

## DOES THE SHARIA-COMPLIANT STATUS REMOVAL ANNOUNCEMENT MATTER? LIQUIDITY, TRADING ACTIVITIES AND INSTITUTIONAL INVESTORS

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### ABSTRACT

*On 29th November 2013, the Security Commission Malaysia revised the Sharia-compliant screening policy and about 20% of the Sharia firms lost their certification for not meeting the additional criteria. Using 107 affected firms, we examine the removal announcement effect on the stocks' liquidity and trading activities. Our analysis focuses only on the removal announcement due to the screening policy changes. We use 181 days event window for the short-term effect and multivariate panel estimation models for the long-term effect. The event study observes a decreasing trend for the liquidity measures, indicating a higher liquidity post-Sharia removal announcement among the affected stocks. Conversely, trading activities decrease substantially within the first few days post-event date before picking up gradually. The regression analysis confirms the results, but we do not find consistent results supporting the relationship between institutional investors and liquidity and trading activities. The study is among the pioneers to unfold the effect of Sharia-compliant status removal announcement due to the policy changes on the stock liquidity and trading activities within short and long-term perspectives. We also provide post-effect evidence on the change of the institutional investors due to the removal announcement on the liquidity and trading aspect.*

**Keywords:** Sharia status removal, Stock liquidity, Trading activities, Sharia screening policy, Sharia-compliant firms

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Received: 26 May 2023; Accepted: 11 March 2024; Published: 7 June 2024

To cite this article: Zainudin, R., & Khaw, K. L. H. (2024). Does the Sharia-compliant status removal announcement matter? Liquidity, trading activities and institutional investors. *Asian Academy of Management of Accounting and Finance*, 20(1), 237–271. <https://doi.org/10.21315/aamjaf2024.20.1.8>

To link to this article: <https://doi.org/10.21315/aamjaf2024.20.1.8>

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## **INTRODUCTION**

Stock market liquidity is vital for investors and firms (Wuyts, 2007). Investors prefer trading in a more liquid stock market to enjoy lower trading costs, whereas firms are more inclined to raise funds via equity instead of debt in a liquid stock market. A liquid market offers a cheaper cost of capital in raising equity than debt (Lipson & Mortal, 2009) and increases the firm value (Nguyen et al., 2016). From the macro-level perspective, a large, liquid stock market indicates smooth capital mobility with ample risk diversification opportunities for market participants and facilitates trading activities within a market (Bhattarai et al., 2021). Therefore, stock market liquidity manifests a solid economy and improves economic growth (Levine & Zervos, 1993; Næs et al., 2011; Ogunmuyiwa, 2010). However, the effect differs for low-, middle- and high-income countries (Chu & Chu, 2020), where the growth-enhancing impact of financial liquidity is weaker in low and middle-income countries.

Studies have attempted to explicate stock market liquidity using stock-specific, firm-specific, and market-specific factors (Ali et al., 2016; Bacidore & Sofianos, 2002; Brockman & Chung, 2003; Chowdhury et al., 2018; Chung, 2006; Eleswarapu & Venkataraman, 2006). Some studies investigate the microstructure characteristics, such as order or quote-driven effects on market liquidity (Hsieh et al., 2008; Malinova & Park, 2013). In contrast, others seek to understand how macro variables like monetary and fiscal policies influence stock market liquidity (Chowdhury et al., 2018; Fernández-Amador et al., 2013). This paper steers away from the existing liquidity studies. Using the event study and the panel regression model, we measure the effect of the Sharia screening policy changes on stock liquidity and trading activities among listed firms in Malaysia.

More than 70% of the listed firms in Malaysia are Sharia-compliant firms. Existing evidence finds that Sharia-compliant firms are less liquid, maintain low gearing positions (Sakti et al., 2020), have shorter debt maturity (Katper et al., 2019), pay more dividends (Farooq & Tbeur, 2013), lower risk (Ho & Mohd-Raff, 2019) and are more resilient during crisis periods (Cheong, 2021) compared to non-Sharia compliant firms. The Sharia screening policy reflects a good company image and strict screening for business activities that benefit society. Businesses must maintain a tolerable level of permissible and non-permissible business activities involving gambling, alcohol and pork, tobacco, interest-based investment/financing activities, weapons, and others (Ho, 2015).

The Sharia screening is conducted semi-annually to identify new Sharia-compliant firms and to ensure that existing Sharia-compliant firms consistently conduct their business activities adhering to the Sharia law. On 29 November 2013, Sharia Advisory Council (SAC) revised the screening policy to add financial ratio requirements into the screening criteria. In light of the new policy changes, many Sharia-certified firms failed to meet the new criteria and were subsequently excluded from the Sharia-compliant list. The involuntary delisting affected 158 firms across different industries, bringing the Sharia-listed firms to 71% of the total listed firms in 2013 compared to 89% in 2012 (Kasi & Muhammad, 2016).

There are mixed results on the impact of involuntary delisting on stock prices and trading activities. Delisting announcements affect the stock prices of the U.S.-listed firms (Beneish & Gardner, 1995; Charitou et al., 2007), but inconclusive results are found regarding the impact of involuntary delisting on firms' trading activities in many developed markets (see Gregoriou & Nguyen, 2010; Lin & Kensinger, 2007). Building on the involuntary delisting literature, we examine the association between the involuntary delisting of Sharia certification and firms' liquidity and trading activities. Involuntary Sharia compliance delisting is attributable to listed firms' failure to satisfy the Sharia screening criteria imposed by the Sharia Advisory Council (SAC).

Next, we examine the impact of ownership structure,<sup>1</sup> focusing on institutional investors' changes on the affected stocks' liquidity and trading activities driven by the removal announcement. Listed firms in developing markets tend to have more concentrated ownership<sup>2</sup> than those in developed markets (Mehdi et al., 2017). Concentrated institutional investors<sup>3</sup> have more controlling power to influence firm-level decisions. Institutional investors enhance the stock market capitalisation, amplify the trading volume (Raj & Kumari, 2006), and make the market more efficient (Javaira & Hassan, 2015). Their trading activities significantly influence price discovery and stock market liquidity (Agarwal, 2009). Using the involuntary delist announcement in the Korean stock exchange, Park et al. (2014) report a substantial selling pressure for the affected stocks by domestic institutional investors and foreign investors, which dampened the stock liquidity. Consistent with Park et al. (2014), we expect removing Sharia-compliant status will affect stock liquidity because fund managers<sup>4</sup> must sell the delisted stock from their Sharia-compliant portfolios (Security Commission Malaysia). The selling pressure by institutional investments is expected to affect the liquidity of stocks.

We contribute to the existing liquidity literature in several ways. Firstly, this study is among the first to explore how stock liquidity and trading activities are affected by the involuntary exclusion of Sharia-compliant status due to the implementation of a revised screening policy. Our study differs from the existing

studies, which focus on the involuntary delisting from stock exchanges with evidence from the developed markets. In comparison, our study posits that Sharia exclusion announcements are expected to change the trading and liquidity activities of the affected firms. Noting that the affected stocks were removed from the Sharia-compliant list but not from the Malaysian stock exchange, we expect our liquidity effect to differ from the conventional delisted stock literature. We comprehensively test our hypotheses, covering both event studies for the short-term impact and panel regression estimation for the long-term effect.

Previous event studies examine the Sharia-compliant status removal effect on the stock return (see Yazı et al., 2015), not liquidity. We measure liquidity and trading activities using Amihud's (2002) illiquidity (*ILLIQ*) ratio, quoted spread (*SPREAD*), total volume (*LTVol*), turnover rate (*TO*), and turnover-to-price (*TPI*) ratio. We use the screening policy changes as the event day. We applied 21 days (−10 to +10 days), 41 days (−20 to +20 days), 61 days (−31 to +30 days), and 181 days (−90 to +90 days) event windows to measure liquidity and trading activities of the affected stocks pre- and post-removal period. Consistent with Chowdhury et al. (2018), we show that the revision of the screening policy significantly impacts the affected firm's stock liquidity and trading activities in the extended run analysis via panel regression estimation. Our estimation models also control for firm-specific variables, including stock volatility, stock return, market-to-book, firm size and age.

