

# The Effect of Reconstitution of Sharī'ah Compliant Index Announcement on Stock Turnover and Returns

Ali Ahsan<sup>1</sup> Saqib Sharif<sup>2</sup>

<sup>1</sup> Islamic Banking Group, Bank Alfalah Limited,

<sup>2</sup> School of Business Studies, Institute of Business Administration, Karachi-Pakistan

Received: March 21, 2025

Last revised: May 30, 2025

Accepted: June 25, 2025

## Abstract

This study determines the effect of announcements of re-composition of Islamic Index, commonly known as PSX-KMI All Share Islamic Index of Pakistan Stock Exchange, on the turnover and returns of included and excluded firms. This study is warranted because of the growing interest of individual and institutional investors in Sharī'ah compliant stocks. The quantitative approach has been applied using secondary data of companies that are included and excluded due to re-constitution of PSX-KMI All Share Islamic Index surrounding four announcements. The Event Study approach is used to calculate abnormal turnover and abnormal returns surrounding the announcement period. In the second stage, regression analysis is conducted. The study finds insignificant impact of re-composition announcement of KMI-All Share Index on abnormal turnover and abnormal returns following inclusion and exclusion of companies. The underlying reason of insignificant evidence contradicts ethical screening theory followed by investors but can be attributed to non-standardization of stock screening criteria amongst asset management companies in Pakistan, mainly because of their Sharī'ah scholars' interpretation of Islamic laws according to different schools of thought, hence the space of Sharī'ah-compliant securities for trading & investment varies from one institutional investor to another. This study contributes to the body of knowledge related to market reaction on regulatory intervention (i.e., announcement reaction) and its impact on the prices and volumes of listed Sharī'ah compliant stocks. As per the authors' best knowledge, this is the first empirical study examining the effect of announcements of re-composition of PSX-KMI All Share Islamic Index on the volume and price of included and excluded companies in Pakistan.

**Keywords:** PSX-KMI All Share Islamic Index, Index re-composition, Event study, Abnormal turnover, Abnormal returns.

Corresponding author: Saqib Sharif Email: ssharif@iba.edu.pk



## 1. Introduction

### 1.1 Background of the Study

In the last two decades, there has been a tremendous growth in Islamic financial industry of Pakistan. The operation of this industry is based on Sharī'ah rules. Kassim et al. (2017) argue that Sharī'ah rules guide Muslim Ummah regarding principles specified in the Quran and Sunnah, as they play an important role in almost every aspect of life and Muslims are bound to abide by those injunctions. Muslim investors are also concerned about *Halal* financial returns (i.e., permissible in Islam), but for them, it is critical to consider that the business of companies is compliant with Sharī'ah principles. Similarly, Ashraf & Khawaja (2016) suggest that the Muslim investors select the securities that complied with the Sharī'ah principles. Hence, we expect a significant change in the stock prices and trading that are either part of the Islamic index or added to the index.

There are two Islamic indices available on Pakistan Stock Exchange (PSX) namely PSX-KMI-30 Index and PSX-KMI All Shares Islamic Index. These indices are composed of scrips meeting eligibility criteria divided into Sharī'ah screening filters and technical filters (PSX, 2015). Moreover, Kassim et al. (2017) observe that the companies that follow the Sharī'ah principles are included in the Sharī'ah stock index whereas the companies that failed to adhere with Sharī'ah principles, are excluded. The inclusion and exclusion of the firms from the stock index are revealed through semi-annual announcements by re-composing the index (PSX, 2021).

This study examined PSX-KMI All Share Islamic Index which is currently comprised of 226 companies (after inclusion of 31 companies and exclusion of 14 companies as per the eligibility criteria for inclusion and exclusion (PSX, 2021). The eligibility criteria to include and exclude companies in the Index is based on Islamic screening criteria (e.g., Aslam et al., 2019; Sharif et al., 2020). There are specific features of differences between the conventional stock market and the Islamic stock market, particularly in the specification of risk return profile (Hussein & Omran, 2005). In this regard, the screening criteria undertaken by the Islamic institutions is based on Sharī'ah principles which exclude non-compliant companies from its pool of investable equities. Thus, only Sharī'ah - compliant companies are considered resulting in a smaller pool of investable equities with more volatile returns (e.g., Dewandaru *et al.*, 2014; Hussein & Omran, 2005).

Also, for the S&P 500, using a sample from March 1990 to April 1995, Lynch & Mendenhall (1997) find a positive abnormal return on the announcement day, which reverses only partially after the implementation day, providing support for the idea that there is a temporary component to the stock price increase. Likewise, Labidi *et al.* (2022) find a positive (negative) price reaction for added (deleted) stocks. However, Goyal & Soni (2025) surprisingly finds no substantial changes in stocks that are added in the Indian sustainability Index and exclusion of securities is followed by significant cumulative abnormal returns. This suggests that market does not reward those firms that become part of the sustainability index. In the stock markets of the United States, stocks included (excluded) from a widely followed index exhibit significant positive (negative) abnormal returns, and trading volume is positively affected by the event. Shleifer (1986) and Harris & Gurel (1986) are the first researchers to report significant positive stock price reactions to the announcement of new stocks added to the S&P 500 Index.

### 1.2 Problem Statement

Yazi *et al.* (2015) document the companies that have been considered Sharī'ah -compliant at one point in time and have later been announced as non- Sharī'ah -compliant face adverse effect on its share price and trading volumes. Therefore, investors could also opt out their investment after the company has become non-compliant after Sharī'ah screening, and this is a core objective around which this study revolves. The study examines whether exclusion and inclusion of firms' announcement affect their turnover and returns. The rationale behind the adverse effect on abnormal turnover and returns is that individual investors and Islamic funds would sell the stocks of the companies that are declared as non-Sharī'ah compliant. This becomes a major issue for the companies for not following the Shariah principle that makes them fall under non-eligible criteria and tend to affect turnover and returns negatively. However, Wahyono (2023) finds that firms' inclusion and exclusion in the Indonesian Sharia Stock Index (ISSI) does not yield abnormal returns, indicating that investors are not too much concerned about Sharī'ah index reconstitutions. Since in Pakistan, many Islamic mutual and pension funds invest in equities, hence, we may observe lower trading volumes after exclusion, as presumably Islamic institutional investors would not invest in such securities while balancing their portfolios. Therefore, this study investigates the effects of Sharī'ah compliance announcements on stocks due to re-composition of the PSX-KMI All Share Islamic index.

