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**Original citation & hyperlink:**
Hassan, MK, Chowdhury, MIH, Balli, F & Hasan, R 2022, 'A note on COVID-19 instigated maximum drawdown in Islamic markets versus conventional counterparts', Finance Research Letters, vol. 46, no. Part B, 102426. https://dx.doi.org/10.1016/j.frl.2021.102426

DOI 10.1016/j.frl.2021.102426
ISSN 1544-6123
ESSN 1544-6131

Publisher: Elsevier

**Accepted for Finance Research Letters**
**Pre-proof Final Version**

# A note on COVID-19 instigated maximum drawdown in Islamic markets versus conventional counterparts

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**Abstract**

This study uncovers the impact of the COVID-19 on the Islamic equity markets compared to their conventional counterparts. The extremely large-scale drawdown across the markets signifies an indiscriminate impact. To some extent, Asian Islamic markets show relative resilience to their counterparts. Both Islamic and non-Islamic Asian markets signpost a quicker recovery than the rest of the regions, the Middle East & Africa, Europe, and America. It appears that a higher return leads to a smaller maximum drawdown, while higher volatility leads to a larger maximum drawdown. Despite the large-scale drawdown, a number of markets secure a positive return where Islamic markets outperform the counterparts. Conventional markets respond to the COVID-19 aftershock homogenously as a result of their high interlinkages. Collectively, these results reinforce the view that in the crisis period, Islamic markets are more resilient.

Keywords: Islamic equity market, COVID-19, Maximum drawdown

JEL Codes: G10, G11, Z12All

## 1. Introduction

Unlike the endogenous GFC, the COVID-19 instigated a unique crisis as an utterly exogenous shock to the financial markets. Henceforth, increasingly connected financial markets suggest an inevitable ripple effect (Zhang et al., 2020, Chowdhury et al., 2020). Nevertheless, it is also unlikely that all countries have the same reaction to the COVID-19 aftershock. Thus, this unique crisis presented a testing occasion to examine how the global stock markets have responded to the crisis and how the inherited structures underwrote the impact.

Past studies suggest that Islamic equity markets often depicted as an investment alternative to the mainstream are competitive in a bull episode and a safe haven in a bear episode (Foglie and Panetta, 2020). Regarding the COVID-19 pandemic, Yarovaya et al. (2020) cite the underlying principles of the Shari'ah-compliant instruments that might help resist the crisis shock. They find that Islamic equity portfolios are more resilient to COVID-19 shock as it outperforms non-Islamic counterparts during the pandemic's peak period. Salisu and Sikiru (2020) further confirm the Islamic stock markets' resilience to crises relative to the conventional stock markets, particularly in Asia-Pacific regions. In a similar vein, Ashraf et al. (2020) reveal the hedging benefits of Islamic equity indices for global, US, and European markets. Interestingly, Sherif (2020) reports that COVID-19 interacts negatively but insignificantly with the Islamic equity index compared to its counterpart in the UK. Recently, Chowdhury et al. (2021) find that most global Islamic sectoral indexes experience relatively lower drawdown and faster recovery than their non-Islamic counterparts. Theoretically, Islamic instruments are expected to be relatively resilient in a crisis similar to COVID-19 due to the prohibition of interest and structural instruments with risk transfer mechanisms in conventional counterparts.

This study provides a side-by-side assessment of country-level Islamic equity indices versus their conventional counterparts developed by the MSCI. These indices retain unique securities relative to their counterparts, are perceived as a separate asset class. They enable faith-adhering Muslims to invest in their stock markets (Balli et al., 2019, Balli et al., 2020).

We rely on straightforward methodologies that use COVID-19 instigated maximum drawdown to explore the impact of Shari'ah compliance. A maximum drawdown is often quoted as an underlying measure of downside risk that signifies the depletion from an investment over a specific period (de Melo Mendes and Lavrado, 2017). It has recently received extensive attention in the literature on financial markets (Goldberg and Mouti, 2019; Chowdhury et al., 2021). Additionally, we perform cross-section regression analysis using index-level attributes to identify the underlying antecedents of drawdown. In sum, this study

reflects the economic impact of Shari'ah compliance, offering important implications for the Islamic equity markets. Consequently, this study links with the studies claiming that Islamic equity markets can perform superior in a stress period.

The rest of this note proceeds as follows. Section 2 describes the data and empirical approach. Then, section 3 presents the findings and related insights. Lastly, Section 4 concludes.