Park et al. (2014) suggest a high net selling position from institutional and foreign investors after the delisting announcement for the affected stocks in Korea. Given the unique ownership structure of an emerging market like Malaysia, we further examine whether institutional investors drive the liquidity and trading activities of the affected stocks. Then, we test the interaction of the Sharia removal announcements via the *Removal* dummy variable with the association of institutional investors-stock liquidity. The *Removal* dummy captures the effect of the delisting announcement on the institutional investor-stock liquidity relationship. SC gives investors a six-month grace period to remove the delisted stock from their Sharia-compliant portfolio. Due to the 6-month grace period, we interact two-quarter dummy variables with the institutional investor-stock liquidity relationship to account for the quarter calendar effect. We expect our findings to be helpful to investors and fund managers who hold Sharia-complaint stocks or funds. Since the removal of the complaint affects the liquidity, they should sell the delisted stocks from their portfolio immediately within the 6-month grace period given by the SC.

## **LITERATURE REVIEW**

### **Stock Liquidity and Sharia Screening Policy Changes**

Studies on the effects of policy changes on stock market liquidity tend to concentrate on macro-level monetary and fiscal policies (see Chowdhury et al., 2018; Fernández-Amador et al., 2013). Chowdhury et al. (2018) find that policies on money supply, government expenditure and borrowing, private borrowing, bank rates, and short-term interest rates significantly affect the stock market liquidity in eight<sup>5</sup> emerging markets. They add that domestic macroeconomic news substantially impacts market liquidity more than global news. Studies on policy changes also include firm-related policies. Chae (2005) explores market participants' reactions to new information flow and the effect on trading volume caused by scheduled and unscheduled announcements. The results show that the impact on trading volume is more pronounced when it involves scheduled announcements than unscheduled ones.

Efficient Market Hypothesis (EMH) theory explains how market reactions towards different types of new information flow into the market (Fama, 1970). Within this EMH theory, sufficient empirical evidence classifies the Malaysian stock market as a semi-strong form (Hussin et al., 2010; Tuck, 2005). Hussin et al. (2010) find that publicly available information, such as dividends and earnings announcements, affects stock price movement in Malaysia. The movement resulted from the investors' trading pattern after the dividend and earning announcements. Firm stock will be delisted from the exchange when it violates the delisting rules (Macey et al., 2008), firm liquidation and bankruptcy, or corporate restructuring due to merger and acquisition exercises (Pour & Lasfer, 2013). Using the semi-strong form efficiency theory, we classify involuntary delisting as publicly related information and unscheduled announcements. The liquidity hypothesis theory explains how the delisting announcement influences stock liquidity. Consistent with the theory, the literature highlights that involuntary delisting deteriorates the liquidity of delisted stocks and amplifies the liquidity risk (Sanger & Peterson, 1990; Macey et al., 2008), while insignificant results reported by Lin and Kensinger (2007) and Gregoriou and Nguyen (2010).

Studies find that Sharia-compliant status enhances a firm value in the context of the Sharia removal announcement. In contrast, a Sharia removal announcement reduces the share price and firm value (Yazi et al., 2015). In Malaysia, the Sharia screening policy is carried out bi-annually to ensure that the certified firms consistently comply with the Sharia screening criteria. Otherwise, they risk losing their status, prompting Sharia-conscious investors to penalise

these firms by selling the stocks from their investment portfolios (Cheong, 2021; Farooq & Tbeur, 2013). Therefore, Sharia-compliant status announcements matter to firms. On 29 November 2013, the Security Commission Malaysia implemented stricter Sharia screening guidelines. Due to the more stringent criteria, many firms lost their Sharia compliance status. Supported by the semi-strong form nature of the Malaysian stock market and compliance with the liquidity hypothesis, we expect the exclusion announcement to be important news that can affect the affected firms' stock liquidity and trade activities. Since the study is among the pioneers in exploring the association, we propose the following:

H1: Given the delisting event, the Sharia-compliant removal announcement significantly affects the abnormal stock liquidity and trading activities among delisted firms.

H2: Sharia-compliant removal announcement significantly affects stock liquidity and trading activities.

### **Stock Liquidity and Institutional Ownership**

Empirical evidence provides a contradicting view on the relationship between ownership structure and stock liquidity. For example, Rhee and Wang (2009) and Vayanos (2004) find that ownership structure is positively related to stock liquidity. Agarwal (2009), Attig et al. (2006), and Leñaño and Pedraza (2018) report a negative relationship. Agarwal (2009) uses the adverse selection and information efficiency hypotheses to test the relationship. The adverse selection hypothesis argues that firms with concentrated institutional shareholders' control tend to have lower liquidity, while substantial institutional shareholders lead to a broader level of information than the minority shareholders, inducing the information asymmetry problem (Ajinkya et al., 2005; Rubin, 2007; Leñaño & Pedraza, 2018). The major shareholders are likely to possess more quality firm-related information than the uninformed minority shareholders, resulting in adverse selection trading behaviour (O'Hara, 2003). Due to that, the theory suggests that a higher percentage of institutional investors will reduce the firm's stock liquidity.

In contrast, the information efficiency theory highlights institutional investors' positive role in promoting stock price efficiency (Agarwal, 2009; Mendelson & Tunca, 2004). The theory views that many institutional investors will amplify the stock market's competition and promote better price efficiency. Hence, firms with higher institutional shareholders lead to higher stock liquidity. The relationship can also be justified using the signalling theory and trading hypothesis. Active trading signals better information transparency related to the stock and lowers information asymmetry issues (Rhee & Wang, 2009).

From a liquidity perspective, the downward slope demand curve (DSDC) hypothesis explains how selling pressure from institutional investors, with inelastic demand for stock demand, suppresses the firm value upon delisting (Sanger & Peterson, 1990). Park et al. (2014) examine the trading patterns of individual, institutional, and foreign investors in response to the delisted announcement for Korean firms. Their findings support high selling pressure from the institution and foreign investors but not for individual investors after the delisting announcement. In the context of our study, the Sharia exclusion announcement would lead to the rebalancing of the Sharia-compliant portfolio among Sharia-compliant fund managers. Concerned Sharia investors must sell the affected stocks within six months of the exclusion announcement. Hence, based on the DSDC hypothesis and Park et al. (2014) empirical evidence, we posit that:

H3: Institutional ownership is significantly related to the liquidity/trading for Sharia stocks that lost their compliance status.

## **DATA AND METHODOLOGY**

### **Data**

The Sharia screening guidelines follow a two-tier approach that screens firms based on qualitative and quantitative criteria. The qualitative criteria evaluate firms' image, whereas the quantitative criteria measure the contribution of Sharia- and non-Sharia-compliant business activities to revenues. The screening is carried out bi-annually to ensure that certified firms follow the Sharia screening criteria consistently. Moreover, the newly listed and delisted firms are announced yearly at the end of May and November. Before the guideline's revision, there were four benchmarks, i.e., 5%, 10%, 20% and 25%. According to SC, the benchmarks of the acceptable level of non-permissible elements are as follows:

1. 5% benchmark on income based on Conventional banking; Conventional insurance; Gambling; Liquor and liquor-related activities; Pork and pork-related activities; Non-halal food and beverages; Sharia non-compliant entertainment; and other activities deemed non-compliant according to Sharia.
2. 10% benchmark on income based on the prohibited element but cannot be avoided (Interest income from conventional accounts and instruments; Tobacco and tobacco-related activities; and other activities deemed non-compliant according to Sharia).
3. 20% benchmark on income from rental payments from Sharia non-compliant activities.

4. 25% benchmark on income from generally permissible and have *maslahah*, but certain activities may affect the Sharia status (hotel and resort operations; share trading, stockbroking business; and other activities deemed non-compliant according to Sharia).

On 29 November 2013, the Security Commission revised the policy to tighten the Sharia screening criteria. The revised policy removed the 10% and 25%<sup>6</sup> maximum tolerable levels of non-Sharia permissible business activities. In addition, it introduced the financial requirement, where debt to asset ratio and cash ratio<sup>7</sup> cannot be more than 33%. Due to the revision, almost 20% of the certified firms lost their Sharia status.

This study aims to measure the impact of Sharia-compliant status loss on the affected stocks' liquidity and trading activities surrounding the announcement date, 29 November 2013. The affected firms are identified by comparing the lists of Sharia-compliant securities on 31 May 2013 and 29 November 2013. The lists are publicly available on the Security Commission website. We collect two sets of data:

1. Daily data spanning 90 days before and after the removal of Sharia status (i.e., 181-day event window) for the event study analysis.
2. Quarterly data from 2013 to 2014 for the regression analysis.