### 1.3 Research Objectives

Based on the above problem statement, the fundamental goal of the study is to measure the effects of Sharī'ah Compliance announcements on the turnover and returns of PSX-KMI All share Islamic Index in Pakistan. The objectives have been designed to rationally analyze the impact. The following are the objectives:

- I. To determine the impact of inclusion due to Sharī'ah compliance announcements on the abnormal turnover of stocks in PSX-KMI All share Islamic index.
- II. To determine the impact of exclusion due to Sharī'ah compliance announcements on the abnormal turnover of stocks in PSX-KMI All Share Islamic Index.
- III. To determine the impact of inclusion due to Sharī'ah compliance announcements on the abnormal returns of stocks in PSX-KMI All Share Islamic Index.
- IV. To determine the impact of exclusion due to Sharī'ah compliance announcements on the abnormal returns of stocks in PSX-KMI All Share Islamic Index.

### 1.4 Research Questions

Following research questions are derived from the above research objectives:

- I. What is the impact of inclusion due to Sharī'ah compliance announcements on the Abnormal Turnover of stocks in PSX-KMI All Share Islamic Index?
- II. What is the impact of exclusion due to Sharī'ah compliance announcements on the Abnormal Turnover of stocks in PSX-KMI All Share Islamic Index?
- III. What is the impact of inclusion due to Sharī'ah compliance announcements on the Abnormal Returns of stocks in PSX-KMI All Share Islamic Index?
- IV. What is the impact of exclusion due to Sharī'ah compliance announcements on the Abnormal Returns of stocks in PSX-KMI All Share Islamic Index?

### 1.5 Scope of the Study

This study covers only constituent firms of PSX-KMI All Share Islamic Index. Other listed equities, Exchange Traded Funds (ETFs) and sectoral indices are not the focus of this study.

## 2. Literature Review:

Surrounding the bi-annual announcements of PSX-KMI All Share Islamic Index

recomposition, the abnormal turnover and abnormal returns of the firms included and excluded from the index are examined. Islam prohibits investment in enterprises whose primary operations include gambling, conventional financial services, non- Sharī'ah compliant entertainment, alcohol, pork related items, cigarettes, and weapons manufacturing. Companies are also screened for their Sharī'ah compliance. According to the PSX-KMI All Share Index, if the interest-bearing debt to total assets is not less than 37%, they are not Sharī'ah -compliant equities. The portfolio is then cleansed of interest income or other revenue streams that are not permitted (Abdelsalam *et al.*, 2014). It's possible that the primary purpose of these restrictions is to safeguard the interests of all market participants while also strengthening the Sharī'ah's overall goal of justice (Dusuki & Abozaid, 2008).

The indices of various regions, such as the Dow Jones or FTSE indices, have their own screening criteria and been used by researchers to analyze those markets (e.g., Ajmi *et al.*, 2014). Standard rules for determining whether a corporation business is *halal* or *haram* (lawful or illegal) have been suggested by Wilson & Grant (2013) and Derigs & Marzban (2008). Labidi *et al.* (2022) document significant abnormal returns on addition / deletion of securities in response to Dow Jones Islamic Market-Gulf Cooperation Council Index (DJIM-GCC) revisions. This market reaction is mainly attributed to investor sentiment than changes in the characteristics of the firms' fundamentals. On the other hand, Loang (2024) witnessed increased volatility in Sharī'ah -compliant stocks of Indonesia, Malaysia, and Gulf Cooperation Council countries (GCC) following the fiscal policy intervention.

A favorable reaction to the share price of stocks included in the KLSI index is witnessed, but not a substantial difference in returns between Islamic and regular stock market indexes, thus on balance, investors seem to prefer stocks' inclusion in the index (Yazi *et al.*, 2015). Harris & Gurel (1986) find a significant effect when an index recomposition was announced for a specific stock, both its share price and trading volume were affected by it although, the S&P 500 notification of index inclusion or exclusion did not provide any new information. Hence, the fluctuations in stock price and trading volume must have been caused by other factors. As a result, Harris & Gurel (1986) reached the conclusion that the rise in index fund demand, rather than the notice of index adjustment, was responsible for the price and volume impacts. Moreover, Wahyono (2023) does

not find any change in stock prices following the announcement of recomposition of Islamic securities in the Indonesian market.

Additions and deletions of different S&P 500 firms were studied by Jain (1987) during the period from November 1977 through 1983. Companies that were included in the index had considerable and long-lasting price increases. However, the evidence does not support either the price pressure theory or the imperfect substitute hypothesis, despite the considerable price impact. S&P supplemental indexes provide a permanent positive substantial excess return for those companies that are included in them. Firms that were not included in the S&P 500 index, on the other hand, had an excess negative return of 1.16% on the first day following the announcement (Jain, 1987).

Additionally, Lynch & Mendenhall (1997) studied the S&P 500 additions and deletions from 1990 to 1995 by using price and volume data. Their findings show a large abnormal return for the additions on the day they were announced; besides, the day following the announcement to the day before the effective date of change, they found a positive abnormal return (3.81 percent). A substantial negative announcement day abnormal return is seen for deletion. That's because a considerable abnormal return was obtained post announcement date, which is not compatible with semi-strong efficiency. Lynch & Mendenhall (1997) believe this is a valid interpretation of their data.

Beneish and Gardner (1995) who examined the Dow Jones Industrial Average Index (DJIA) listing, find no indication of an impact on price or trading volume for companies listed in the DJIA. They claim that this is because most index funds follow the S&P rather than the DJIA, which would prevent portfolio rebalancing. However, they find that companies that were not included in the index saw a large drop in their stock price. Changes in the MSCI country indices and the trading volume of companies that were either included or removed were analyzed by Chakrabarti *et al.* (2005) using cross-sectional data from 29 countries between 1998 and 2001. On the day after the announcement and the day before the effective date, the MSCI indexes show a large positive abnormal return of 3.4 percent and 4.5 percent, respectively. The cumulative abnormal return (CAR) of the eliminated stocks, on the other hand, was roughly -7.5 percent after and before announcement and implementation dates respectively. A 3.3% rise in abnormal trading volume may be attributed to the addition of new

stocks to the indexes. Because of the permanent return and volume impact, their findings looked to be more in line with the evidence of price pressure effect and mild evidence of liquidity effect in case of Japan and UK.