## 2. Data and methodology

Based on the availability of Islamic equity indices at the country level, we sample 50 countries from the widely recognized six continents, as presented in Table A1. To be consistent with the index methodology, we consider MSCI Islamic[1] and their conventional counterpart indices. We collect the data from the Bloomberg Terminal. The study period covers the first three quarters of 2020, i.e., from 1 January 2020 to 30 September 2020, which encompasses COVID-19 instigated uncertainty.

Our empirical approach comprises 2-steps. First, we employ the daily price of the sampled indexes on the Heikin-Ashi (HC) measure[2] to estimate the Maximum Drawdown ($\widehat{MD}$) as a downside risk over the specified period. Following de Melo Mendes and Lavrado (2017) and Chowdhury et al. (2021), we specify:

$$\widehat{MD} = \underset{1 \leq h \leq 1 \leq T}{max} \left(\frac{P_h - P_1}{P_h}\right) \quad (1)$$

where T is the study period (i.e., 1 January 2020 to 30 September 2020), Ph is the highest price while Pl is the lowest price before the new high price.

$\widehat{MD}$ measures the size of the largest drop in value over the period. Therefore, we also identify the 'Duration' between the highest price and the lowest price and the 'Recovery' between the lowest price and the new highest price when applicable to amplitude the significance.

We then estimate the Compounded Annual Return ($\widehat{CAR}$) to depict the cumulative outcome of gain or loss over the specified period as:

$$\widehat{CAR} = \left(\frac{P_e}{P_b}\right)^{\left(\frac{1}{n}\right)-1} \quad (2)$$

[1] Following Shariah investment ideologies, MSCI Islamic index ejects non-Shariah-compliant stocks through business activity screening and financial ratio screening. The screening method has been approved by MSCI's Shariah advisors committee. Find more in MSCI Islamic Index Series Methodology at https://www.msci.com/index-methodology.

[2] It is the average index price of 4 trading parameters, i.e., (Open + High + Low + Close Price) / 4.

where $P_e$ is the period ending price, $P_b$ is the period beginning price, and n is the length of the period in a year. Second, we emphasize the underlying antecedent of the drawdown instigated by the COVID-19 uncertainty. Note, an index's exposure to the pandemic is set before the actual event. Therefore, we are not interested in simultaneity and assume that the independent variable's lag affects the dependent variable. Applied researchers propose to use the lagged value in order to exogenize the effect. Accordingly, we use one-year lag, i.e., the immediate year-end 2019 values. We take guidance from Goldberg and Mouti (2019) and determine the following equation:

$$\widehat{MD} = \alpha_0 + \beta_v volatility_{t-1} + \beta_s size_{t-1} + \beta_r return_{t-1} + \beta_d leverage_{t-1} + \varepsilon_i \qquad (3)$$

where $\widehat{MD}$ is the maximum drawdown as defined earlier, volatility is the annualized standard deviation of the index value change, size is the logarithmic market capitalization of the aggregate of all equity contributions in the index, the return is either return on assets or return on capital or return on equity ratio, and leverage is proxied by the debt to equity ratio[3].

## 3. Empirical results

The worldwide stock markets start sliding to their nadirs in March as a result of the widespread coronavirus[4]. For example, on 23 March, the global benchmark yardstick, the S&P500, dropped by nearly 34% and then took 126 trading days to recoup the sell-offs (Levisohn, 2020). Indeed, a ripple effect in the global economy is inevitable, with millions of people across the world in a virtual lockdown. Moreover, the prevalent COVID-19 is likely to result in a more protracted economic downturn.

### 3.1. COVID-19 instigated maximum drawdown

Table 1 reports the maximum drawdown for the Islamic stock markets and their conventional counterparts side by side. To expose the amplitude, we tally the number of days to reach the lowest price level, i.e., duration and days to climb back to the previous peak from the drop, i.e., recovery.

A quick look over the table reveals the 2-digits drawdown throughout the sampled countries signifying the indiscriminate impact of COVID-19 shock in both Islamic markets and their counterpart. We find the largest drawdown in Columbia for both Islamic (68.32%) and

[3] The selection of independent variables is limited to the availability of data at the index level. The index developer MSCI does not provide financial screening ratios, which would have been more appropriate. Bloomberg terminal estimates only the fundamental ratios.