The revised policy led to the involuntary delisting of 158 firms from Sharia-compliant status. However, due to missing values in calculating *daily* liquidity and trading proxies for event study purposes, the sample firms vary based on the proxies, as summarised in Table 1.

Table 1  
*Sampling firms*

Proxy	Number of firms
<i>ILLIQ</i>	84
<i>SPREAD</i>	91
<i>LTVol</i>	87
<i>TO</i>	70
<i>TPI</i>	80

For the regression analysis, we have a sample of 107 firms spanning four quarters (Q3 2013, Q4 2013, Q1 2014, and Q2 2014). Ideally, we should have 856 observations, but due to 77 missing quarterly data points, our final sample comprises 779 firm-quarter observations.



## Variables Specification

This study employs five stock liquidity/trading proxies. Stock liquidity is measured using Amihud's (2002) illiquidity measure (*ILLIQ*) and quote spread (*SPREAD*). The lower the ratio, the higher the stock liquidity (Ma et al., 2018). Trading activity is alternatively being adopted to measure liquidity; therefore, similar to Chowdhury et al. (2018), we use three trading proxies, namely; natural log of trading volume (*LTVol*), turnover rate (*TO*) and turnover price index (*TPI*) of each firm's stock. The higher the ratio, the higher the liquidity for the traded stocks. The proxies are computed as follows:

$$ILLIQ_{iyd} = |R_{iyd}|/TV_{iyd} \quad (1)$$

where  $ILLIQ_{iyd}$  is the illiquidity ratio of security  $i$  on day  $d$  of year  $y$ ;  $R$  is the return on stock, and  $TV$  is the daily volume.

$$SPREAD_{i,d} = (Ask_{i,d} - Bid_{i,d})/M_{i,d} \quad (2)$$

where  $Ask_{i,d}$  is the closing ask price of stock  $i$  on day  $d$ ,  $Bid_{i,d}$  is the closing bid price of stock  $i$  on day  $d$ , and  $M_{i,d}$  is the mean of  $Ask_{i,d}$  and  $Bid_{i,d}$ .

$LTVol_{iyd}$  is the natural log of the daily trading volume of security  $i$  on day  $d$  of year  $y$ . Turnover rate ( $TO_{iyd}$ ) is the sum of the daily number of shares traded of security  $i$  on day  $d$  of year  $y$  divided by the number of daily shares outstanding of security  $i$  on day  $d$  of year  $y$ .  $TPI$  is constructed based on the following equation:

$$TPI_{iyd} = |R_{iyd}|/TO_{iyd} \quad (3)$$

where  $TO_{iyd}$  and  $R_{iyd}$  are the turnover rate and daily return of each share, respectively.

Chae (2005) tested the reactions of market participants to new information flow and the effect on trading volume caused by scheduled and unscheduled corporate announcements among NYSE and AMEX-listed firms. In this study, H1 aims to test abnormal liquidity movement after the delisting announcement after the revision of the Sharia screening policy. Similarly to Chae's (2005) context of schedule announcements to liquidity event studies, we apply a 21-day event window (−10 to +10 days) to gauge the impact of the schedule delisting announcement due to revised policy toward the liquidity of the affected stocks. Therefore, our event and the date are the delisting announcement due to Sharia screening policy changes on 29 November 2013. For robustness, we increase the observed event windows to 41 days (−20 to +20 days), 61 days (−31 to +30 days),

and 181 days (−90 to +90 days) before and after the removal announcement. Only trading days are considered for our analysis. Figure 1 summarises the event study procedure.

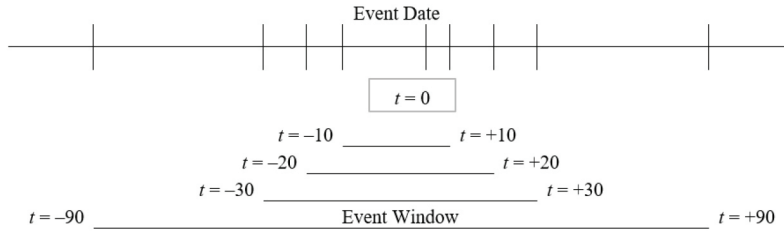


Figure 1. Event window for Sharia Screening Policy Change

Following the mean-adjusted model of Chae (2005), we compute the average liquidity or trading for each delisted firm  $\left(\overline{LIQ}_{iyd} = \frac{\sum_{t=-40}^{t=-11} LIQ_{iyd}}{30}\right)$  and generate the abnormal stock liquidity ( $ALIQ_{iyd}$ ) pre- and post-Sharia removal announcement by subtracting the  $LIQ_{iyd}$  with  $\overline{LIQ}_{iyd}$ . Refer to Ibrahim et al. (2019), we compute the average abnormal liquidity of tested firms on day  $d$   $\left(AALIQ_d = \frac{1}{n} \sum_{i=1}^n ALIQ_{iyd}\right)$  and the cumulative  $AALIQ_{iyd}$  is generated from  $CumAALIQ_{iyd} = \sum_{t_1}^{t_2} AALIQ_{iyd}$ .

The dependent and independent variables in the panel regression model (specified in Equation 4) are quarterly data. *Removal* is the primary independent variable, a dummy variable capturing the Sharia status removal announcement during the fourth quarter of 2013. *Inst\_Own* denotes the institutional investor's ownership (Wang & Zhang, 2015), whereas  $\Delta Inst\_Own$  is the institutional investor's ownership changes (Park et al., 2014) between two quarters. We also control for firm-specific variables influencing the firm's stock liquidity (Agarwal, 2009; Wang & Zhang, 2015). *Firm size* measures the level of information asymmetry, where larger firms tend to have higher information asymmetry and lower stock liquidity (Ajina et al., 2015; Cheng, 2007; Heflin et al., 2005). We expect a positive association between a firm's size and stock liquidity. Price volatility plays a significant role in influencing the firm's stock liquidity. Literature supports an inverse relationship between stock volatility and illiquidity measurement (Ajina et al., 2015; Chai et al., 2010; Espinosa et al., 2008). Therefore, we posit that stock volatility positively affects liquidity and trading activities. Firm age is the natural log of the number of years post-establishment, and we expect a positive relationship with liquidity (Cheung et al., 2015). Literature suggests that stock return (see Chan & Faff, 2003; Datar et al., 1998) and market-to-book (Chauhan et al., 2017) negatively related to liquidity and trading activities.

The required variables are collected from the Thomson Reuters Datastream and S&P Capital IQ databases. Appendix defines the tested variables used in our study. We employ a multivariate panel data regression model to examine the association between the firm's liquidity and the observed variables, controlling for the year and industry effects with standard errors clustered at the firm level. Our baseline regression model is specified below:

$$LIQ_{it} = \beta_0 + \gamma_i + \beta_1 Removal_{i,t} + \beta_2 Inst\_Own_{i,t} + \beta_n Control\ variables_{i,t} + \varepsilon_{i,t} \quad (4)$$

We also add interaction term to the baseline model as follow:

$$LIQ_{it} = \beta_0 + \gamma_i + \beta_1 Removal_{i,t} + \beta_2 Inst\_Own_{i,t} + \beta_3 Removal * Inst\_Own_{i,t} + \beta_n Control\ variables_{i,t} + \varepsilon_{i,t} \quad (5)$$

Lastly, we also re-estimate equations using  $\Delta Inst\_Own$ .

## RESULT AND DISCUSSION

### Short-Term: Event Study Analysis

We conduct an event study analysis to test H1 to identify any abnormal movement of stock liquidity and trading activities surrounding the removal announcement. Referring to Chae (2005), we apply a similar  $\pm 10$ -day event window to capture the announcement effect ten days before and after the Sharia status removal announcement. Table 2 lists the excluded firms' daily abnormal liquidity and trading values. We find a decreasing trend for the *ILLIQ* ratio and *SPREAD*, especially at  $t = +4$  ( $-0.0092$ ),  $t = +6$  ( $-0.0072$ ) and  $t = +8$  ( $-0.0072$ ). Smaller *SPREAD* is found on the announcement day ( $-0.0114$ ) compared to the day ( $-0.0084$ ) before the announcement. A diminishing trend is observed at  $t = +2$  ( $-0.0152$ ),  $t = +4$  ( $-0.016$ ),  $t = +6$  ( $-0.0163$ ) and  $t = +10$  ( $-0.0156$ ). These downward trends indicate high liquidity after the Sharia status removal announcement.