Bechmann (2004) analyzed the Danish blue-chip KFX index change and its effect on stock price and trading. The KFX index has a negative influence on stock prices when it is deleted, whereas an addition has a positive effect when it is added. Selection criteria hypothesis states that these impacts on stock price are long-term. The trading volume drops for deletions, whereas the trading volume increases just slightly for additions. The volume ratio method proposed by Harris & Gurel (1986) and the market's average trading volume were used to evaluate the impacts on trading volume. Firstly, they discover a considerable rise in the price of additions and a big fall in the price of removals. The price pressure concept was simply disproved since no substantial price reversal was detected for additions or removals. For both additions and deletions, short-term trading volumes have shown a large rise in the near term. Third, over time, the trading volume for the newly included (removed) equities decreases drastically (increases substantially).

The influence of changes in the Korea Stock Exchange Price Index 200 on stock return, trading volume, and volatility was examined by Yun & Kim (2010). A persistent price impact and no complete return reversal for the event stocks is found to be the case. Trading volumes rose significantly after the announcement date, and they remain higher than they were before the announcement. The existence of volatility effects and anticipatory trading effects were also observed.

Changes in the composition of the Nikkei 225 index in Japan were analyzed by Hanaeda & Serita (2003). After the announcement of the move, added stocks had a huge increase in returns of 19 percent, while eliminated stocks saw a decrease of 36 percent. Adding and deleting stocks both raise trading volume significantly.

Bacha & Abdullah (2001) studied the effect of SAC inclusion and removal on stock price and volume. A three-year sample of data from 1997 to 1999 yielded 39 additions and 21 deletions. A favorable influence on stock price and trading volume observed when a company is included. After 30- and 60-days post announcement, the stock prices significantly increased. There was an instantaneous but short-lived rise in volume. However, elimination had a detrimental impact on stock prices and trading volume. Only 60 days after the

announcement does the Mean Cumulative Abnormal Returns (MCAR) become statistically significant.

A conventional event study method was used by Ahmad et al. (2006) to assess the impact of delisting from the KLSE SI on company stock prices between April 1999 and January 2002. According to their findings, the 52 equities that were removed from the Sharī'ah index showed no substantial negative abnormal returns because of the occurrence. On the other hand, Sharif *et al.* (2020) in their case study mentioned that in case of Pakistan, every asset management company have their own Sharī'ah screening criteria based on Islamic injunctions and different schools of thought followed by Sharī'ah advisors; some have more stringent criteria, and some have relaxed criteria, that could potentially decrease or increase the universe of Islamic stocks respectively for investment and trading. Hence, not necessarily all institutional investors follow the same Sharī'ah screening criteria (i.e., KMI All Share Index) jointly developed by Pakistan Stock Exchange and Al Meezan Investments (a subsidiary of Meezan Islamic Bank).

When the Karachi Stock Exchange (KSE) imposed a price floor in 2008, Sharif (2015) documented the market response to this move. Whether regulatory action restored investor confidence is the focus of research following the relaxation of the floor, the research revealed that the price freeze and trading restriction had a harmful effect on the KSE (following resumption of active trading). After the price freeze was eased, the price of securities (or ARs) fell dramatically. Second, when the price floor was lowered, market liquidity dwindled. Third, the post-floor era saw an increase in price volatility. Pakistan Stock Exchange's Board of Directors (BoDs) decision to apply a price floor for a prolonged time seems to have been ineffectual.

## 2.1 Hypotheses Development

Based on the literature discussed, first and foremost, included firms are perceived to be more Shari'ah compliant than excluded firms in terms of positive market reaction as opposed to excluded companies. Second, in the case of included firms, the effect of announcements on turnover and returns is significantly higher than the impact of announcements on excluded companies. As a result, we anticipate that if the index recomposition announcement is made, the market will likewise perceive the firms included in the index to be more attractive. Following this reasoning, the hypotheses listed below are constructed:

**H<sub>1</sub>:** Shari‘ah compliance announcements has significantly positive impact on the turnover of companies included in the PSX-KMI All Share Islamic index.

**H<sub>2</sub>:** Shari‘ah compliance announcements has significantly negative impact on the turnover of companies excluded from PSX-KMI All Share Islamic index.

**H<sub>3</sub>:** Shari‘ah compliance announcement has significantly positive impact on the returns of companies included in the PSX-KMI All Share Islamic Index.

**H<sub>4</sub>:** Shari‘ah compliance announcements has significantly negative impact on the returns of companies excluded from PSX-KMI All Share Islamic Index.

Table 1 below summarizes the findings of the existing empirical studies.

**Table 2.1** Findings of the Prior Empirical Studies

Article	Findings	Reference
Impact of Inclusion into and Exclusion from the Sharī‘ah Index on a Stock Price and Trading Volume: An Event Study Approach	In the days leading up to the announcement and change dates, event research technique is utilized to estimate abnormal returns and abnormal volumes (CDs). Abnormal returns and abnormal volumes were found in the included stock in the research. Temporary losses and lower trading volumes might be expected after the announcement of the stock's delisting and changing dates.	Kassim, N.S., Ramlee, R. & Kassim, S., 2017.
The Theoretical Impact of the Listing of Syariah-Approved Stocks on Stock Price and Trading Volume	Syariah-approved stock prices and trading volumes may change as a result of the inclusion-exclusion exercise, according to this study. The Securities Commission of Malaysia's Syariah Advisory Council does not update its list of Syariah-approved equities based only on financial soundness. The Kuala Lumpur Syariah Index includes and excludes companies based on syariah and financial theories, respectively, to explain their behavior.	McGowan, Jr, C.B., & Muhammad, J., 2010.
Do Changes in Index Composition	This study shows that there is a positive impact on trading volume both in the short-term and long-	Ng, S.H. and Zhu, X., (2016)