[4] The World Health Organization officially declared the COVID-19 outbreak as a global pandemic on 11 March 2020.

mainstream (63.97) markets. The lowest drawdown is in Turkey (16.12%) for Islamic and Qatar (22.14%) for the mainstream markets. Interestingly, the drawdown scale is similar in both types of markets for Australia (38.72%, 38.98%) and Canada (37.38%, 37.36%). After a closer review, it appears that all the Asian Islamic markets apart from Singapore experienced a lower drawdown compared to their counterpart. Results are inconclusive in the rest of the regions, but most Islamic markets experienced a relatively lower drawdown in total. In contrast, the Islamic market in South Africa experienced a significantly higher drawdown (%) compared to its counterpart (%). Note, the size of the South African Islamic market is merely ⅕ of the mainstream market. In the case of recovery, some of the major stock markets, including Singapore, Italy, Russia, Spain, and the UK, are yet to recover from the aftershock. We reckon such a global drawdown is accompanied by the crude oil price war in early March between Saudi Arabia and Russia to reduce production to sustain a moderate price level. The dispute and the deep drop in demand resulted in a sharp slide in price over the subsequent period, twisting somewhat negative in late April. We note the earliest recovery is in Turkey (24 days) for Islamic and Denmark (63 days) for the mainstream markets. On average and region-wise, recovery days are smaller for Islamic markets than their conventional counterparts in all regions.

Our results suggest an indiscriminate impact of COVID-19 across the world stock markets. To some extent, Asian Islamic markets have been relatively resilient compared to their counterparts, in consonance with Salisu and Sikiru (2020). However, both type of Asian markets signposts a quicker recovery than that the rest of the regions. The rest of the regions are inconclusive, but collectively, the non-Islamic market has a 0.50% higher drawdown than the Islamic counterpart. Moreover, COVID-19 is expected to have a long-term negative impact on global economies (Carletti et al., 2020). Therefore, the heterogeneous large-scale drawdown also indicates that the recovery is likely to occur highly unevenly across the sampled countries.

### 3.2. More insights on maximum drawdown

In this stage of the study, to put the importance of maximum drawdown into perspective, we think it is reasonable to plot the drawdown against the compounded return. Fig. 1 presents the scatter plot of Islamic markets and their conventional counterparts side by side. We uncover that despite the large-scale drawdown, nearly ⅕ of the sampled markets secure positive returns. What is more noticeable that those Islamic markets have outperformed their conventional counterparts, specifically Bangladesh by 17.46%, China 5.48%, Denmark 7.74%, Finland

9.98%, India 32.10%, Malaysia 17.66%, Netherlands 14.28%, New Zealand 1.30%, Switzerland 16.28%, Thailand 57.68%, and USA 1.84%. These results reinforce our view that Islamic markets are relatively more resilient in the stress period. Similarly, Yarovaya et al. (2020) report that the Islamic equity portfolio is more resilient to COVID-19 shock as they outperformed non-Islamic counterparts during the pandemic's peak period.

In the scatter plot, it is also noticeable that Islamic markets are widely dispersed, whereas their conventional counterparts are closely clustered. It also insights quality assets are not moving with others in the world. Conventional counterparts, in contrast with more typical assets, move together. Thus, they respond to the COVID-19 aftershock homogenously as a result of their high interlinkages.

### 3.3. Underlying antecedents

We now study the underlying antecedents of maximum drawdown that might be a case of the market's inherited vulnerability. We rely on the standard stock market metrics5 while taking guidance from Goldberg and Mouti (2019). Table 2 reports the regression results for the Islamic markets and their conventional counterparts. We load each variable separately before considering them collectively, yielding a total of 6 models.

We uncover the impact of volatility positive and statistically significant across the models for both Islamic markets and conventional counterparts. It implies that higher volatility signposts larger drawdown, consistent with Goldberg and Mouti (2019), who also show a similar volatility impact on maximum drawdown. On the other hand, market size is negative but remains mostly insignificant in both types of markets. In the case of return, three metrics, i.e., return on assets, return on equity, and return on capital, are consistently negative and statistically significant for Islamic markets. Hence, one would expect, a higher return will lead to a smaller maximum drawdown or vice versa. We find such a signal for conventional counterparts in only return on capital, and other metrics are insignificant. This variation arises from the quality of assets in Islamic equity markets. Surprisingly, as proxied by debt to equity, leverage is insignificant throughout for both types of markets. Therefore, we expected some impacts of limited leverage on maximum drawdown in Islamic markets compared to conventional counterparts. Nevertheless, we are unable to explore further due to data unavailability at the index level. Our results hold even after exploiting an alternative size measure, i.e., market capitalization to GDP, to control the relative size of the equity market in explaining maximum drawdown. Table A3 in the appendix reports the robust results.