As for trading activities, *LTVol* indicates significantly higher trading volume before the announcement, but the trading volume decreases after the event date. The highest trading volumes are at  $t = -4$  ( $0.491$ ) and  $t = -5$  ( $0.573$ ); before falling to  $-1.8578$  at  $t = +2$  and  $-1.8019$  at  $t = +3$ . A similar pattern is observed for *TO*, with a value of  $0.3247$  and  $0.2580$  at  $t = +4$  and  $t = +5$ , respectively. However, post-announcement shows a negative but insignificant *TO*, except at  $t = +8$  ( $0.1164$ ). The highest *TPI* ratios are found slightly earlier than *LTVol* and *TO*, i.e., at  $t = -3$  ( $0.3985$ ) and  $t = -4$  ( $0.1953$ ), and similar negative *TPI* ratios are observed on the second ( $-0.4848$ ) and third ( $-0.5006$ ) days after the announcement. Collectively,

the trading volume and trading-to-price ratio decreased after the Sharia removal announcement. Literature suggests that the concerned shareholders will likely penalise Sharia status removal announcement (Cheong, 2021). Likewise, in our case, concerned investors, especially those holding or managing Sharia-compliant portfolios, sell the excluded stocks, translating into selling pressure.

Table 2  
Daily abnormal liquidity and trading values from  $t = -10$  to  $t = +10$

Variable	LIQUIDITY		TRADING		
	<i>ILLIQ</i>	<i>SPREAD</i>	<i>LTVol</i>	<i>TO</i>	<i>TPI</i>
No. of firms	84	91	87	70	80
-10	0.0086 [0.6821]	-0.0032 [-0.8833]	0.2275 [2.7552]	0.0589 [0.7316]	0.1702 [2.1172]
-9	0.0012 [0.3120]	-0.0111 [-4.4558]	0.3223 [4.8339]	0.0794 [1.0238]	0.0520 [0.6332]
-8	-0.0047 [-1.1298]	-0.0044 [-1.2953]	0.2140 [2.2571]	0.1112 [1.4793]	0.0892 [1.0583]
-7	-0.0051 [-1.3227]	-0.0072 [-2.1675]	0.3008 [4.0880]	0.1173 [1.5692]	0.0488 [0.5671]
-6	0.0000 [0.0036]	-0.0040 [-0.6523]	0.3679 [5.1474]	0.2224 [3.1286]	0.0439 [0.5122]
-5	-0.0006 [-0.1576]	-0.0120 [-2.8340]	0.5370 [9.6782]	0.2580 [3.7127]	0.1728 [2.2421]
-4	-0.0085 [-1.8502]	-0.0097 [-1.9741]	0.4910 [8.4781]	0.3247 [5.0250]	0.1953 [2.5658]
-3	0.0092 [0.7331]	-0.0096 [-1.8702]	0.3508 [5.1314]	0.1588 [1.9253]	0.3985 [4.7258]
-2	-0.0008 [-0.1655]	-0.0113 [-2.5757]	0.2998 [3.9847]	0.1527 [2.0235]	0.1582 [1.9638]
-1	-0.0091 [-1.5766]	-0.0084 [-1.6768]	0.2057 [2.8144]	0.0333 [0.4220]	0.0256 [0.3370]
0	-0.0091 [-1.5177]	-0.0114 [-2.3745]	0.1104 [1.4423]	0.0225 [0.3022]	0.1230 [1.3562]
+1	-0.0095 [-1.6193]	-0.0093 [-1.6095]	0.1887 [2.4777]	-0.0315 [-0.3468]	0.0214 [0.2881]
+2	-0.0093 [-1.5753]	-0.0152 [-3.7607]	-1.8578 [-18.0740]	-0.0124 [-0.1519]	-0.4848 [-9.4207]
+3	-0.0095 [-1.6193]	-0.0093 [-1.6095]	-1.8019 [-15.8356]	-0.0267 [-0.2927]	-0.5006 [-8.7887]
+4	-0.0092 [-1.6965]	-0.0160 [-3.1360]	0.2244 [3.0392]	0.0708 [1.0858]	0.2055 [2.1333]

(Continued on next page)

Table 2 (Continued)

Variable	LIQUIDITY			TRADING	
	<i>ILLIQ</i>	<i>SPREAD</i>	<i>LTVol</i>	<i>TO</i>	<i>TPI</i>
No. of firms	84	91	87	70	80
+5	-0.0077 [-1.5921]	-0.0056 [-1.0504]	0.1816 [2.4089]	-0.0133 [-0.1718]	0.1968 [2.2990]
+6	-0.0072 [-1.8297]	-0.0163 [-2.6190]	0.1249 [1.6988]	0.0131 [0.2016]	0.2458 [3.1170]
+7	-0.0075 [-1.4657]	-0.0009 [-0.0865]	0.1584 [2.3080]	-0.0314 [-0.4325]	0.0444 [0.5174]
+8	-0.0072 [-1.8154]	-0.0173 [-2.4213]	0.2135 [3.3920]	0.1164 [2.0528]	0.1912 [2.1375]
+9	-0.0034 [-1.0136]	-0.0047 [-0.5931]	0.2835 [3.6851]	0.0729 [0.8232]	0.1670 [2.1132]
+10	-0.004 0 [-1.0337]	-0.0156 [-2.6473]	0.0712 [0.6723]	0.0867 [1.1281]	0.2258 [2.5117]
Average (-10, -3)	-0.0013 [-0.6605]	-0.0115 [-9.0600]	0.3515 [8.0351]	0.1674 [4.6901]	0.1103 [4.6727]

Notes: Table 2 illustrates the daily abnormal liquidity (*ILLIQ*, *SPREAD*) and trading values (*LTVol*, *TO*, and *TPI*) for the 10 days preceding and following Sharia status removal announcements. The term Average (-10, -3) refers to the mean abnormal value derived from the average liquidity/trading values between  $t = -10$  and  $t = -3$ , representing the period 3 to 10 days before the announcement of the revised Sharia screening policy and the removal of Sharia status. *t*-statistics are enclosed in square brackets.

Table 3  
Average abnormal liquidity and trading values

Variable	LIQUIDITY			TRADING		
	ILLIQ	SPREAD	LTVol	TO	TPI	
No. of firms	84	91	87	70	80	
<b>Panel A: Average abnormal liquidity and trading ratios</b>						
Average (-10, +10)	-0.0074 [-3.6229]	-0.0096 [-9.3089]	0.0578 [0.4150]	0.0849 [3.9880]	0.0852 [1.8374]	
Average (-20, +20)	-0.0049 [-5.0622]	-0.0075 [-7.1236]	-0.0711 [-0.6664]	-0.0072 [-0.3034]	0.9490 [12.2259]	
Average (-30, +30)	-0.0048 [-6.1747]	-0.0058 [-5.3865]	-0.0318 [-0.4003]	-0.0037 [-0.1789]	3.1928 [3.9403]	
Average (-10, -3)	-0.0013 [-0.6605]	-0.0115 [-9.0600]	0.3515 [8.0351]	0.1674 [4.6901]	0.1103 [4.6727]	
<b>Panel B: Pre- and post-Sharia status removal announcement (Mean difference Test)</b>						
Sub period	Pre-removal	Post-removal	Pre-removal	Post-removal	Pre-removal	Post-removal
Average (-10, -1); Average (+1, +10)	0.0190 [ <i>p</i> -value = 0.02]	-0.0010 [ <i>p</i> -value = 0.16]	-0.0081 [ <i>p</i> -value = 0.06]	0.3317 [ <i>p</i> -value = 0.01]	0.1517 [ <i>p</i> -value = 0.27]	0.1354 0.0208
Average (-20, -1); Average (+1, +20)	0.0178 [ <i>p</i> -value = 0.02]	-0.0036 [ <i>p</i> -value = 0.00]	0.1174 [ <i>p</i> -value = 0.09]	0.0249 [ <i>p</i> -value = 0.28]	0.0512 [ <i>p</i> -value = 0.65]	0.0208 0.0550
Average (-30, -1); Average (+1, +30)	0.0051 [ <i>p</i> -value = 0.01]	-0.0006 [ <i>p</i> -value = 0.00]	0.0300 [ <i>p</i> -value = 0.45]	-0.0181 [ <i>p</i> -value = 0.46]	0.0053 [ <i>p</i> -value = 0.42]	0.0550 0.0083
Average (-60, -1); Average (+1, +60)						0.0584 [ <i>p</i> -value = 0.02]