<p>Affect the Stock Prices and Trading Volume? The Case of a Shariah-Compliant Index in Malaysia</p>	<p>term from stock additions and deletions. To sum up, our findings suggest to Sharī'ah -compliant investors that they should keep a close eye on the Sharī'ah -compliant index and adjust their portfolios as necessary to maximize their investment returns over the short and long term. Value of a stock rises with its inclusion on the Sharī'ah -compliant stock list, while removing it has a negative impact on the stock's value.</p>	
<p>Does the Sharī'ah screening process matter? Evidence from Sharī'ah compliant portfolios</p>	<p>SCPs, according to research, pose a lower level of danger than CBPs. We also found that Sharī'ah screening norms have little influence on return performance. They are negligible, in fact. SCPs who use the BVTA technique for financial screening often report higher nominal and risk-adjusted returns than those that use the MVE approach. Consistency in the application of Sharī'ah screening standards is needed considering the lack of difference in risk adjusted performance and rebalancing across various criteria.</p>	<p>Ashraf, D. &amp; Khawaja, M., (2016).</p>
<p>Stock Price and Volume Effects Associated with changes in the Composition of the FTSE Bursa Malaysian KLCI</p>	<p>We find evidence to support the price pressure hypothesis for both additions to and deletions from the KLCI. This is because significant stock price and trading volume effects in the pre index revision period are entirely reversed after</p>	<p>Azevedo, A., Karim, M., Gregoriou, A., &amp; Rhodes, M. (2014).</p>

	<p>the announcement of the news. Our empirical findings can be explained by the market microstructure literature. Significant changes in liquidity causes trading volume and stock prices to reverse back to their original level before the index revisions took place.</p>	
<p>The effects of changes in index composition on stock prices and volume: Evidence from the Istanbul stock exchange</p>	<p>This study shows how changes in the ISE's value-weighted index composition affect two ISE indexes without index funds or derivatives. Previous research has shown that stock inclusion (exclusion) is associated with ISE abnormal returns. It has a substantial impact on volume and volume volatility as well.</p> <p>The absence of index funds and derivatives markets in Turkey seems to support the price-pressure, imperfect substitute, and attention theories.</p>	<p>Bildik, R. and Gülay, G., (2008).</p>
<p>The price effects of index additions: A new explanation</p>	<p>The study uses a sample of changes in the Nikkei 225 to investigate a novel volatility explanation for the long-term price impact of index additions. Increases in the index cause considerable price increases, which, despite brief price declines, tend to be long-term.</p> <p>Investor awareness and demand rise, while price volatility reduces for the new equities, in contrast to the increased price volatility for stocks</p>	<p>Liu, S., 2011.</p>

	added to the S&P 500. As a result, multivariate regression analysis shows that decreased volatility and more investor knowledge contribute considerably to the long-term price increase, which is a novel explanation; this is in line with earlier work.	
The Effects of Shariah Compliance Announcement towards Stock Price Changes in Malaysia	This has resulted in a dramatic change to the number of Shariah compliant firms in Bursa Malaysia and for the first time, it has caused a drastic removal of 158 previously Shariah compliant stocks from SAC's Shariah compliant list. Considering the revised screening methodology of the SC, this paper provides clear evidence that the inclusion of a stock in the Sharī'ah - compliant list has a positive effect to the value of the stock while removal from the list negatively affects the price of the stock.	Yazi, E., Morni, F. & Imm, S. S., 2015.

## 2.2 Literature Gap

Several studies in the literature document the impact of stocks' inclusion and exclusion announcements in the index on returns and volume, however, no study is carried out in case of Pakistan; more specifically the Islamic securities that are constituent of PSX-KMI All Shares Index. Therefore, the current study aims to fill this gap by documenting evidence from Pakistan financial market with some unique features, such as non-standardized Sharia'h screening criteria (i.e., institutional investors invest and trade in the universe of Islamic stocks approved by their respective Sharī'ah advisory boards), review period screening is conducted by third party/major industry player, not by the regulator herself, and a relatively longer time lag between end of review period and announcement of

additions and deletions of securities (i.e., probability of information leakage due to a long gap between end of review period and announcement date; for example, the review period was July 2024 to December 2024 and announcement of additions and deletions of stocks that were Sharī'ah -compliant and non-compliant respectively was made on June 2, 2025).<sup>3</sup>

### 3. Methodology

#### 3.1 Research Design:

This study determines the impact of Sharī'ah compliance addition/deletion announcements on volume and price of PSX-KMI All Share Islamic Index companies. Therefore, we used quantitative research approach. This study tests the impact of inclusion and exclusion on turnover and returns, before and after the announcement of Sharī'ah compliance of the companies by PSX-KMI All Share Islamic index. Based on the previous literature, the best method to conduct such a study is to employ event study analysis. An event study method gauge reaction in financial markets to past occurrences of a given type of event that is hypothesized to affect public firms' market values. This research applied the event study methodology, which takes time as a function of an event and is used to test abnormal performance. This methodology seems to be the most appropriate to gauge the rapidity in the movement of stock prices, which arise due to the flotation of any newfangled financial information in the stock market (Angelovska, 2017).

Hence, to test the hypotheses, the study has adopted the event study methodology to better evaluate the magnitude of movement over time of a single event on the value of a corporation, using financial market data. Furthermore, the methodology of Ng & Zhu (2016) has been incorporated in this study. They used *t*-test statistics to compare abnormal returns and trading turnover of stocks being included /excluded from the index over a short- and long-term period. However, in this study, we are looking at a very short-term event window of days 0 and +1 (i.e., day '0' being an announcement date).

#### 3.2 Data Collection

This study is based on secondary data of stock prices and trading volumes extracted from the official website of the Pakistan Stock Exchange, Refinitiv DataStream and audited financial statements of the companies.

<sup>3</sup> <https://www.psx.com.pk/psx/themes/psx/uploads/KMI-All-share-Notice-Recomposition-as-of-Dec-2024-Final.pdf>

**3.3 Sample Size and Period**

The sample size of the study is the total number of companies included/excluded at the announcement dates. 176 listed PSX companies, included (65) and excluded (69) during the four announcement periods with four review periods from January 01, 2019, to December 31, 2020, have been obtained for the analysis. At the first place, the data of 176 actively traded stocks of PSX have been collected. Subsequently, stocks with trading days less than 20% of the sample period and stocks with zero turnover with pre and post announcement average returns were excluded. The final sample size of 134 stocks has been used to analyze the data.