Table 1: Maximum drawdown in Islamic markets with conventional counterparts

| Country | | Islamic Markets Duration (days) | MIDD (%) | Recovery (day) | Conventional counterparts duration (day) | MIDD (%) | Recovery (day) |
|---|---|---|---|---|---|---|---|
| Asia & Australia | Bangladesh | 17 | 26.44 | 113 | 19 | 27.37 | 115 |
| | China | 48 | 23.88 | 77 | 47 | 24.9 | 76 |
| | Hong Kong | 46 | 25.66 | . | 46 | 30.06 | 206 |
| | India | 46 | 35.72 | 73 | 43 | 38.03 | 138 |
| | Indonesia | 51 | 37.33 | . | 49 | 44.19 | . |
| | Japan | 38 | 29.3 | 171 | 26 | 30.67 | 160 |
| | Malaysia | 52 | 18.13 | 54 | 51 | 26.16 | 180 |
| | Philippines | 53 | 46.95 | . | 50 | 49.18 | . |
| | Singapore | 41 | 34.53 | . | 45 | 33.99 | . |
| | South Korea | 24 | 33.51 | 103 | 41 | 35.93 | 96 |
| | Taiwan | 54 | 28.33 | 82 | 39 | 29.92 | 78 |
| | Thailand | 54 | 40.43 | . | 49 | 40.88 | . |
| | Turkey | 38 | 16.12 | 24 | 43 | 32.95 | 182 |
| | Australia | 43 | 38.72 | 208 | 22 | 38.98 | . |
| | New Zealand | 21 | 27.63 | 111 | 21 | 26.29 | 67 |
| Middle East & Africa | Bahrain | 31 | 29.36 | 173 | 85 | 40.45 | . |
| | Kuwait | 39 | 37.89 | 332 | 49 | 35.1 | . |
| | Oman | 42 | 28.03 | . | 37 | 26.48 | 293 |
| | Qatar | 53 | 20.22 | 220 | 43 | 22.14 | 263 |
| | Saudi Arabia | 53 | 27.17 | 177 | 53 | 30.68 | 244 |
| | UAE | 65 | 42.9 | . | 40 | 41.49 | 247 |
| | Morocco | 48 | 35.37 | . | 40 | 31.25 | . |
| | South Africa | 45 | 59.84 | 218 | 22 | 38.34 | 200 |
| Europe | Austria | 52 | 55.05 | 211 | 54 | 52.31 | 271 |
| | Belgium | 23 | 31.74 | 223 | 28 | 45.89 | . |
| | Czech Republic | 44 | 31.62 | 213 | 54 | 35.75 | 287 |
| | Denmark | 23 | 28.19 | 66 | 17 | 29.44 | 63 |
| | Finland | 26 | 35.2 | 125 | 24 | 38.03 | 180 |
| | France | 20 | 35.57 | 255 | 18 | 40.43 | 269 |
| | Germany | 38 | 38.05 | 211 | 20 | 40.14 | 223 |
| | Hungary | 53 | 34.74 | 248 | 55 | 41.7 | 298 |
| | Ireland | 26 | 47.07 | 144 | 19 | 41.11 | 165 |
| | Italy | 51 | 52.29 | . | 18 | 44.11 | . |
| | Netherlands | 20 | 34.31 | 57 | 20 | 35.94 | 170 |
| | Norway | 48 | 33.39 | 285 | 49 | 34.19 | 246 |
| | Poland | 50 | 52.21 | 194 | 51 | 43.62 | . |
| | Portugal | 54 | 47.69 | . | 23 | 37.71 | . |
| | Russia | 43 | 54.97 | . | 42 | 52.76 | . |
| | Spain | 51 | 43.66 | . | 18 | 42.44 | . |
| | Sweden | 33 | 39.22 | 194 | 17 | 34.34 | 170 |
| | Switzerland | 23 | 23.12 | . | 17 | 31.43 | 298 |
| | UK | 43 | 47.73 | . | 41 | 36.46 | . |
| America | Argentina | 39 | 45.67 | . | 21 | 51.42 | 93 |
| | Brazil | 45 | 52.02 | 185 | 55 | 58.6 | . |
| | Canada | 42 | 37.38 | 210 | 22 | 37.36 | 221 |
| | Chile | 48 | 47.98 | . | 49 | 49.49 | 254 |
| | Colombia | 52 | 68.32 | . | 52 | 63.97 | . |
| | Mexico | 45 | 43.33 | 183 | 45 | 47.09 | 295 |
| | Peru | 52 | 60.39 | . | 55 | 45.67 | . |
| | US | 46 | 33.75 | 117 | 23 | 35.77 | 99 |

