abnormal returns and trading on a year-by-year basis. Additionally, this study did not investigate the causes of abnormal returns and trading volume, leaving the question of whether stock price reactions to changes in the LSCS are driven by company fundamentals or just the Islamic label unanswered. (Labidi et al., 2022). As an avenue for future research, it may be beneficial for scholars to concentrate on investigating the persistence and determinants of price and trading volume anomalies associated with Islamic index revisions.

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