**Table 3.1: Sample Criteria**

	Inclusions	Exclusions	Total
<b>Initial Sample</b>	90	86	176
Less:			
Non-availability of Data + Trading Volume	18	11	29
Zero average turnover	7	6	13
<b>Final Sample</b>	65	69	134

For analysis, added and deleted stocks of PSX-KMI All Shares Islamic Index has been considered. Stock market data such as daily closing price, trading volume, common shares outstanding have been extracted from Eikon Refinitive DataStream. The market index closing value has been extracted from the website of PSX. For recomposition announcement dates, official website of Pakistan Stock Exchange has been used. Given that recomposition announcements are completely published on all media networks within 24 hours after they are made, according to Pevzner *et al.* (2015)'s approach, earnings announcement day and the following trading day after that announcement are regarded as event windows (0, +1). Included firms are represented with a '1' while excluded companies are represented with a '0' as a dummy variable. Additional financial information about the companies is obtained from their official websites, such as the total amount of debt and total amount of assets.

**3.4 Econometric Models:**

Following a market model event study to calculate abnormal returns and turnover, the research questions/hypotheses of this study have been examined by the following two econometric/regression models:

$$ABNTO_{i,t} = \alpha_0 + \alpha_1 Dummy_{i,t} + \alpha_1 MCap_{i,t} + \alpha_2 LEV_{i,t} + \epsilon_{i,t} \dots\dots\dots (i)$$

$$ABNR_{i,t} = \beta_0 + \beta_1 Dummy_{i,t} + \beta_1 MCap_{i,t} + \beta_2 LEV_{i,t} + \epsilon_{i,t} \dots\dots\dots (ii)$$

**Table 3.2 Definition of Variables**

<b>Variable</b>	<b>Definition</b>	<b>Measurement of Variables</b>
<b>Abnormal Turnover (ABNTO)</b>	ABNTO is proxy to capture the reaction of market on volume turnover in response to Sharī'ah compliance announcement due to inclusion and exclusion of company from index	The average daily trade volume turnover of post announcement event window (0, +1) divided by average of daily trade volume turnover of pre-announcement estimation window (-20, -66). Where trade volume is the number of shares traded at time <i>t</i> divided by common shares outstanding at time <i>t</i> (i.e., turnover).
<b>Abnormal Returns (ABNR)</b>	ABNR is proxy to capture the reaction of market on Abnormal turnover in response to Sharī'ah compliance announcement due to inclusion and exclusion of company from index	The average of daily abnormal return (i.e., stock return minus market return) over the announcement / event window (0, +1), minus the average of daily abnormal return over the estimation window (-20, -66).
<b>Market Capitalization (MCAP)</b>	Market Capitalization (i.e. Market value or firm size) of companies (in '000') depicted in terms of natural logarithm (ln).	MCAP is calculated by taking day end price of stocks of each company multiplied by common shares outstanding.
<b>Leverage Ratio (LEV)</b>	How much of the companies' assets are financed through debts.	It is calculated as the ratio of total debt to total assets times 100 of each company.
<b>Dummy (Inclusions &amp; Exclusions)</b>	Dummy variable '1' denotes firms included in the index after announcement and '0' denotes the firms excluded from the index after announcement.	Variable sign '1' denotes companied included in the index after announcement and '0' denotes the companies excluded from the index after announcement.

#### 4. Results and Discussion

##### *Descriptive Statistics:*

**Table 4.1: Descriptive Statistics - Total (both Additions and Deletions)**

Variable	Obs	Mean	Std. Dev.	Min	Max	Median
ABNTO	134	2.655	5.920	0.019	51.107	0.912
ABNR	134	-0.033	2.556	-9.006	8.132	-0.257
MCAP	134	14.792	2.1875	9.874	18.879	14.842
LEV	134	33.319	29.266	0.000	155.235	32.386

**Note:** Table 4.1 depicts the descriptive statistics of variables used in the regression model of this study. The abnormal turnover and returns are calculated using a simple market model event study method. The descriptive statistics of variables under study are shown. The mean of abnormal turnover (ABNTO) is 2.655 and its median is 0.912. This suggests that a high average trading value (i.e., greater than 1.00) is mainly driven by outliers. The mean of abnormal returns (ABNR) is -0.03% and median are -0.26%, suggesting slight decline in prices of securities, on average, around announcement dates. The mean and median of independent variable natural log of market capitalization (MCAP) are 14.79185 and 14.842 respectively. The mean and median of leverage (LEV) are 33.319 and 32.386 respectively. Overall, these results do not tell us much, as both included and excluded securities are considered to calculate summary statistics.

**Table 4.2: Descriptive Statistics – Added Securities**

Variable	Obs	Mean	STD	Min	Max	Median
ABNTO	65	2.089	4.241	0.032	24.108	0.817
ABNR	65	-0.362	2.119	-6.443	7.299	-0.339
MCAP	65	14.951	2.198	10.678	18.633	14.856
LEV	65	33.053	29.474	0.000	155.236	31.575

**Note:** Table 4.2 depicts the descriptive statistics of variables used in the regression model of this study for companies included in the index after announcements. The abnormal turnover and returns are calculated using a simple market model event study method.

Table 4.3: Descriptive Statistics - Deleted Securities

Variable	Obs	Mean	STD	Min	Max	Median
ABNTO	69	3.189	7.144	0.019	51.107	1.034
ABNR	69	0.278	2.890	-9.006	8.132	-0.109
MCAP	69	14.642	2.183	9.875	18.879	14.808
LEV	69	33.571	29.284	0.000	155.236	33.393

**Note:** Table 4.3 depicts the descriptive statistics of variables used in the regression model of this study for companies excluded in the index after announcements. The abnormal turnover and returns are calculated using a simple market model event study method.