Notes: MDD refers to Maximum Drawdown, which is based on equation 1. Duration refers to the period between the highest price and the lowest price, and Recovery refers to the period between the lowest price and the new highest price. Recovery (.) denotes not recovered until 1 June 2021, i.e., after approximately 300 days from the event.

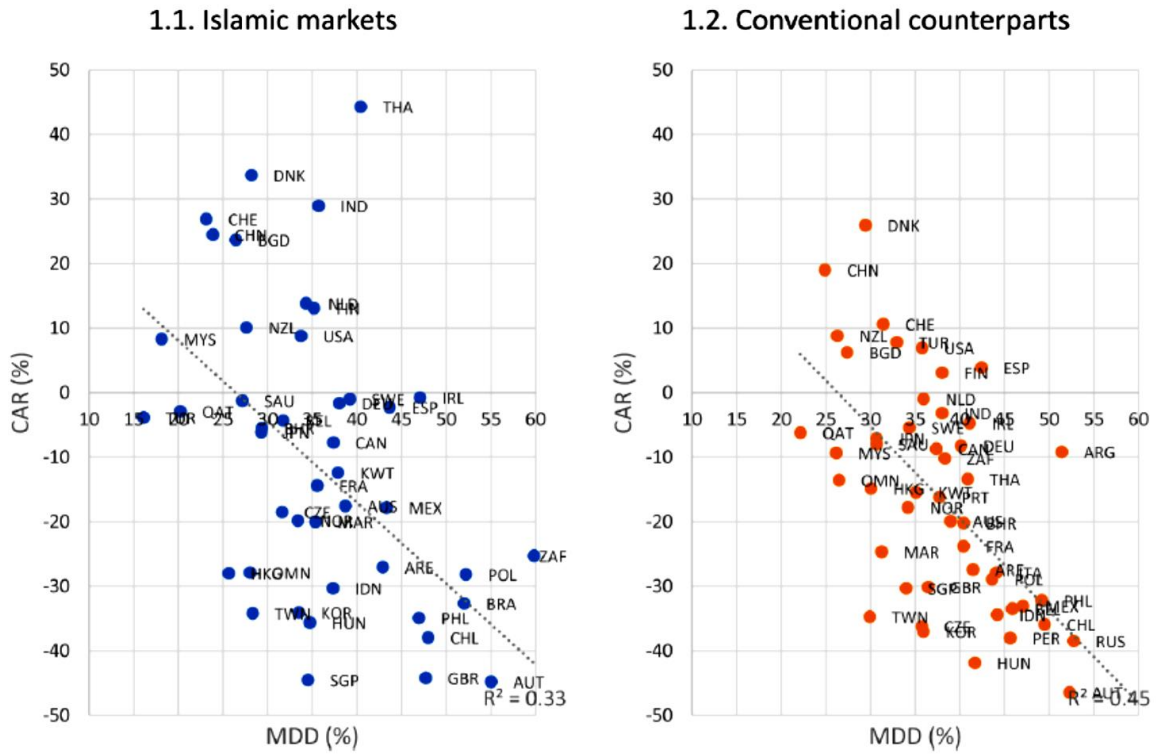


Fig. 1. Scatter plot of CAR vs. MDD

Notes: MDD refers to Maximum Drawdown, which is based on equation 1. CAR refers to Compounded Annual Return, which is based on equation 2. See Table A1 for the list of countries with ISO three-letter country codes. The dotted line shows the negative relationship between MDD and CAR.

## 4. Concluding remarks

The economic consequence of the COVID-19 pandemic is not yet clear, but the global financial markets have already reported catastrophic movements. This study employs a simple statistical analysis to uncover the impact of the pandemic on the country-level

Islamic equity markets compared to their conventional counterparts.