(Continued on next page)

Table 3 (Continued)

Sub period	Pre-removal	Post-removal	Pre-removal	Post-removal	Pre-removal	Post-removal	Pre-removal	Post-removal
Average (-90, -1); Average (+1, +90)							0.0900	0.0071 [p-value = 0.00]
Average (-11, -1); Average (0, +10)	-0.0001	-0.0076	-0.0076	-0.0110	0.3194	-0.1912	0.1417	0.0243 [p-value = 0.01]
Average (-21, -1); Average (0, +20)	0.0013	-0.0051	-0.0035	-0.0112	0.1146	-0.2507	0.0167	0.0450 [p-value = 0.25]
Average (-31, -1); Average (0, +30)	0.0014	-0.0049	-0.0003	-0.0109	0.0400	-0.0916	-0.0134	0.0128 [p-value = 0.77]
Average (-61, -1); Average (0, +60)								0.0580 [p-value = 0.03]
Average (-91, -1); Average (0, +90)								0.0993 [p-value = 0.00]

Notes: Table 3 reports the average abnormal liquidity and trading values by event windows in Panel A, with t-statistics enclosed in square brackets. Additionally, it presents data by subperiods—specifically, pre-removal and post-removal event windows—to facilitate a comparison of the average abnormal liquidity and trading values between these two subperiods in Panel B, where p-values for the mean difference test are enclosed in square brackets.

Next, we examine whether the average abnormal liquidity and trading remain significant in longer event windows, specifically, the 41-day (−20 to +20) and 61-day (−30 to +30) windows. If the average abnormal liquidity and trading remain significant as the 21-day event window (−10 to +10), we infer that the removal announcement significantly impacts the affected stock liquidity and trading activities in both the short and longer term. Table 3 reports the average abnormal liquidity and trading values by event windows in Panel A, with *t*-statistics enclosed in square brackets. Additionally, it presents data by subperiods—specifically, pre-removal and post-removal event windows—to facilitate a comparison of the average abnormal liquidity and trading values between these two subperiods in Panel B, where *p*-values for the mean difference test are enclosed in square brackets. Though we observe smaller *ILLIQ* and *SPREAD* values in the extended event windows (−20, +20) and (−30, +30), the values are consistently significant. Regarding trading activities, *LTVol* and *TO* are insignificant but *TPI* is significant across different event windows. Intuitively, the excluded stock liquidity increases even for longer event windows. On the other hand, the removal announcement significantly influences the average turnover rate (*TO*) for a short period but affects the turnover-to-price ratio for the observed event windows.

Next, we compare the average abnormal liquidity and trading values pre and post-removal announcement for the following event windows: (−10, −1 vs. +1, +10), (−20, −1 vs. +1, +20) and (−30, −1 vs. +1, +30). To ensure the robustness of our analysis, we repeat the process by incorporating the announcement day in our analysis (−10, −1 vs. 0, +10), (−20, −1 vs. 0, +20) and (−30, −1 vs. 0, +30). Our findings indicate that the mean for abnormal *ILLIQ* and *SPREAD* decreases significantly for the observed post-removal event windows. A similar downward trend is reported for abnormal trading volume for (−10, −1 vs. +1, +10), (−20, −1 vs. +1, +20), (−11, −1 vs. 0, +10), and (−21, −1 vs. 0, +20) event windows. A significantly smaller average abnormal *TO* value is reported for the shorter pre- and post-removal event windows (−10, −1 vs. +1, +10) and (−11, −1 vs. 0, +10) but not for longer event windows. The average abnormal *TPI* is not significantly different between the pre- and post-removal for observed event windows. For this reason, we conduct a further test using longer event windows (−60, −1 vs. +1, +60), (−90, −1 vs. +1, +90), (61, −1 vs. 0, +60), and (−91, −1 vs. 0, +90). The results are significant for these event windows. Therefore, we confirm that the turnover-to-price effect becomes more conspicuous ±60 and ±90 days after the removal announcement.



In conclusion, our results support H1. In the post-removal announcement period, stock liquidity increases, but trading activities decrease significantly—the effects on *ILLIQ*, *SPREAD*, *LTVol* and *TO* are significant for the shorter windows. However, the impact on TPI is considerably longer ( $\pm 60$  and  $\pm 90$  days). After the removal announcement, the liquidity and trading activities changed more evidently, therefore supporting the semi-strong-form nature of the Malaysian stock market. Moreover, we failed to support the inverse effect of delisted announcement toward the stock liquidity as posited by the liquidity hypothesis theory.

### Preliminary Analysis

Table 4 depicts the descriptive statistics for the tested variables. The mean values of *ILLIQ* and *SPREAD* proxies are less than 0.0239, indicating that the stocks are relatively liquid. Meanwhile, the average *LTVol* is 4.056, which is on the high side, with a maximum value of 6.2125. The average *TO* and *TPI* are 0.1549 and 2.9571, respectively. 8.52% of the stock is owned by institutional investors, and the ownership changes by 26.93%. The average firm size is 12.2930, with a mean firm age of 3.3786. The sample firms have a mean market-to-book ratio greater than 1, i.e., 1.2555, lower stock returns of 1.67%, and higher stock volatility of 45.89%.

Table 5 presents the mean differences of the tested variables between the pre-removal and post-removal subperiods. Consistent with the event study, the univariate analysis suggests a higher liquidity post-removal subperiod, indicating a lower *SPREAD* value post-removal than pre-removal. Stock trading volume (*TO*) increases, but the turnover-to-price ratio (*TPI*) decreases post-removal subperiod. Another significant change is the change in institutional ownership, with a mean value of 52.98%, suggesting a substantial change in institutional shareholdings post-removal period. Table 6 is the correlation matrix. We do not find any multicollinearity concerns.

Table 4  
*Descriptive statistics*

Variable	Obs	Mean	SD	Min	Max
<i>ILLIQ</i>	779	0.0000	0.0003	0.0000	0.0075
<i>SPREAD</i>	779	0.0239	0.0394	0.0000	0.3333
<i>LTVol</i>	779	4.0558	0.9644	0.0000	6.2125
<i>TO</i>	779	0.1549	0.4443	0.0000	5.5482
<i>TPI</i>	779	2.9571	8.5674	0.0000	69.0877
<i>Removal</i>	779	0.4929	0.5003	0.0000	1.0000
<i>Inst_Own</i>	779	0.0852	0.1413	0.0000	0.7817
$\Delta$ <i>Inst_Own</i>	779	0.2693	3.4922	-1.0000	71.2222
<i>Firm size</i>	779	12.2930	1.6020	7.8400	16.4974
<i>Firm age</i>	779	3.3786	0.5986	1.6094	4.9628
<i>Market-to-book</i>	779	1.2555	1.8711	-0.1800	15.8200
<i>Stock return</i>	779	0.0167	0.0879	-0.5509	0.4929
<i>Stock volatility</i>	779	0.4589	0.3513	0.0879	2.2862

*Notes:* Table 4 presents the sample's summary statistics, comprising 779 firm-quarter observations ( $n = 107$ ) spanning from the first quarter of 2013 to the fourth quarter of 2014. The definition of each variable is provided in Appendix.