Tables 4.2 & 4.3 depict the descriptive statistics of companies included and excluded in the index respectively. The mean (median) of ABNTO is 2.089 (0.817) and the ABNR is -0.36% (-0.34%) of included companies; whereas mean (median) of excluded companies i.e., ABNTO is 3.189 (1.034) and the ABNR is -0.28% (-0.11%). The positive abnormal return for deleted firms hints to the fact that investors are not very concerned about stock deletions due to non-compliance of Shari'ah screening criteria (e.g., Wahyono, 2023). The mean (median) MCAP of companies included is 14.951 (14.856), whereas the mean (median) MCAP of companies excluded is 14.642 (14.808). Surprisingly, the excluded companies' standard deviation for ABNTO is 7.144 and ABNR is 2.890; this suggests higher level of disagreement among investors for deleted firms compared to added firms. Lastly, the characteristics of included and excluded firms' market capitalization and leverage ratios are not very different from each other.

Table 4.4: Univariate Results

	Inclusions	Exclusions	Diff	<i>p</i> -Value
	N=65	N=69		
<i>ABNTO</i>	2.089	3.189	1.100	0.277
<i>ABNR</i>	-0.362	0.278	0.640	0.145
<i>MCAP</i>	14.951	14.642	-0.308	0.417
<i>LEV</i>	33.053	33.571	0.518	0.918

**Note:** Table 4.4 depicts the mean differences between financial variables of included and excluded companies, along with their *p*-values. The last column *p*-values: \*, \*\*, \*\*\* depicts significance level at 10%, 5% and 1% respectively.

Table 4.4 shows the *t*-test of variables with difference of means between included and excluded companies. The final sample of the companies is 134, with 65 inclusions and 69 exclusions. As mentioned earlier from Tables 5 and 6, the MCAP and LEV are not significantly different from each other. Excluded companies on average have slightly higher debt to assets ratio as compared to included companies, which suggests that Sharī'ah compliant companies are more equity-financed (e.g., Bilal et al., 2016). Similarly, in PSX-KMI-All Shares Islamic Index included entities have slightly higher average MCAP as compared to the excluded entities, but the difference between the two samples is insignificant. On the other hand, market reaction surrounding re-composition announcements, as calculated by abnormal turnover and abnormal return is not different from zero between included and excluded entities. The evidence confirms the industry practice of non-standardized Sharī'ah screening criteria mentioned in the case study of Sharif et al. (2020) that suggests an insignificant impact on price and trading volume of companies added / deleted is because most institutional investors follow their own universe of Sharī'ah -compliant firms (i.e., approved by their own Sharī'ah advisory committee/board) rather than the PSX-KMI Index, which would not trigger portfolio rebalancing by Islamic funds managers around announcement dates. Nevertheless, based on the first secular analysis, this research does not accept the hypotheses presented in this study. However, regression analysis with firm specific controls (i.e., size / market capitalization and leverage) following the correlation analysis, however, yields the more insightful findings.

Table 4.5: Correlation Matrix

	ABNTO	ABNR	MCAP	LEV
ABNTO	1			
ABNR	0.132	1		
MCAP	-0.089	0.024	1	
LEV	-0.073	-0.064	0.084	1

**Note:** Table 4.5 shows the Pearson correlation coefficients among different financial variables of the model. \*, \*\*, \*\*\* depicts significance level at 10%, 5% and 1% respectively.

The correlation analysis of the specified variables in Table 8 illustrates that there is little to no association between the factors in question (i.e., correlation coefficients are less than +/-0.500 and no significant pair-wise correlation is observed). Hence, multivariate regression models can safely be applied to evaluate the association of abnormal returns and turnover with included (excluded) firms to (from) Islamic index.

**Table 4.6: ABNTO regressed on Dummy and MCAP / LEV variables.**

	Abnormal Turnover	
	(1)	(2)
<b>Intercept</b>	3.186*** (0.001)	8.021** (0.050)
<b>MCAP</b>		-0.2106 (0.375)
<b>LEV</b>		-0.0136 (0.439)
<b>Dummy</b>	-1.100 (0.283)	-1.042 (0.312)
<b>Observations</b>	134	134
<b>Adjusted R-Squared</b>	0.0010	0.0022

**Note:** Table 4.6 depicts the results of regression estimation of equation (1). The dependent variable is stock market reaction calculated through Abnormal Turnover. The number in parenthesis, below the coefficient estimates, is the  $p$ -value, shows the significance. \*, \*\*, \*\*\* depicts significance level at 10%, 5% and 1% respectively.

Table 4.6 shows the results of the first regression model (1). Investors' reaction to the company's inclusion/exclusion announcements are measured using abnormal turnover in this model. If a company is Shari'ah compliant (added), then the stock is labelled one, otherwise zero (deleted). This is shown in the column (1) of Table 4.6, where binary indicator / dummy is the single explanatory variable. The second regression model in column (2) incorporated two widely known firm-specific controls of size and leverage. The results show insignificant results for trading activity in added and deleted stocks suggesting that investors in Pakistan financial market are less concerned about ethical screening (i.e., Labidi *et al.* 2022) and market practice of asset management companies having their own Shari'ah screening frameworks, thus benchmark Islamic index re-constitution announcements have little or no effect (e.g., Sharif *et al.* 2020).

Table 4.7: ABNR regressed on Dummy and MCAP / LEV variables.

	Abnormal Return	
	(1)	(2)
Intercept	0.278 (0.367)	-1.110 (0.413)
MCAP		0.1087 (0.350)
LEV		-0.682 (0.587)
Dummy	-0.640 (0.148)	-0.718 (0.164)
Observations	134	134
Adjusted R-Squared	0.0083	0.0022

**Note:** Table 4.7 depicts the results of regression estimation of equation (2). The dependent variable is the stock market reaction proxy of Abnormal Return calculated through event study approach. The number in parenthesis, below the coefficient estimates, is the  $p$ -value, shows the significance. \*, \*\*, \*\*\* depicts significance level at 10%, 5% and 1% respectively.

