

Does MCO Truly Assist the Islamic Stock Market to Rebound Amid Covid-19?

(Adakah PKP Benar-benar Membantu Pasaran Saham Islam Pulih di tengah-tengah Covid-19?)

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ABSTRACT

The Covid-19 pandemic is likely to affect stock markets negatively as observed by past studies that the hedging effectiveness of Islamic stocks declines due to Covid-19. The subsequent effort to bend down the uprising cases of Covid-19 is through limited movement order, which on the other hand, may aggravate the situation if economic sectors are not allowed to operate. Hence, this study aims to examine the potential moderating role of government stringency order on the relationship between Covid-19 and Islamic stock market performance across the globe. Based on the panel cointegration analysis, the findings show that the adverse effect of Covid-19 on Islamic stock prices can be mitigated by executing the government's stringency policy. This study contributes to the existing literature by arguing that MCO, which is originally meant to curb Covid-19, can also affect the relationship between Covid-19 and stock prices, which signals the need to further preserve and enhance the Islamic value of Islamic stocks to be an effective hedging tool. This is because rather than focusing on strengthening the Islamic principles in the businesses, the loosening of Shariah conditions has been the main reason for more companies to be considered Shariah compliant. Nonetheless, although MCO seems to be empirically effective in reversing the adverse effect of Covid-19 on stock prices, sub-analyses serve as a reminder that the imposition should be done with more caution, as in several sub-regional analyses, it does not seem to work well. Rather than imposing MCO, this study would prefer to suggest more focus only on mask-wearing and social distancing to ensure that the economy can continue active.

Keywords: Covid-19; government movement order; Islamic stock market; panel analysis

ABSTRAK

Pandemik Covid-19 seakan memberi kesan negatif kepada pasaran saham seperti yang telah didapati dalam kajian lepas bahawa keberkesanan lindung nilai yang berkurangan kerana Covid-19. Usaha untuk melenturkan peningkatan kes Covid-19 melalui perintah kawalan pergerakan (PKP) pula dalam sudut yang lain mungkin akan mengeruhkan lagi situasi sekiranya sektor-sektor ekonomi tidak dibenarkan beroperasi. Oleh itu, kajian ini bertujuan untuk menguji peranan penengah yang mungkin perintah kawalan pergerakan ke atas hubungan antara Covid-19 dan prestasi pasaran saham Islamik di seluruh dunia. Berdasarkan analisis kointegrasi, dapatan menunjukkan bahawa kesan buruk Covid-19 ke atas harga saham Islamik dapat di kurangkan melalui pelaksanaan perintah kawalan pergerakan. Kajian ini menyumbang kepada literatur dengan menghujahkan bahawa PKP, yang awalnya hanya untuk mengurangkan Covid-19 boleh juga mempengaruhi hubungan antara Covid-19 dan harga saham yang mengisyaratkan keperluan untuk memelihara dan meningkatkan nilai Islam dalam stok Islamik sebagai alat pelindung nilai. Ini kerana berbanding memberikan tumpuan kepada memperkasakan prinsip-prinsip Islam dalam perniagaan, melonggarkan syarat-syarat Shariah telah menyebabkan banyak syarikat diakui patuh Shariah. Walaubagaimanapun, walaupun PKP kelihatan berkesan dalam mengubah kesan Covid-19 ke atas harga saham secara empirical, analisis sampingan bertindak sebagai peringatan bahawa penguatkuasaannya perlu dilakukan dengan lebih berhati-hati kerana dalam beberapa analisis kumpulan lebih kecil, tidak kesemuanya memberikan keputusan yang diharapkan. Berbanding pelaksanaan PKP, kajian lebih mencadangkan tumpuan kepada pemakaian pelitup muka dan penjarakan sosial sahaja bagi memastikan ekonomi boleh terus bergerak.