First, the extremely large-scale drawdown across the global stock markets signifies the indiscriminate impact of the pandemic. To some extent, Asian Islamic markets have been relatively resilient compared to their counterparts. However, both types of Asian markets, i.e., Islamic and non-Islamic counterparts, signpost a quicker recovery than the rest of the regions (the Middle East & Africa, Europe, America). COVID-19 is expected to have a long-term negative impact on the global economies. Therefore, the heterogeneous drawdown signals uneven recovery across the stock markets. Second, despite the large-scale drawdown, a number of markets secure a positive annual return where Islamic markets have outperformed their counterparts. These results reinforce our view that collectively

Islamic markets have been more resilient compared to their non-Islamic counterparts. Third, in studying the underlying antecedents, we explore the cross-section of maximum drawdown. We find that higher return leads to a smaller maximum drawdown while higher volatility leads to a larger maximum drawdown. Our results are stronger for Islamic markets, perhaps resulting from the quality of underlying assets.

We expect the resilience in Islamic equity markets to be a catalyst for their future demand. Indeed, Islamic markets' (possible) dependency on conventional markets might lead Islamic markets susceptible to drawdown. Therefore, we suggest research areas on resiliency that deserve further investigation with more granular measures.

## References


ASHRAF, D., RIZWAN, M.S. & AHMAD, G. 2020. Islamic Equity Investments and the COVID-19 Pandemic. Available at SSRN 3611898. Available: 10.2139/ssrn.3611898.

BALLI, F., CHOWDHURY, M.I.H., DE BRUIN, A., 2020. Transition to Islamic equities: Systematic risk and Shari'ah compliance. *Glob.. Finance J*., 100552 https://doi.org/10.1016/j.gfj.2020.100552. Available:

BALLI, F., DE BRUIN, A., CHOWDHURY, M.I.H., 2019. Spillovers and the determinants in Islamic equity markets. *North Am. J. Econ. Finance* 50, 101040. https://doi.org/10.1016/j.najef.2019.101040.

CARLETTI, E., OLIVIERO, T., PAGANO, M., PELIZZON, L. & SUBRAHMANYAM, M.G. 2020. The Covid-19 shock and equity shortfall: Firm-level evidence from Italy. Available: 10.1093/rcfs/cfaa014.

CHOWDHURY, M.I.H., BALLI, F., DE BRUIN, A., 2021. Islamic equity markets versus their conventional counterparts in the COVID-19 age: Reaction, resilience, and recovery. Int. Rev. Finance. https://doi.org/10.1111/irfi.12349.

CHOWDHURY, M.I.H., BALLI, F., HASSAN, M.K, 2020. Network Connectedness of World's Islamic Equity Markets. Finance Res. Lett., 101878 https://doi.org/10.1016/j.frl.2020.101878.

DE MELO MENDES, B.V., LAVRADO, R.C, 2017. Implementing and testing the Maximum Drawdown at Risk. *Finance Res. Lett*. 22, 95–100. https://doi.org/10.1016/j.frl.2017.06.001. Available:

FOGLIE, A.D. & PANETTA, I.C. 2020. Islamic stock market versus conventional: Are islamic investing a 'Safe Haven'for investors? A systematic literature review. *Pacific-Basin Finance J*.,101435. Available: 10.1016/j.pacfin.2020.101435.

GOLDBERG, L.R. & MOUTI, S. 2019. Sustainable Investing and the Cross-Section of Maximum Drawdown. Available at SSRN 3387615. Available: 10.2139/ssrn.3387615.

LEVISOHN, B., 2020. The Stock Market Just Erased All Its Covid Losses - The Economy Is Still a Problem. Barron's. Dow Jones & Company, New York, US.

SALISU, A.A., SIKIRU, A.A, 2020. Pandemics and the Asia-Pacific islamic stocks. Asian Econ. Lett. 1, 17413. https://doi.org/10.46557/001c.17413.

SHERIF, M., 2020. The impact of Coronavirus (COVID-19) outbreak on faith-based investments: An original analysis. J. Behav. Exp. Finance 28, 100403. https://doi.org/10.1016/j.jbef.2020.100403. Available:

YAROVAYA, L., MIRZA, N., RIZVI, S.K.A., SABA, I. & NAQVI, B. 2020. The Resilience of Islamic Equity Funds during COVID-19: evidence from Risk Adjusted

Performance, Investment Styles Volatility Timing. Available at SSRN 3737689. Available: 10.2139/ssrn.3737689.