Table 4.7 shows the results of the second regression model (2). Investors' reactions to the firms' addition/deletion in Islamic index are measured using abnormal return as a dependent variable in this model. If a company is Shari'ah compliant (added), then the dummy variable is one, otherwise zero (deleted). The column (1) shows the regression result, where dummy is the single explanatory variable. In column (2), the variable of interest, i.e., dummy is incorporated in the regression model with firm specific variables. The results from both regressions find insignificant association of added / deleted firms with abnormal returns. The evidence again hints to the case study of Sharif *et al.* (2020) that faith-based individuals and institutional investors does not strictly follow the screening criteria of PSX-KMI benchmark index, rather they have their own universe of Shari'ah-compliant securities; thus, no substantial difference in price movements between included and excluded firms is documented in this study. Moreover, another reason is the information leakage due to two reasons: 1) screening process is jointly carried by Pakistan Stock Exchange and another major industry

player; and 2) longer time lag between the end of screening review period and announcement (e.g., the review period was January 1, 2023, to June 30, 2023; whereas announcement of index re-composition is made on December 16, 2023 (PSX, 2023).

## 5. Conclusion

This study examines the impact of re-composition announcement of Sharī'ah - compliant index on trading activity and prices of firms entering and exiting Islamic Index. The market model event study method is used to measure abnormal turnover and returns. Surprisingly, the evidence shows no market reaction in the stocks added to / deleted from PSX-KMI All Share Index during the four review periods from January 01, 2019, to December 31, 2020, surrounding four announcement periods. The daily abnormal returns of the stocks are estimated by employing a market model event study methodology; also called cumulative abnormal returns (ABNR in this study). The estimation period spans from 60 days to 20 days before the announcement event (i.e., -60, -20) and abnormal volume and returns are calculated for two-days around announcement, i.e., on the day of announcement and the following day (i.e., 0, +1).

We hypothesize that recomposition announcements of entities that have been included in the Islamic index should elicit a stronger reaction from the capital market players than those companies that have been omitted. However, the extant literature discussed in this study finds mixed evidence. Companies added and deleted from the PSX-KMI All Share Islamic Index are examined to see whether there is an impact of index recomposition announcement on firms' turnover and returns. Consistent with prior literature, broadly speaking, the evidence documented in this study does not find any consistent / significant difference in price and volume of added and deleted firms around announcement days.

The finding of no significant change in trading volumes and prices of added and deleted securities surrounding announcement days in this study are consistent with Bildik & Gulay (2008) and Wahyono (2023). Moreover, the findings are consistent with the case study of Sharif *et al.* (2020). In Pakistan Islamic Asset Management, companies have their own Sharī'ah Advisory Boards that screen the firms based on four different school of thoughts (i.e., Hanafi, Maliki, Shafi'i, and Hanbali) within Islamic injunctions. Hence, the changes in listed securities

due to re-constitution of Islamic index announcement have no significant impact, as the institutional investors have their own respective universe of Islamic securities for investment and trading approved by their own Sharī'ah advisors. Besides, anecdotal evidence suggests less concern of individual investors towards ethical screening, that is, announcements do not induce investors' perception towards the attribution or withdrawal of a compliance certification (e.g., Labidi *et al.*, 2022). Lastly, few other reasons for insignificant results are: higher time-lag between end of review period and announcement; screening process for Islamic index is carried out by industry player (hence higher chances of information leakage, as already discussed at the end of literature review section) unlike other countries; and in some circumstances after the announcement of deletion of stocks, if institutional investor/(s) have long position with large concentration in stocks excluded, they get certain exceptions/relaxations from stock exchange to liquidate the ineligible securities steadily to avoid any price pressure/loss during rebalancing of portfolio.

### **5.1 Limitation and Areas for Future Research**

This research has only considered a single country analysis with a sample period of two years surrounding four half- yearly announcements. However, this study has opened several avenues for further investigation. The future studies may further contribute to the knowledge base of regulatory intervention (announcement reaction) and its impact on the performance of listed (added/deleted) stocks by including other countries' Islamic indices and considering bigger sample period and size. The future research can also consider other proxies for liquidity, such as bid-ask spreads and Amihud illiquidity ratios; proxies for volatility, such as standard deviation of daily returns and intraday high-low prices to investigate the market reaction on the announcement of Islamic index recompositions.

### **References**

- Abdelsalam, O., Fethi, M. D., Matallín, J. C., & Tortosa-Ausina, E. (2014). On the comparative performance of socially responsible and Islamic mutual funds. *Journal of Economic Behavior & Organization*, 103, S108-S128.
- Ahmad, R., & Albaity, M. S. (2006). The performance of syariah and composite indices: Evidence from Kuala Lumpur stock market. *Available at SSRN 1008840*.

- Ajmi, A. N., Hammoudeh, S., Nguyen, D. K., & Sarafrazi, S. (2014). How strong are the causal relationships between Islamic stock markets and conventional financial systems? Evidence from linear and nonlinear tests. *Journal of International Financial Markets, Institutions and Money*, 28, 213-227.
- Angelovska, J. (2017). The impact of financial crisis on the short-term interaction between Balkan stock markets. *UTMS Journal of Economics*, 8(2), 53-66.
- Ashraf, D. & Khawaja, M., (2016). Does the Sharī'ah screening process matter? Evidence from Sharī'ah compliant portfolios. *Journal of Economic Behavior & Organization*, 132, 77-92.
- Aslam, E., Kalim, R. & Fizza, S., (2019). Do Cash Holding and Corporate Governance Structure Matter for the Performance of Firms? Evidence from KMI 30-and KSE 100-Indexed Firms in Pakistan. *Global Business Review*, 20(2), 313-330.
- Azevedo, A., Karim, M., Gregoriou, A., & Rhodes, M. (2014). Stock price and volume effects associated with changes in the composition of the FTSE Bursa Malaysian KLCI. *Journal of International Financial Markets, Institutions and Money*, 28, 20-35.
- Bacha, O. I., & Abdullah, M. H. (2001). Halal Stock Designation and Impact on Price and Trading Volume. *The Journal of Accounting, Commerce & Finance – Islamic Perspective*, 5(1), 66-97.
- Bechmann, K. L. (2004). Price and volume effects associated with changes in the Danish blue-chip index: The KFX Index. *Multinational Finance Journal*, 8(1/2), 3-34.
- Beneish, M. D., & Gardner, J. C. (1995). Information costs and liquidity effects from changes in the Dow Jones Industrial Average list. *Journal of Financial and Quantitative Analysis*, 30(1), 135-157.
- Bilal, Z. O., Durrah, O. M., & Atiya, T. M. (2016). Comparative study on performance of Islamic banks and conventional banks: Evidence from Oman. *International Journal of Economics and Financial Issues*, 6(4), 1835-1841.