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Kata kunci: Covid-19; perintah kawalan pergerakan; pasaran saham Islam; analisis panel

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INTRODUCTION

Over the last decade, stock markets have been considered effective in forecasting real economic activity (Bosworth 1975). Empirical evidence about the influence of the stock market in countries on economic growth appears to justify that increased stock market performance fosters investment leading to significant economic growth (Aali-Bujari et al. 2017; Coşkun et al. 2017; Abdulkarim et al. 2020). A rising stock market usually indicates a more robust economy and increases investor confidence. Investors favor countries with low unemployment, minimal social and economic disparities, low crime rates, and generally stable political and security conditions. As the nation’s economic and political circumstances

strengthen, the stock market will perform better and more comprehensively.

However, economic growth has been brought to its knees by Covid-19, resulting in the most significant recession since the Great Depression of the 1930s. By the end of 2020, the world GDP experiences 3.59 percent lower than it might have been if the pandemic had not occurred, as illustrated in Table 1, and it will be a new economy in which many sections of the economy will not return to their previous levels of output. Hence, the worldwide spread of Covid-19 resulted in stock price reductions, increased stock-price volatility, lower nominal interest rates, and most certainly contractions of actual economic activity, as measured by the GDP growth rate.

TABLE 1. The GDP growth rate

	2017	2018	2019	2020
World	3.28%	3.03%	2.34%	-3.59%
High Income	2.39%	2.22%	1.59%	-4.70%
Middle Income	4.95%	4.53%	3.66%	-1.93%
Low Income	4.43%	4.53%	4.11%	0.92%

Note: ^a Different growth rate from 2019 to 2020.

Source: World Bank (2021).

To prevent the spread of the new virus, several nations have imposed strict measures such as travel bans, social distancing orders, and shutting schools, hotels, restaurants, and other businesses (Kotishwar 2020). Eventually, government stringency policy is expected to enhance investor confidence and reduce the disease’s negative economic impacts, resulting in a favorable market response. However, these efforts raised more

doubts about their efficacy and impact. For example, Movement Control Order (MCO) was potentially helpful in preventing new infections and increasing economic distance. However, it affects the jobs and earnings of tens of millions of people, reducing economic activity. Therefore, when an unexpected disaster occurs, financial investors are compelled to leave the volatile market to pursue more secure financial assets (Arin et al. 2008).

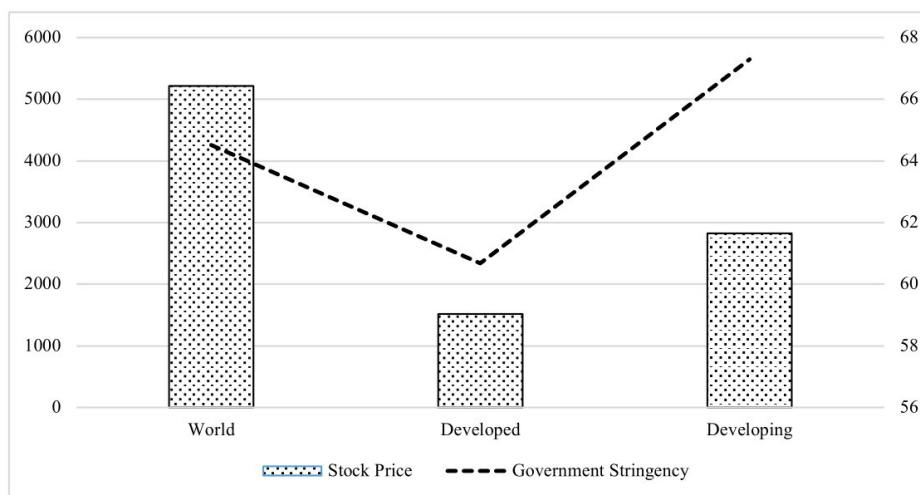


FIGURE 1. Government Stringency Policy vs Islamic Stock Price.

Note: The average daily closing price and government stringency policy from worldwide, developed, and developing nations from July 2020 to June 2021.

Sources: Bloomberg Economics (2021).

