Islamic equity markets versus their conventional counterparts in the COVID-19 age: Reaction, resilience, and recovery

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Abstract
We undertake a comparative examination of Islamic equity markets and their conventional counterparts during the COVID-19 pandemic via maximum drawdown-based risk measures. The two-digit drawdown throughout the underlying sectors signifies the indiscriminate impact of the pandemic. It appears that most of the Islamic sectors experience relatively lower drawdown as well as faster recovery than their non-Islamic counterparts. During the period, Islamic markets outperformed their counterparts. Islamic markets also hold healthier Calmar ratios while the emerging markets retain relatively higher metrics.

KEYWORDS
COVID-19, Islamic equity market, maximum drawdown

JEL CLASSIFICATION
G10; G11; Z12

1 | INTRODUCTION

With increasing uncertainty, portfolio managers are most anxious about large-scale capital loss as it may destroy accumulated wealth leading to massive cash extraction, risking the continuity of operations (de Melo Mendes & Lavrado, 2017). Throughout the Global Financial Crisis (GFC) of 2007–2008, we experienced this when the global economy took several years to recover. The development of the COVID-19 pandemic poses similar severe threats to financial markets and the global economy. The broad-market yardstick, the S&P500, dropped by nearly 34% on March 23 and then took 126 trading days to recoup the sell-offs (Levisohn, 2020). As investors transition to a pandemic afterlife while lockdown restrictions ease throughout, the capital market is also pushing aside coronavirus-
induced uncertainty with growing optimism about reopening the economy. In addition to emergency initiatives, including credit services and rate cuts, government stimulus is also playing a role.

Increasingly, interrelated capital markets suggest an inevitable ripple effect throughout the economy (Chowdhury, Balli, & Hassan, 2020). Then again, it is also unlikely that all sectors had the same reaction. Moreover, different sectors may respond in different ways to the COVID-19 aftershock. Some sectors bear the direct brunt of the fallout, while other seemingly unrelated sectors will also feel the secondary effects.

In this study, we aim to glean some valuable insights, in particular, from 10 main equity sectors—Basic Materials, Consumer Goods, Consumer Services, Financials, Health Care, Industrials, Oil and Gas, Technology, Telecommunications, and Utilities. Our core objective is to provide a side-by-side comparison of conventional and Islamic equity sectoral portfolios developed by Dow Jones. The constituents of these Islamic equity portfolios must meet strict two-stage Shariah compliance screening and supervision. First, business screening rejects alcohol, tobacco, pork-related products, gambling, pornography, conventional media organization, non-Islamic financial services, and weapon/defense products manufacturing. Next, the constituent must adhere to specific metrics for leverage and liquidity (in particular, total debt 33%, total cash + investments 33%, total receivables 33%, to 2-year average market capitalization). The Islamic indexes are supervised by a board of Shariah scholars who review the composition quarterly (i.e., March, June, September, and December) and decide the ins or outs of constituents. Accordingly, they retain unique assets relative to non-Islamic portfolios (Orzano & Welling, 2019). Therefore, Islamic equity portfolios’ risk exposure is not expected to be analogous (Balli, de Bruin, & Chowdhury, 2020). Hence Islamic equity portfolios are perceived as a separate asset class. Whether or not Shariah compliance criteria have an economic impact is another issue of interest in this study.

We explore the question of whether Shariah compliance impacts the downside risk with a straightforward approach that uses maximum drawdown (Max. DD)-based measures. Consequently, this study contributes to the existing body of knowledge in several ways. As Goodell (2020) anticipates, there will be accelerating scholarly interest on the role of pandemics in finance, yet our study is the first, timely study to conduct a comparative analysis of the reaction to the pandemic via Max. DD-based measures that are widely used among the market participants. Second, it employs the Calmar measure that has received extensive attention in empirical research as an important metric for technical traders utilizing momentum strategies. Finally, this study connects with studies that claim that Islamic equity portfolios can deliver superior returns, at least in specific stress periods (Safiullah & Shamsuddin, 2019).

The remainder of this study is organized as follows: Section 2 describes the data and methodology, Section 3 discusses the findings of the empirical analysis, and Section 4 concludes.

2 | DATA AND RESEARCH APPROACH

We use the daily price data for the Dow Jones world conventional and Islamic sectoral indexes as well as the aggregate market indexes. Likewise, we also collect data for the Dow Jones emerging countries’ conventional and Islamic markets indexes. The 10 main sectors are Basic Materials, Consumer Goods, Consumer Services, Financials, Health Care, Industrials, Oil and Gas, Technology, Telecommunications, and Utilities. The constituents of the Dow Jones Islamic indexes, as mentioned previously, undergo a two-stage compliance screening and supervision regime. As a result, Islamic indexes are with significant deviations from conventional indexes in individual sector weights. The study period covers the period from January 1, 2020, to August 15, 2020, which encompasses COVID-19-induced volatility and uncertainty episodes. The data are obtained from Bloomberg Terminal and quoted in the U.S. dollar. The complete index list and the corresponding ticker are available on request.