Table 5  
Mean difference test

Variable	Pre-removal					Post-removal					Mean difference
	Obs	Mean	S. D.	Min	Max	Obs	Mean	SD	Min	Max	
<i>ILLIQ</i>	395	0.0001	0.0004	0.0000	0.0075	384	0.0000	0.0002	0.0000	0.0045	0.0001
<i>SPREAD</i>	395	0.0297	0.0485	0.0000	0.3333	384	0.0179	0.0256	0.0000	0.1961	0.0119***
<i>LTVol</i>	395	3.9742	0.9473	0.0000	6.2125	384	4.1398	0.9758	0.0000	6.1076	-0.1655**
<i>TO</i>	395	0.1493	0.5002	0.0000	5.5482	384	0.1605	0.3788	0.0000	3.7335	-0.0112
<i>TPI</i>	395	3.7129	9.7714	0.0000	69.0877	384	2.1796	7.0486	0.0000	69.0877	1.5334**
<i>Inst_Own</i>	395	0.0880	0.1484	0.0000	0.7817	384	0.0823	0.1337	0.0000	0.6743	0.0058
$\Delta$ <i>Inst_Own</i>	395	0.0159	0.2609	-1.0000	3.2544	384	0.5298	4.9566	-1.0000	71.2222	-0.5139**
<i>Firm size</i>	395	12.1545	1.6524	7.8400	16.3851	384	12.4355	1.5376	7.8400	16.4974	-0.2810**
<i>Firm age</i>	395	3.3502	0.6122	1.6094	4.9558	384	3.4078	0.5837	1.7918	4.9628	-0.0576
<i>Market-to-book</i>	395	1.1509	1.8089	-0.1800	15.8200	384	1.3631	1.9294	-0.1800	15.8200	-0.2122
<i>Stock return</i>	395	0.0142	0.0927	-0.5509	0.4929	384	0.0194	0.0827	-0.3979	0.4836	-0.0052
<i>Stock volatility</i>	395	0.5034	0.3844	0.0879	2.2862	384	0.4132	0.3076	0.0879	2.2862	0.0902***

Notes: Table 5 reports the mean differences between the pre-removal and post-removal announcement subsamples for 107 firms. The definition of each variable is provided in the Appendix. The superscripts \*, \*\*, and \*\*\* represent significance at the 90%, 95%, and 99% confidence levels, respectively.

Table 6  
Correlation matrix

Variable	ILLIQ	SPREAD	LTVol	TO	TPI	Removal	Inst_Own	ΔInst_Own	Firm size	Firm age	Market-to-book	Stock return	Stock volatility
ILLIQ	1.0000												
SPREAD	0.4742***	1.0000											
LTVol	-0.2314***	-0.4258***	1.0000										
TO	-0.0373	-0.1045***	0.4066***	1.0000									
TPI	0.5868***	0.6352***	-0.3849***	-0.1060***	1.0000								
Removal	-0.0405	-0.1505***	0.0859**	0.0126	-0.0895**	1.0000							
Inst_Own	-0.0521	-0.2257***	0.2824***	-0.0809**	-0.1236***	-0.0204	1.0000						
ΔInst_Own	-0.0068	-0.0326	0.0077	-0.0110	-0.0136	0.0736**	-0.0138	1.0000					
Firm size	-0.1417***	-0.4230***	0.3380***	-0.1068***	-0.1737***	0.0878**	0.5546***	0.0173	1.0000				
Firm age	0.0094	-0.1835***	-0.0420	-0.0134	-0.1091***	0.0481	0.1021***	-0.0532	0.2086**	1.0000			
Market-to-book	-0.0385	-0.1327***	-0.0485	-0.0326	-0.0402	0.0567	0.1445***	0.0149	0.3574***	0.1978***	1.0000		
Stock return	-0.0792*	-0.0019	0.0809**	0.0760**	-0.0157	0.0295	-0.0422	0.0004	0.0140	0.0151	0.0479	1.0000	
Stock volatility	0.0527	0.2916***	0.0468	0.1581***	0.1661***	-0.1285**	-0.2535***	-0.0420	-0.4407***	-0.1811***	-0.2139***	0.0037	1.0000

Notes: Table 6 reports the pairwise correlation for the tested variables. The definition of each variable is provided in the Appendix. The superscripts \*, \*\*, and \*\*\* represent significance at the 90%, 95%, and 99% confidence levels, respectively.

### Long Term: Regression Analysis

To test H2 for the long-term analysis, we regress Equation 4, and the results are presented in Table 7. Table 7 reports the estimates of the regression model for Equation (5). *Removal* is negatively and significantly related to *SPREAD*, where a lower bid-ask spread implies higher liquidity post-removal announcement. The positive sign of *Removal* in the *LTVol* model indicates an increase in the total shares changing hands post-removal announcement. In contrast to the theory of the liquidity hypothesis, these findings further confirm the evidence of higher liquidity phenomena after the analysis of the removal announcement in the event study. On the contrary, the Removal of Sharia status leads to lower *TPI*. Lower *TPI* may be due to substantial selling pressure for affected stocks (Nor et al., 2019) that also suppressed the stock price after these firms lost their Sharia certification (Yazi et al., 2015), as such supported the liquidity hypothesis theory. These findings are significant at the 1% level and remain consistent in Models 7, 8 and 10, where  $\Delta Inst\_Own$  is used instead of *Inst\\_Own* in the regression model. Since all tested liquidity and trading proxy are significant, in summary, we find evidence in support of H2 that is consistent with the semi-strong form for the Malaysian stock market, but partially in compliance with the liquidity hypothesis. As for the *Inst\\_Own* and  $\Delta Inst\_Own$ , similar to Sanger and Peterson (1990), our results are insignificant. Due to insignificant results, we failed to prove the DSDC hypothesis in our investigation.

For the control variables, firm size is negatively related to *SPREAD* (Models 2 and 7) but is positively associated with *LTVol* (see Models 3 and 8). The results are in line with Ajina et al. (2015), Cheng (2007), and Heflin et al. (2005), where the larger the firms, the higher the stock trading activities, making the stock more liquid. Firm age does not influence liquidity and trading activities. Like Chauhan et al. (2017), *Market-to-book* is negatively associated with *LTVol* (Models 3 and 8). *Stock return* is positively related to trading activities, *LTVol* and *TO*. Consistent with the literature (Ajina et al., 2015; Chai et al., 2010; Espinosa et al., 2008), a positive association can be found between stock volatility and *SPREAD* (Models 2 and 7), *LTVol* (Models 3 and 8) and *TO* (Models 4 and 9), suggesting that higher stock volatility leads to higher trading activities in the expense of low liquidity.

Table 7  
Removal of Sharia-compliant status, liquidity and trading activities

Variable	ILLIQ	SPREAD	LTVol	TO	TPI	ILLIQ	SPREAD	LTVol	TO	TPI
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Removal	-0.0001 (0.2796)	-0.0181*** (0.0008)	0.2976*** (0.0014)	0.0087 (0.9009)	-2.4513*** (0.0050)	-0.0001 (0.2775)	-0.0180*** (0.0008)	0.2895*** (0.0015)	0.0124 (0.8545)	-2.4130*** (0.0059)
Inst_Own	0.0000 (0.5371)	-0.0030 (0.7744)	0.3796 (0.5209)	-0.1763 (0.3391)	-1.8181 (0.3948)					
$\Delta$ Inst_Own						0.0000 (0.5769)	-0.0001 (0.1350)	0.0032 (0.5985)	0.0003 (0.7782)	-0.0021 (0.9182)
Firm size	-0.0000 (0.1342)	-0.0096*** (0.0026)	0.3072*** (0.0000)	0.0166 (0.3240)	-0.7186 (0.2257)	-0.0000 (0.1300)	-0.0097*** (0.0009)	0.3269*** (0.0000)	0.0074 (0.5477)	-0.8131 (0.1357)
Firm age	0.0000 (0.2849)	-0.0042 (0.3582)	-0.1090 (0.3078)	0.0445 (0.5264)	-0.6158 (0.5017)	0.0000 (0.2858)	-0.0043 (0.3530)	-0.1065 (0.3195)	0.0443 (0.5327)	-0.6209 (0.5000)
Market-to-book	0.0000 (0.3835)	0.0007 (0.3411)	-0.0897*** (0.0003)	-0.0093 (0.2894)	0.1097 (0.5210)	0.0000 (0.3956)	0.0007 (0.3175)	-0.0915*** (0.0002)	-0.0086 (0.3322)	0.1171 (0.4842)
Stock return	-0.0003 (0.3882)	0.0084 (0.5902)	0.7894* (0.0752)	0.4315* (0.0916)	-0.3267 (0.9269)	-0.0003 (0.3858)	0.0086 (0.5870)	0.7586* (0.0826)	0.4462* (0.0908)	-0.1763 (0.9611)
Stock volatility	0.0000 (0.9707)	0.0124* (0.0654)	0.4940*** (0.0077)	0.1356** (0.0495)	2.6291 (0.1681)	-0.0000 (0.9852)	0.0125* (0.0625)	0.4859*** (0.0078)	0.1398** (0.0492)	2.6713 (0.1600)
Constant	0.0005 (0.1145)	0.1608*** (0.0000)	0.2993 (0.6954)	-0.2407 (0.3004)	13.7785** (0.0195)	0.0005 (0.1098)	0.1626*** (0.0000)	0.0915 (0.8949)	-0.1472 (0.5224)	14.7513*** (0.0066)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

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Table 7 (Continued)

Variable	ILLIQ	SPREAD	LTVol	TO	TPI	ILLIQ	SPREAD	LTVol	TO	TPI
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Adjusted R <sup>2</sup>	0.0356	0.2239	0.3152	0.1109	0.0721	0.0355	0.2240	0.3136	0.1091	0.0716
Observations	779	779	779	779	779	779	779	779	779	779
N	107	107	107	107	107	107	107	107	107	107

Note: \*, \*\*, and \*\*\* represent significance at the 90%, 95%, and 99% confidence levels, respectively.