ZHANG, D., HU, M., JI, Q., 2020. Financial markets under the global pandemic of COVID-19. Finance Res. Lett., 101528 https://doi.org/10.1016/j.frl.2020.101528.

# Appendix

Table A1: Underlying antecedents of maximum drawdown

| Variable | | | i | ii | iii | iv | v | vi |
|---|---|---|---|---|---|---|---|---|
| Islamic | Markets | volatility | 0.633* | 0.607* | 0.616* | 0.614* | 0.594* | 0.579* |
| | | | (0.320) | (0.330) | (0.330) | (0.330) | (0.320) | (0.330) |
| | | Size1 | -0.433 | -0.337 | -0.385 | -0.406 | -0.588 | -0.548 |
| | | | (0.380) | (0.380) | (0.380) | (0.380) | (0.480) | (0.480) |
| | | RoA | | -0.559* | | | | |
| | | | | (0.330) | | | | |
| | | RoC | | | -0.201** | | | |
| | | | | | (0.080) | | | |
| | | RoE | | | | | -0.135*** | -0.131*** |
| | | | | | | | (0.040) | (0.040) |
| | | DtE | | | | | -0.052 | -0.047 |
| | | | | | | | (0.070) | (0.070) |
| | | Obs. | 50.000 | 50.000 | 50.000 | 50.000 | 50.000 | 50.000 |
| | | Adj. r-squared | 16.080 | 17.230 | 16.520 | 17.020 | 15.330 | 16.080 |
| | | Prob(F-stat.) | 0.000 | 0.000 | 0.000 | 0.000 | 0.010 | 0.010 |
| Conventional counterparts | | Volatility | 0.541** | 0.556** | 1.321*** | 0.542** | 0.544** | 0.545** |
| | | | (0.230) | (0.250) | (0.300) | (0.240) | (0.240) | (0.240) |
| | | Size1 | 0.360 | -0.353 | -0.587* | -0.352 | -0.356 | -0.347 |
| | | | (0.380) | (0.390) | (0.360) | (0.400) | (0.390) | (0.400) |
| | | RoA | | -0.483 | | | | |
| | | | | (1.280) | | | | |
| | | RoC | | | | -0.371*** | | |
| | | | | | (0.110) | | | |
| | | RoE | | | | -0.269 | | -0.271 |
| | | | | | | (0.310) | | (0.310) |
| | | DtE | | | | | 0.004 | 0.004 |
| | | | | | | | (0.020) | (0.010) |
| | | Obs. | 50 | 50 | 50 | 50 | 50 | 50 |
| | | Adj. r-squared | 20.670 | 19.320 | 36.350 | 19.730 | 19.020 | 18.030 |
| | | Prob(F-stat.) | 0.000 | 0.000 | 0.000 | 0.000 | 0.010 | 0.010 |

Notes: The table reports the results of cross-sectional estimation for equation 3 with heteroskedasticity and autocorrelation corrected (HAC) standard errors in parenthesis. Volatility refers to annualized standard deviation, Size1 logarithmic market capitalization, RoA return on assets, RoC return on capital, RoE return on equity, and DtE debt to equity ratio. ***, **, and *refer to statistical significance for the coefficient at 1%, 5%, and 10% levels, respectively.

| Asia & Australia | | Middle East & Africa | | Europe | | America |
|---|---|---|---|---|---|---|
| Bangladesh | (BGD) | Bahrain | (BHR) | Austria | (AUT) | Argentina |
| China | (CHN) | Kuwait | (KWT) | Belgium | (BEL) | Brazil |
| Hong Kong | (HKG) | Oman | (OMN) | Czech Republic | (CZE) | Canada |
| India | (IND) | Qatar | (QAT) | Denmark | (DNK) | Chile |
| Indonesia | (IDN) | Saudi Arabia | (SAU) | Finland | (FIN) | Colombia |
| Japan | (JPN) | United Arab Emirates | (ARE) | France | (FRA) | Mexico |
| Malaysia | (MYS) | | | Germany | (DEU) | Peru |
| Philippines | (PHL) | Morocco | (MAR) | Hungary | (HUN) | US |
| Singapore | (SGP) | South Africa | (ZAF) | Ireland | (IRL) | |
| South Korea | (KOR) | | | Italy | (ITA) | |
| Taiwan | (TWN) | | | Netherlands | (NLD) | |
| Thailand | (THA) | | | Norway | (NOR) | |
| Turkey | (TUR) | | | Poland | (POL) | |
| | | | | Portugal | (PRT) | |
| Australia | (AUS) | | | Russia | (RUS) | |
| New Zealand | (NZL) | | | Spain | (ESP) | |
| | | | | Sweden | (SWE) | |
| | | | | Switzerland | (CHE) | |
| | | | | UK | (GBR) | |

*Notes*: List of countries with ISO three-letter country codes in the parentheses.