We utilize the daily price of the sampled indexes based on the Heikin-Ashi (HC) estimation, which is the average value of four parameters, that is, \((\text{Open} + \text{High} + \text{Low} + \text{Close})/4\). We then measure the maximum drawdown (Max. DD) to yield the downside risk over the specified period. Following de Melo Mendes and Lavrado (2017), we specify:
Max. DD = \max_{1 \leq h < l < T} \left( \frac{P_h - P_l}{P_h} \right)

(1)

where \( T \) is the study period, that is, from January 1, 2020, to August 15, 2020, \( P_h \) is the highest price while \( P_l \) is the lowest price before the new high price.

Note, Max. DD only measures the size of the largest drop in value. Therefore, in the course, 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.

Next, we estimate the compounded annual return (CAR) to depict the cumulative outcome of gain or loss over the specified period.

\[
\text{CAR} = \left( \frac{P_e}{P_b} \right)^{\frac{1}{n}} - 1
\]

(2)

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.

We compute the Calmar ratio (CR), which is a function of compounded return and Max. DD, as a more realistic measure of risk-adjusted return (Psaradellis, Laws, Pantelous, & Sermpinis, 2019).

\[
\text{CR} = \frac{\text{CAR}}{\text{Max. DD}}
\]

(3)

where CAR is the compounded annual return and Max. DD is the maximum drawdown, as specified earlier.

### 3 | EMPIRICAL ANALYSES

In this study, we attempt to sketch the impact of COVID-19 on the global composite markets as well as on emerging country markets. In particular, we focus on the core economic sectors alongside the entire market benchmark equity indices. The objective is to provide a side-by-side comparison of Islamic equity markets to their conventional counterparts with a straightforward approach that uses Max. DD-based risk measures.

#### 3.1 | Maximum drawdown

Tables 1 and 2 exhibit the Max. DD analyses for the global composite markets and emerging country markets, respectively. A Max. DD is often quoted as a measure of downside risk, which signifies the depletion from an investment over a specific period (de Melo Mendes & Lavrado, 2017). We also tally the number of days (duration) to reach the lowest level of price and days to climb back to the previous peak (recovery) from the drop to expose the amplitude.

The two-digit Max. DD throughout the sectors signifies the indiscriminate impact of COVID-19 on the underlying economic sectors. It appears that all the global Islamic sectors have relatively lower Max. DD than their conventional counterparts, with the only exception Consumer Services sector. The lowest drawdown in both markets is for the Telecommunications sectors but yet to recover from the aftermath. The largest drawdown is for the Oil and Gas sectors, nearly 60%. The Oil and Gas sector is yet to recover, down by closely 35% as of August 15.¹ Financials sectors are also down, but clearly, the Islamic one is recovering more rapidly as signposted by the percentage down. We also spot a strong disparity in the Utilities sector; the dropdown is 25.12% in the Islamic sector against 35.74%.

Importantly, global Islamic sectors, particularly Basic Materials, Consumer Goods, Health Care, and Industrials,
recovered faster than their counterparts. This is also depicted in the entire market, taking about 90 days to recover after the onset of the crisis. Results are similar yet more interesting in the emerging country market sectors. All the Islamic sectors reveal relatively lower Max. DD, and most of them depict faster recovery than their counterparts.

**TABLE 1** Maximum drawdown—global composite market

| Sector          | Conventional | Islamic      |
|-----------------|--------------|--------------|
|                 | Duration (days) | Max. DD (%) | Recovery (days) | Duration (days) | Max. DD (%) | Recovery (days) |
| Basic Materials | 67           | 38.46        | 120             | 66              | 36.10        | 101             |
| Consumer Goods  | 55           | 31.74        | NYR (1.26)      | 28              | 29.46        | 98              |
| Consumer Services | 29       | 33.24        | 99              | 52              | 35.58        | 107             |
| Financials      | 30           | 41.40        | NYR (18.53)     | 28              | 36.69        | NYR (4.21)      |
| Health Care     | 34           | 27.91        | 67              | 35              | 25.95        | 58              |
| Industrials     | 55           | 39.35        | NYR (4.12)      | 50              | 36.43        | 117             |
| Oil and Gas     | 64           | 58.95        | NYR (34.23)     | 62              | 58.92        | NYR (34.63)     |
| Technology      | 28           | 31.73        | 65              | 28              | 31.18        | 64              |
| Utilities       | 28           | 35.74        | NYR (12.76)     | 51              | 25.12        | NYR (6.62)      |
| Entire Market   | 34           | 35.14        | NYR (2.53)      | 28              | 31.83        | 90              |

Notes: Maximum drawdown (Max. DD) is based on the equation as Max.DD = \( \max_{1 \leq h < l < T} \left( \frac{P_h - P_l}{P_h} \right) \), where \( T \) is the study period (i.e., from January 1, 2020, to August 15, 2020), \( P_h \) is the highest price while \( P_l \) is the lowest price before the new high price. 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. NYR denotes not yet recovered, that is, after approximately 150 days from the event, percentage down is in parentheses.