Table 8  
Interaction effect: Removal of Sharia-compliant status, liquidity and trading activities

Variable	ILLIQ	SPREAD	LTVol	TO	TPI	ILLIQ	SPREAD	LTVol	TO	TPI
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Removal	-0.0001 (0.2810)	-0.0198*** (0.0007)	0.2868*** (0.0040)	0.0215 (0.7487)	-2.5554*** (0.0091)	-0.0001 (0.2778)	-0.0180*** (0.0008)	0.2895*** (0.0015)	0.0124 (0.8546)	-2.4129*** (0.0059)
Inst_Own	0.0000 (0.5505)	-0.0001 (0.2201)	0.0032 (0.5942)	0.0003 (0.8362)	-0.0009 (0.9680)					
Removal*Inst_Own	0.0001 (0.3517)	0.0231* (0.0572)	0.0355 (0.9446)	-0.1176 (0.3930)	1.8410 (0.5111)					
ΔInst_Own						-0.0000 (0.8585)	-0.0024 (0.6036)	-0.0605 (0.6274)	-0.0187 (0.4276)	0.1053 (0.8922)
Removal*ΔInst_Own						0.0000 (0.8398)	0.0023 (0.6246)	0.0639 (0.6092)	0.0191 (0.4204)	-0.1077 (0.8901)
Firm size	-0.0000 (0.1408)	-0.0103*** (0.0010)	0.3260*** (0.0000)	0.0103 (0.4371)	-0.8582 (0.1530)	-0.0000 (0.1304)	-0.0098*** (0.0009)	0.3268*** (0.0000)	0.0074 (0.5500)	-0.8129 (0.1364)

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Table 8 (Continued)

Variable	ILLIQ	SPREAD	LTVol	TO	TPI	ILLIQ	SPREAD	LTVol	TO	TPI
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Firm age	0.0000 (0.2854)	-0.0041 (0.3780)	-0.1062 (0.3219)	0.0433 (0.5459)	-0.6049 (0.5176)	0.0000 (0.2863)	-0.0043 (0.3541)	-0.1063 (0.3198)	0.0443 (0.5325)	-0.6212 (0.5003)
Market-to-book	0.0000 (0.3839)	0.0007 (0.3150)	-0.0915*** (0.0002)	-0.0087 (0.3250)	0.1182 (0.4784)	0.0000 (0.3951)	0.0007 (0.3237)	-0.0917*** (0.0002)	-0.0087 (0.3296)	0.1175 (0.4841)
Stock return	-0.0003 (0.3876)	0.0098 (0.5311)	0.7605* (0.0830)	0.4400* (0.0918)	-0.0796 (0.9822)	-0.0003 (0.3860)	0.0086 (0.5866)	0.7594* (0.0826)	0.4464* (0.0909)	-0.1776 (0.9609)
Stock volatility	0.0000 (0.9932)	0.0126* (0.0593)	0.4860*** (0.0078)	0.1394** (0.0488)	2.6777 (0.1587)	-0.0000 (0.9806)	0.0124* (0.0639)	0.4844*** (0.0080)	0.1393* (0.0501)	2.6738 (0.1603)
Constant	0.0005 (0.1208)	0.1688*** (0.0000)	0.1009 (0.8848)	-0.1786 (0.4107)	15.2423** (0.0108)	0.0005 (0.1102)	0.1627*** (0.0000)	0.0934 (0.8927)	-0.1467 (0.5242)	14.7480*** (0.0067)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.0350	0.2254	0.3127	0.1084	0.0707	0.0342	0.2231	0.3128	0.1080	0.0704
Observations	779	779	779	779	779	779	779	779	779	779
N	107	107	107	107	107	107	107	107	107	107

Note: \*, \*\*, and \*\*\* represent significance at the 90%, 95%, and 99% confidence levels, respectively.



To test H3, we run Equation 5 with the interaction term  $Removal*Inst\_Own$ . Table 8 reports the estimates of the regression model for Equation (5). The results in Table 7 are consistent with those reported in Table 8. Removal remains significant in the  $SPREAD$ ,  $LTVol$  and  $TPI$  models, supporting H2.  $Removal*Inst\_Own$  is only significant in the  $SPREAD$  model but at the 10% significance level; hence, we do not find robust evidence to support H3. We argue that it could be due to the six-month grace period given to Sharia-compliant fund managers to sell Sharia stocks that have lost certification in their holdings (Security Commission Malaysia). This means they may not dispose of the affected stocks immediately upon the removal announcement.

### Additional Analysis

Since our  $Removal*Inst\_Own$  is significant in the  $SPREAD$  model but at 10% (Table 8), we conducted additional tests to capture the specific quarter did institutional ownership changes after the announcement. To investigate further, we include two-quarter dummy variables to identify the quarter calendar effect (Shin & Kim, 2002) after Sharia status removal announcements in November 2013. The first quarter of 2014 ( $Q1_{2014}$ ) takes the value of 1, else 0 for other quarters, and the second quarter of 2014 ( $Q2_{2014}$ ), else 0 for other quarters. To account for the potential quarter calendar effect, we interact  $Inst\_Own$  with  $Q1_{2014}$  and  $Q2_{2014}$  as follows:

$$LIQ_{it} = \beta_0 + \gamma_i + \beta_1 Q1_{2014, it} + \beta_2 Inst\_Own_{it} + \beta_3 Q1_{2014} * Inst\_Own_{it} + \beta_n Control\ variables_{i,t} + \varepsilon_{i,t} \quad (6)$$

$$LIQ_{it} = \beta_0 + \gamma_i + \beta_1 Q2_{2014, it} + \beta_2 Inst\_Own_{it} + \beta_3 Q2_{2014} * Inst\_Own_{it} + \beta_n Control\ variables_{i,t} + \varepsilon_{i,t} \quad (7)$$

Table 9 reports the estimates of the regression model for Equations (6) and (7). From Panel A of Table 9,  $Q1_{2014}*Inst\_Own$  is insignificant, and the same results are reported for  $Q1_{2014}*\Delta Inst\_Own$ . In Panel B,  $Q2_{2014}*Inst\_Own$  is positively associated with  $SPREAD$  (Model 2), but at the 10% level. In Models 7 and 8, the significant  $\Delta Inst\_Own$  denotes changes in the institutional ownership that promote stock liquidity. Still, when we interact  $\Delta Inst\_Own$  with  $Q2_{2014}$ , the significant relationship with  $LTVol$  turns negative, where changes in institutional ownership during quarter two of 2014 lead to lower trading activities (Model 8), implying a delayed impact. Based on the results, H3 is marginally supported.