- Bildik, R. and Gülay, G. (2008). The effects of changes in index composition on stock prices and volume: Evidence from the Istanbul stock exchange. *International Review of Financial Analysis*, 17(1), 178-197.
- Chakrabarti, R., Huang, W., Jayaraman, N., & Lee, J. (2005). Price and volume effects of changes in MSCI indices–nature and causes. *Journal of Banking & Finance*, 29(5), 1237-1264.
- Derigs, U., & Marzban, S. (2008). Review and analysis of current Sharī'ah - compliant equity screening practices. *International Journal of Islamic and Middle Eastern Finance and Management*, 1(4), 285-303.
- Dewandaru, G., Rizvi, S. A. R., Masih, R., Masih, M., & Alhabshi, S. O. (2014). Stock market co-movements: Islamic versus conventional equity indices with multi-timescales analysis. *Economic Systems*, 38(4), 553-571.
- Dusuki, A. W., & Abozaid, A. (2007). A critical appraisal on the challenges of realizing maqasid Al-Shariaah in Islamic banking and finance. *International Journal of Economics, Management and Accounting*, 15(2), 143-165.
- Goyal, P., & Soni, P. (2025). Does the stock market react to the sustainability index reconstitutions? Evidence from the S&P BSE 100 ESG index. *South Asian Journal of Business Studies*, 14(2), 181-205.
- Hanaeda, H. & Sarita, T., (2003). Price and Volume Effects Associated with a Change in the Nikkei 225 Index List: New Evidence from the Big Change on April 2000. *International Finance Review* 4, 199–225.
- Harris, L., & Gurel, E. (1986). Price and volume effects associated with changes in the S&P 500 list: New evidence for the existence of price pressures. *The Journal of Finance*, 41(4), 815-829.
- Hussein, K., & Omran, M. (2005). Ethical investment revisited: evidence from Dow Jones Islamic indexes. *The Journal of Investing*, 14(3), 105-126.
- Jain, P. C. (1987). The effect on stock price of inclusion in or exclusion from the S&P 500. *Financial Analysts Journal*, 43(1), 58-65.
- Kassim, N.S., Ramlee, R. & Kassim, S., (2017). Impact of Inclusion into and Exclusion from the Sharī'ah Index on a Stock Price and Trading Volume: An Event Study Approach. *International Journal of Economics and Financial Issues*, 7(2), 40-51.

- Labidi, C., Laribi, D. and Ureche-Rangau, L. (2022), Price and volume effects around Islamic index revisions: the case of DJIM-GCC, *Managerial Finance*, 48(2), 222-242. <https://doi.org/10.1108/MF-11-2020-0564>.
- Liu, S., (2011). The price effects of index additions: A new explanation. *Journal of Economics and Business*, 63(2), 152-165.
- Loang, O. K. (2024). Stability of Sharī'ah -Compliant stocks in Indonesia, Malaysia, And GCC: The roles of monetary and fiscal policies and contagion. *Journal of Islamic Monetary Economics and Finance*, 10(1), 155-176.
- Lynch, A. W., & Mendenhall, R. R. (1997). New evidence on stock price effects associated with changes in the S&P 500 index. *The Journal of Business*, 70(3), 351-383.
- McGowan, Jr, C. B., & Muhammad, J., (2010). The Theoretical Impact of The Listing of Syariah-Approved Stocks on Stock Price and Trading Volume. *International Business & Economics Research Journal*, 9(3), 11-20.
- Mustafa, S.A., Ramlee, R. & Kassim, S., (2017). Economic Forces and Islamic Stock Market: Empirical Evidence from Malaysia. *Asian Journal of Business and Accounting* 10(1), 45-85.
- Ng, S. H. and Zhu, X., (2016) Do Changes in Index Composition Affect the Stock Prices and Trading Volume? The Case of a Sharī'ah -Compliant Index in Malaysia. *Capital Market Review*, 24(2), 14-39.
- Pevzner, M., Xie, F., & Xin, X. (2015). When firms talk, do investors listen? The role of trust in stock market reactions to corporate earnings announcements. *Journal of Financial Economics*, 117(1), 190-223.
- PSX. (2015). All Shares Islamic index of Pakistan brochure. Karachi: PSX. Available at: [https://www.psx.com.pk/psx/themes/psx/documents/AllShrIslamic\\_Idx\\_Brochure.pdf](https://www.psx.com.pk/psx/themes/psx/documents/AllShrIslamic_Idx_Brochure.pdf) [Accessed 01 Oct. 2021].
- PSX. (2021). Notice for All Market Participants [online] Available at: <https://dps.psx.com.pk/download/attachment/168923-1.pdf> [Accessed 01 Oct. 2021].
- Sharif, S. (2015). Market reaction to the Karachi stock exchange floor imposition. *South Asian Journal of Global Business Research*, 4(2), 275-291.

- Sharif, S., Ahson, S., & Noor, H. (2020). Al Meezan Investment Management Limited: Evolution of Sharī'ah-compliant mutual funds. *Emerald Emerging Markets Case Studies*, 10(4), 1-41.
- Shleifer, A. (1986). Do demand curves for stocks slope down? *The Journal of Finance*, 41(3), 579-590.
- Wahyono, B. (2023). Do political connections affect the market reaction to firms' inclusion in or exclusion from the Sharia index? *Eurasian Business Review*, 13(4), 835-854.
- Wilson, J. A., & Grant, J. (2013). Islamic marketing—a challenger to the classical marketing canon? *Journal of Islamic Marketing*, 4(1), 7-21.
- Yazi, E., Morni, F. & Imm, S. S., (2015). The effects of Sharī'ah compliance announcement towards stock price changes in Malaysia. *Journal of Economics, Business and Management*, 3(11), 1019-1023.
- Yun, J., & Kim, T. S. (2010). The effect of changes in index constitution: Evidence from the Korean stock market. *International Review of Financial Analysis*, 19(4), 258-269.