**TABLE 2** Maximum drawdown—emerging country market

| Sector          | Conventional | Islamic      |
|-----------------|--------------|--------------|
|                 | Duration (days) | Max. DD (%) | Recovery (days) | Duration (days) | Max. DD (%) | Recovery (days) |
| Basic Materials | 54           | 41.25        | NYR (8.77)      | 54              | 37.05        | NYR (9.51)      |
| Consumer Goods  | 56           | 33.77        | NYR (2.68)      | 56              | 32.15        | 115             |
| Consumer Services | 52        | 32.31        | 77              | 55              | 25.28        | 51              |
| Financials      | 69           | 38.00        | NYR (24.12)     | 55              | 29.72        | NYR (15.33)     |
| Health Care     | 54           | 25.79        | 60              | 54              | 23.98        | 49              |
| Industrials     | 54           | 33.63        | NYR (6.19)      | 54              | 30.74        | 110             |
| Oil and Gas     | 58           | 48.82        | NYR (22.68)     | 50              | 48.06        | NYR (26.20)     |
| Technology      | 57           | 23.70        | 77              | 57              | 23.35        | 80              |
| Telecommunications | 52        | 27.34        | NYR (13.48)     | 49              | 24.58        | NYR (13.17)     |
| Utilities       | 49           | 37.60        | NYR (18.75)     | 47              | 24.14        | NYR (9.46)      |
| Entire Market   | 55           | 33.67        | NYR (6.01)      | 56              | 28.64        | 91              |

Notes: Maximum drawdown (Max. DD) is based on the equation as Max.DD = \( \max_{1 \leq h < l < T} \left( \frac{P_h - P_l}{P_h} \right) \), where \( T \) is the study period (i.e., from January 1, 2020, to August 15, 2020), \( P_h \) is the highest price while \( P_l \) is the lowest price before the new high price. 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. NYR denotes not yet recovered, that is, after approximately 150 days from the event, % down is in parentheses.
Then again, both Financials and Utilities sectors display strong disparity, both in the case of drawdown and subsequent recovery. The highest drawdown is for the Oil and Gas sectors, almost 50%, but the lowest is for the Technology sectors, roughly 25%. Collectively, Islamic equity markets have been more resilient compared to their non-Islamic counterparts, in consonance with Safiullah and Shamsuddin (2019), who also report similar results through the GFC.

We now estimate the monthly drawdown and plot them in Figures 1 and 2 for global composite markets and emerging country markets, respectively. With a few exceptions, Islamic markets display a lower level of drawdown

**FIGURE 1** Monthly drawdown—global composite market. Month-wise maximum drawdown; see Table 1 for detailed notes. Blue and Orange trajectories refer to the conventional and Islamic markets, respectively.
compared to their counterparts, and the results are more robust in the emerging country markets than global composite markets, consistent with the entire period analysis. The significant impact in March is striking throughout the sectors and entire markets in both regions when the stock markets worldwide start sliding to their nadirs as a result of the widespread coronavirus. We then detect the subsequent drawdown as with the second wave of the pandemic but with reduced magnitude. Once again, the substantial disparities in Financials and Utilities and to some extent in Telecommunications sectors highlight the significance of Shariah compliance. The Financials sector is the main area
of deviation as nearly all entities involved in conventional financial services are not Shariah compliant. Therefore, the Islamic Financials sector is unique to the conventional counterpart. Similar to that in conventional Utilities as they typically have relatively high leverage ratios. Thus COVID-19 mirrors the impact of the GFC. The GFC, which is instigated by imprudent lending as well as risk management practices, did not similarly affect the Islamic financial market since such practices are forbidden under Shariah principles (Yarovaya, Mirza, Rizvi, Saba, & Naqvi, 2020).

3.2 | Annual return

We examine the annualized compound return over the study period. Figures 3 and 4 illustrate the results of the global composite markets and emerging country markets, respectively. The global Islamic market posted a return of 17.99%, while their counterpart posted merely 0.66%. The outperformance of Islamic Financials, as well as

![Figure 3](image-url)  
**FIGURE 3** Compounded annual return (CAR)—global composite market. CAR is over the period January 1, 2020, to August 15, 2020. CAR = \( \frac{P_e}{P_b} \left( \frac{1}{n} \right) - 1 \), 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.