Throughout the outbreak, the government's intervention has gotten increasingly stringent. However, there is a wide range of responses between nations, as illustrated in Figure 1. As governments tighten their policies and vaccination become available in response to Covid-19, examining if the restrictions are effectively promoting stock market growth is essential. With this regard, several empirical studies have explored the positive and negative effects of government stringency on the stock market, specifically on individual country's performance, such as Vietnam (Vo & Doan 2021), India (Alam et al. 2020), Japan (Sayeed & Hossain 2020), Malaysia (Shah et al. 2020), Nepal (Ojha 2019), China (Feng & Li 2021; Guo et al. 2020), Saudi Arabia (Alzyadat & Asfoura 2021), emerging country (Aharon & Siev 2021), and Islamic stock markets (Hersh et al. 2023). To recap, Salisu and Shaik (2022) show that both conventional and Islamic stocks are affected by the Covid-19 although the conventional could suffer more than Islamic stocks. MCO, on the other hand, could serve in both directions. It can cushion the adverse effect of Covid-19 on stock prices if it could reduce daily cases of Covid-19, from which, it can gradually create more confidence among the investors to stay or even invest more. Nonetheless, the unlikely effective MCO in slowing down the daily cases, it may double the adverse effect on the overall economy, including stock prices. Hence the objective of this study is to examine the moderating effect of MCO on Covid-stock relationship in 15 Islamic stock prices across the globe by utilizing Fully Modified OLS (FMOLS) technique. The result generally shows that government stringency policy plays a role in moderating the adverse effect of Covid-19. However, this conclusion has to be treated cautiously as the regional and sub-category analyses do not necessarily share a similar conclusion.

Limited or completely no movement is always the key to economic slowdown. Hence, understanding the effectiveness of MCO is very critical as we believe that social distancing and mask wearing could be sufficient to combat Covid-19, while allowing stock market to be as normal and active as prior to the outbreak. In other words, the finding of this study serves as a reminder to government policymakers that in the event of similar issues occur in future, government should be more cautious in introducing MCO as MCO has not been too effective in reducing Covid-19 cases (and death) and improving optimism among investors on the prospect of market and whole economic recovery. To industry, strengthening the Islamic value that underlies Islamic stocks that could improve the resiliency to shocks could be another signal can be derived from the Covid-19 pandemic and the finding of this study. Moreover, to the best of our knowledge, this could be among the first few studies to examine whether government stringency policy is moderating the adverse effects of Covid-19 on global Islamic stock returns.

The remainder of the paper is structured as follows: The literature review is discussed in Section 2. The methodology is presented in Section 3. The results and conclusions of the analysis are discussed in Section 4, while the conclusion and policy suggestions are discussed in Section 5.

LITERATURE REVIEW

ADAPTIVE MARKET HYPOTHESIS (AMH)

The efficient markets hypothesis (EMH) concept was the cornerstone of early finance theory. However, the EMH is widely criticized and unable to accurately describe market performance since the market is less predictable and considerably more efficient than the most efficient market hypothesis. Then, behavioral finance challenged it from the 1970s through the 1990s, and the focus shifted to behavioral finance (Shiller 2003). Compared to the EMH, Lo (2004) argues that markets are adaptive, change through time, and hence change between efficiency and inefficiency at various times. The adaptive market hypothesis (AMH) was then proposed by Lo (2004), which integrates the ideas of the well-established efficient market hypothesis (EMH) with behavioral finance theory.

The AMH suggests that trading strategies may suffer a loss before returning to profitability when environmental circumstances improve. As a result, the AMH has gained considerable attention in recent empirical studies where there has been significant evidence of stock return adaptive behavior (Charles et al. 2012; Kim et al. 2011; Lim & Brooks 2011; Urquhart & Hudson 2013). For example, Kim et al. (2011) argue that price volatility and economic fundamentals are related to return predictability. Return predictability is associated with significant uncertainty during market crashes; nevertheless, market players' investment decisions may change as they respond to an ever-changing environment. Moreover, Charles et al. (2012) show that return predictability varies over time due to improving market circumstances, which is aligned with the AMH. A research finding by Lekhal & El Oubani (2020) also indicates that lower inefficiency during the crisis has significantly impacted stock market return, leading the stock price to plummet. However, when the market corrects, profit opportunities arise from time to time-based on market conditions consistent with the AMH hypothesis.