Table A2: Descriptive statistics

| | | Volatility | Size | RoA | RoE | RoC | DtE |
|---|---|---|---|---|---|---|---|
| Islamic | Mean | 18.33 | 12.67 | 4.36 | 11.14 | 8.02 | 51.83 |
| | Median | 16.82 | 12.59 | 3.51 | 9.16 | 6.88 | 49.68 |
| | Obs. | 50 | 50 | 50 | 50 | 50 | 50 |
| Conventional | Mean | 16.34 | 13.88 | 2.14 | 11.22 | 3.4 | 117.31 |
| | Median | 15.08 | 13.48 | 1.87 | 11.14 | 5.67 | 116.52 |
| | Obs. | 50 | 50 | 50 | 50 | 50 | 50 |

Notes: Volatility refers to annualized standard deviation, Size logarithmic market capitalization, RoA return on assets, RoE return on equity, RoC return on capital, and DtE debt to equity ratio.

Table A3. Underlying antecedents of maximum drawdown

| Variable | | i | ii | iii | iv | v | vi |
|---|---|---|---|---|---|---|---|
| Islamic Markets | volatility | 0.598* | 0.577* | 0.584* | 0.584* | 0.560* | 0.550* |
| | | (0.320) | (0.330) | (0.330) | (0.330) | (0.320) | (0.330) |
| | Size2 | -0.712 | -0.588 | -0.640 | -0.650 | -0.862 | -0.788 |
| | | (0.440) | (0.460) | (0.450) | (0.470) | (0.560) | (0.560) |
| | RoA | | -0.537 | | | | |
| | | | (0.340) | | | | |
| | RoC | | | -0.193** | | | |
| | | | | (0.080) | | | |
| | RoE | | | | | -0.130*** | -0.125*** |
| | | | | | | (0.040) | (0.040) |
| | DtE | | | | | -0.050 | -0.046 |
| | | | | | | (0.060) | (0.060) |
| | Obs. | 50 | 50 | 50 | 50 | 50 | 50 |
| | Adj. r-squared | 17.040 | 17.970 | 17.320 | 17.770 | 16.320 | 16.840 |
| | Prob(F-stat.) | 0.000 | 0.000 | 0.000 | 0.000 | 0.010 | 0.010 |
| Conventional Counterparts | Volatility | 0.519** | 0.532** | 1.289*** | 0.521** | 0.520** | 0.523** |
| | | (0.230) | (0.250) | (0.290) | (0.240) | (0.240) | (0.240) |
| | Size2 | -0.608 | -0.588 | -0.821* | -0.582 | -0.603 | -0.577 |
| | | (0.480) | (0.500) | (0.430) | (0.500) | (0.500) | (0.520) |
| | RoA | | -0.381 | | | | |
| | | | (1.270) | | | | |
| | RoC | | | -0.366*** | | | |
| | | | | (0.110) | | | |
| | RoE | | | | -0.239 | | -0.240 |
| | | | | | (0.310) | | (0.310) |
| | DtE | | | | | 0.001 | 0.001 |
| | | | | | | (0.020) | (0.010) |
| | Obs. | 50 | 50 | 50 | 50 | 50 | 50 |
| | Adj. r-squared | 21.890 | 20.420 | 37.430 | 20.800 | 20.200 | 19.050 |
| | Prob(F-stat.) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Notes: The table reports the results of cross-sectional estimation for equation 3 with heteroskedasticity and autocorrelation corrected (HAC) standard errors in parenthesis. Volatility refers to annualized standard deviation, Size2 logarithmic market capitalization to GDP, RoA return on assets, RoC return on capital, RoE return on equity, and DtE debt to equity ratio. ***, **, and * refer to statistical significance for the coefficient at 1%, 5%, and 10% levels, respectively.