![Figure 4](image-url)  
**FIGURE 4** Compounded annual return (CAR)—emerging country market. CAR is over the period January 1, 2020, to August 15, 2020. CAR = \( \frac{P_e}{P_b} \left( \frac{1}{n} \right) - 1 \), 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.
Industrials sectors, resulted in such significant performance in the aggregate market. Other Islamic sectors, except for Oil and Gas and Telecommunications, also yield higher returns. Interestingly, over the same period, the emerging Islamic market and the counterpart reported a positive 21.95% return and a negative 3.65% return, respectively. The most salient sector is the Islamic Consumer Services, which generated about 75.12% return over the stated period. This could be a consequence of surging demand in addition to international portfolio diversification from a risk/reward standpoint. All other Islamic sectors are with the same sign return compared to their counterparts with the only exception Industrials sectors. In both global composite and emerging country markets, the Technology sectors outperformed the aggregate markets. As it is expected, the twin crisis scenario is prevalent in the Oil and Gas sector, reporting hefty negative returns in both regions.

3.3 | Calmar ratios

In this stage of the study, we compute the CR as a function of annualized compound return and Max. DD to provide a more realistic risk-adjusted return measure (Psaradellis et al., 2019). Figures 5 and 6 illustrate the results of the
global composite markets and emerging country markets, respectively. The higher the CR, the better the investment performed on risk-adjusted context over the COVID-19 pandemic period. The global composite and emerging country Islamic markets retain healthier Calmar metrics ($\approx 0.50$, $\approx 0.75$, respectively), which is intuitive considering our results in Max. DD and annualized compound return. It is equally imputable to sector allocations and variances in stock selection within sectors. However, the emerging markets partake relatively higher CRs. In particular, Consumer Services, Health Care, and Technology sectors are noticeable, holding $\geq 1.50$.

At this juncture, the performance of Islamic markets is attributable to their investing principles, that is, the Shariah compliance screening. We thus emphasize the aspect of limited leverage alongside the liquidity of Islamic equity sectors, which put them in a better position during the crisis period. For instance, in the emerging country market, the Islamic market had a leverage ratio of 30.61% and a liquidity ratio of 1.59 compared to 103.47 and 1.32%, respectively, in the non-Islamic counterpart (Bloomberg, 2019).

4 | CONCLUSION

Our comparative examination of Islamic equity markets and their conventional counterparts during the COVID-19 pandemic via Max. DD-based risk measures evidences noteworthy differences in reaction, recovery, and resilience.

The two-digit drawdown throughout the underlying sectors signifies the indiscriminate impact of the pandemic. Yet, most of the Islamic sectors partake in relatively lower level of drawdown and depict faster recovery than their counterparts. Notably, the Financials and Utilities sectors display strong disparity, both in the case of drawdown and in the subsequent recovery. A corollary is that Islamic equity markets have been more resilient compared to their non-Islamic counterparts. During the period, Islamic markets outperformed their counterparts. The significant out-performance of Islamic Financials and Industrials sectors resulted in a noticeable disparity in the aggregate markets. Islamic markets also hold healthier CRs while the emerging markets retain relatively higher metrics.

Lately, the second wave of COVID-19 in the midst of easing lockdowns is clouding the economic outlook. We also spot a slow recovery in the real economic activity as signposted by the Oil and Gas sectors. Further inquiry on the variances in the impact of COVID-19 across sectors and markets is now called for. Moreover, as Goodell (2020) emphasizes, COVID-19 suggests an underpricing of equity risk. This, in turn, spotlights the lower risk and leverage that characterizes Islamic markets and the need for further comparative research on Islamic equity markets and their conventional counterparts in the COVID-19 age.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

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ENDNOTES

1 The drawdown is ushered by the oil price war initiated on March 8, 2020, by Saudi Arabia in reaction to Russia’s refusal to reduce production in order to maintain a moderate price level. The abrupt drop in demand in conjunction with the dispute resulted a sharp drop in price over the subsequent period, in fact twisted negative on April 20, 2020.
One can argue that the Islamic Financials sector is the main area of such return in the aggregate market as most of the constituents of conventional Financials sector are not Shariah compliant, representing nearly 20% of the entire market (which significantly underperformed over the specified period).

Safiullah and Shamsuddin (2019) also report significant positive return for the Consumer Services as well as Health Care sectors during the Asian Financial Crisis.

Unfortunately, the index developer Dow Jones does not disclose the global composite and emerging country markets' screening ratios. Bloomberg system estimates only the emerging country market level ratios.

In a recent study, Yarovaya et al. (2020) revealed that Islamic equity funds are more resilient to COVID-19 shock since they outperformed non-Islamic counterparts during the pandemic's peak months.

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