Table 9  
Controlling for potential timing effect

Variable	Panel A: Quarter one, 2014									
	ILLIQ (1)	SPREAD (2)	LTVol (3)	TO (4)	TPI (5)	ILLIQ (6)	SPREAD (7)	LTVol (8)	TO (9)	TPI (10)
Q1 <sub>2014</sub>	-0.0000 (0.8221)	-0.0086* (0.0854)	0.2074*** (0.0061)	0.0119 (0.7269)	0.0421 (0.9747)	-0.0000 (0.7854)	-0.0085* (0.0624)	0.1965*** (0.0037)	0.0126 (0.7030)	-0.0603 (0.9569)
Inst_Own	0.0000 (0.5084)	-0.0026 (0.7998)	0.3831 (0.5097)	-0.1714 (0.3402)	-1.6303 (0.4392)					
Q1 <sub>2014</sub> *Inst_Own	-0.0000 (0.7951)	-0.0034 (0.6856)	-0.0336 (0.8982)	-0.0463 (0.5579)	-1.7733 (0.6179)					
$\Delta$ Inst_Own						0.0000 (0.2893)	-0.0001 (0.3854)	0.0039 (0.5886)	0.0006 (0.6226)	-0.0021 (0.9200)
Q1 <sub>2014</sub> * $\Delta$ Inst_Own						-0.0000 (0.4815)	-0.0004 (0.1884)	-0.0042 (0.7133)	-0.0015 (0.5373)	0.0000 (0.9995)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.0344	0.2229	0.3143	0.1097	0.0709	0.0343	0.2231	0.3127	0.1079	0.0703
Observations	779	779	779	779	779	779	779	779	779	779
N	107	107	107	107	107	107	107	107	107	107
	<b>Panel B: Quarter two, 2014</b>									
Q2 <sub>2014</sub>	-0.0001 (0.2588)	-0.0178*** (0.0024)	0.2213*** (0.0020)	-0.0023 (0.9666)	-1.7195 (0.1390)	-0.0001 (0.2624)	-0.0161*** (0.0021)	0.2109*** (0.0010)	-0.0013 (0.9784)	-1.5475* (0.0949)
Inst_Own	0.0000 (0.6387)	-0.0050 (0.6215)	0.3910 (0.5038)	-0.1731 (0.3471)	-1.9621 (0.3544)					

(Continued on next page)

Table 9 (Continued)

Variable	ILLIQ	SPREAD	LTVol	TO	TPI	ILLIQ	SPREAD	LTVol	TO	TPI
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Q2 <sub>2014</sub> *Inst_Own	0.0001 (0.2439)	0.0198* (0.0878)	-0.1152 (0.6077)	-0.0317 (0.6117)	1.4455 (0.6944)					
ΔInst_Own						0.0000 (0.8190)	-0.0002* (0.0819)	0.0092*** (0.0047)	0.0002 (0.8700)	0.0048 (0.7986)
Q2 <sub>2014</sub> *ΔInst_Own						0.0000 (0.4497)	0.0002 (0.2170)	-0.0215*** (0.0000)	0.0004 (0.7293)	-0.0247 (0.4189)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.0346	0.2234	0.3144	0.1097	0.0709	0.0342	0.2230	0.3139	0.1079	0.0704
Observations	779	779	779	779	779	779	779	779	779	779
N	107	107	107	107	107	107	107	107	107	107

Note: \*, \*\*, and \*\*\* represent significance at the 90%, 95%, and 99% confidence levels, respectively.

## **CONCLUSION**

This study examines the impact of the Sharia-compliant status removal announcement on the liquidity and trading activities of stocks that lost their Sharia certification due to a policy revision. To achieve our primary objective, we conducted an event study analysis, where the main event was the revision of Sharia compliance guidelines in late November 2013. We also test the impact of removal announcement and institutional ownership on the affected stocks' liquidity and trading activities using regression analysis. Our findings confirm a higher liquidity position after the Sharia removal announcement, which contrasts with Sanger and Peterson (1990) and Macey et al. (2008) that delisting deteriorates the liquidity of delisted stocks in the U.S. Our results suggest that trading volume and trading-to-price ratio decrease post-removal announcement. Therefore, we conclude that the Malaysian stock market is semi-strong.

Our trading results differ slightly from the inconclusive findings in the existing study from a developed markets perspective (Gregoriou & Nguyen, 2010; Lin & Kensinger, 2007). In our context, losing the Sharia certification is considered bad news and evokes adverse shareholder reactions (Cheong, 2021). Concerned investors or fund managers will likely sell the affected stocks from their portfolios (Nor et al., 2019). The decreased trading phenomenon indicates that investors had difficulty selling their delisted stocks immediately after the announcement, although the market was liquid. Therefore, observing a falling trend in trading activity after the Sharia removal announcement period is unsurprising. However, trading activities rebound over a longer post-event window. When we divide the observation windows into pre-removal and post-removal subperiods, there is a significant difference in the average abnormal liquidity and trading activities between the subperiods. Consistently, the stocks' liquidity increases significantly for all post-removal sub-period cases. In contrast, trading activities reduced substantially after the removal announcement. Therefore, H1 is supported.

There are a few essential pieces of evidence from the regression analysis. We confirm that the removal announcement significantly affects stocks' liquidity and trading activities, supporting H2. Initially, contrary to the DSDC hypothesis, we do not find a significant relationship between institutional ownership and stock liquidity or trading activities. When we control for the potential calendar effect, we observe a delayed impact on trading activities, but our results are not significant across the models to consistently support H3. Our study implies that Sharia-compliant firms must consistently meet the screening criteria to avoid losing the certification. Suppose the firms fail to retain their Sharia status, it will affect their

firms' Sharia-compliant reputation, especially among the concerned investors. The investors will sell the affected stock from their portfolios if the affected stocks no longer meet the investment criteria. Though selling pressure will be on the affected stocks, the impact is not immediate because the fund managers are given up to six months to rebalance their portfolios, particularly those managing Sharia-compliant portfolios. Lastly, our results suggest that institutional investors are not the only investor group that will impact the affected stocks' liquidity and trading activities. Future studies should account for different investor groups for a more comprehensive understanding.

We are aware of our study limitation, where our panel regression analysis examined firm-level determinants that influence stock liquidity. Chowdhury et al. (2018) and Fernández-Amador et al. (2013) present the effect of macro variables such as monetary and fiscal policies on stock market liquidity. Future studies should incorporate these macro determinants apart from firm-level factors in their delisting-liquidity analysis. Another limitation is related to our sampling firms for our Sharia removal event study. In this study, we do not cater for Sharia removal announcements related firms prior or after that policy changes. We focused on the one specific event related to the highest number of firms (158 firms across different industries) affected by the Sharia removal announcement due to the revised Sharia-compliance guideline in late November 2013.

## **ACKNOWLEDGEMENTS**

This research was supported by the Ministry of Higher Education Malaysia via FRGS grant (FRGS/1/2019/SS01/UM/02/2) (FP119-2019A).

## **NOTES**

1. *Ownership structure* is defined as the percentage of shares owned by a firms most significant shareholders (Demsetz & Lehn, 1985), such as the top 5 most significant shareholders.
2. Concentrate ownership refers to the biggest shareholder with the most control rights and is not influenced by anyone else (Tsao & Chen, 2012).
3. Institutional investors represent the specialised financial institution that manages a massive pool of funds (Davis & Steil, 2004).

4. The major institutional investors in Malaysia include Permodalan Nasional Berhad (PNB), Employee Providence Fund (EPF), and Tabung Haji (TH), which are expected to sell the affected stocks from their investment portfolio to satisfy the mandates of their Islamic-based investors.
5. Malaysia, India, Bangladesh, Indonesia, Pakistan, Thailand, South Korea and Taiwan.
6. The 10% level is the maximum tolerable rate for business activities with umum balwa element, a prohibited element affecting most people and difficult to avoid. The 25% level filters business activities with the masalah element and others, including non-Sharia-compliant hotel and resort operations, share trading and stockbroking. Source: Malaysia Islamic Financial Centre (2013).
7. These ratios measure the riba and riba-based financial activity threshold.

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## APPENDIX

### Variables description

Variable Name	Description
<i>ILLIQ</i>	Amihud (2002) liquidity, $ILLIQ_{iyd} =  R_{iyd} /TV_{iyd}$
SPREAD	Quoted spread, $SPREAD_{i,d} = (Ask_{i,d} - Bid_{i,d})/M_{i,d}$
LTVol	Natural log of trading volume.
<i>TO</i>	Turnover ratio is the sum of the daily shares traded divided by the daily shares outstanding.
<i>TPI</i>	Turnover to price ratio, $TPI_{iyd} =  R_{iyd} /TO_{iyd}$
<i>Removal</i>	A dummy variable that takes the value of 1 for quarters 1 to 4, 2014 and 0 otherwise.
<i>Q1<sub>2014</sub></i>	A dummy variable that takes the value of 1 for quarter 1, 2014 and 0 otherwise.
<i>Q2<sub>2014</sub></i>	A dummy variable that takes the value of 1 for quarter 2, 2014 and 0 otherwise.
<i>Inst_Own</i>	The fraction of shares outstanding held by institutions.
<i>ΔInst_Own</i>	Changes in the institutional investors' ownership.
Firm size	Natural log of market capitalisation (stock price x shares outstanding).
Firm age	Natural logarithm of the number of years post-establishment.
Stock volatility	Annualised standard deviation of daily stock returns.
Stock return	Price changes, $\ln(R_t/R_{t-1})$ .
Market-to-Book	Market capitalisation to book value.