Based on a previous study shows that various components or variables, such as financial crises, market crashes, stock bubbles, or the current economic crisis caused by the Covid-19 outbreak and changes in government policies, can impact the performance of stock prices in the market. Therefore, we can see that the market is not self-contained; it is greatly dependent on several variables because a change in one component or market condition causes the market to change and influence significantly. However, scholars have yet to

devote much attention to examining the AMH in Islamic financial markets during Covid-19. This is unexpected considering that the Islamic stock index is a relatively recent feature in the global financial system, as proven by the fact that the Islamic financial sector has grown at a rate of 15%–20% annually (Filippo et al. 2013).

EMPIRICAL STUDIES ON ISLAMIC CAPITAL MARKET

Islamic stock market is considered not only as fast-growing segment in financial markets, but also in literature. Most past studies are centred around the basic features (El-Ashkar 1995; Rizaldy & Ahmed 2019), advantageous of Islamic stock markets (Hassan et al. 2020; El Maknouzi & Jadalhaq 2020), resilience to shocks (Erragragui et al. 2018; Jawadi et al. 2020; Ahmed, 2021; Dibooglu et al. 2022; Ashraf et al. 2022), responsible finance (Jawadi et al. 2018; Paltrinieri et al. 2019; Ali et al. 2021; Arif et al. 2022), among others.

COVID-19 ON THE STOCK PRICES

The number of studies looking into the influence of Covid-19 on the stock market is increasing enormously, and they are now being conducted in nearly every area of the world economy. The impact of Covid-19 is controversial, mainly because the disease first emerged in China, Asia's primary center for foreign investment. Being the first nation afflicted by the Covid-19 crisis, Al-Awadhi et al. (2020) find that the daily increase in confirmed cases and deaths caused by Covid-19 significantly negatively influences stock returns across all companies in the Chinese stock market. According to Orhun (2020), Covid-19 has significantly impacted stock markets in countries with greater exposure to China. Similarly, Liu et al. (2020) illustrate that the stock market in Asia has been hit harder by Covid-19 instances and deaths than in other countries as investors are concerned about future returns. Hence, during the early stages of the Covid-19 pandemic, the stock market tends to overreact because investors cannot comprehend the implications of the outbreak on the stock market, causing the stock price to plummet for both Covid-19 cases and deaths (Phan & Narayan 2020).

Much empirical research has confirmed that Covid-19 cases and deaths have a detrimental impact on stock market indexes. However, Ashraf (2020) found differences suggesting that the stock market only reacted unfavorably to the increase of Covid-19 confirmed cases, demonstrating that investor reactions vary depending on the stage of the outbreak. Similarly, Bakkar (2020) indicates that the returns of the stock market sector, particularly in Egypt, tend to be more susceptible to new cases. The stock market in the worst-affected nations is more sensitive to the number of daily cases than the number of fatalities, indicating that the country's performance has worsened.

Few studies observe that Covid-19 can positively raise the stock price. Albulescu (2020) argues that the number of new Covid-19 deaths has a significant positive impact on stock volatility in the United States, with an increase in mortality correlating to an increase in stock price. Similarly, Phan & Narayan (2020) argue that both Covid-19 cases and deaths have long-term beneficial implications on the stock price. For example, if the nations hit 100,000 infections and 100 deaths, half of the markets respond positively, signaling a possible market correction. Yousef (2020) also discovers that both Covid-19 cases and fatalities had a substantial beneficial influence on the stock price of the G7 stock market volatility due to the current climate's uncertainties. However, Bissoondoyal-bheenick et al. (2020) still reveal that Covid-19 cases and death do not affect the stock price. He argues that there is a substantial disparity between the number of Covid-19 and the fatality cases in the stock market in selected G20 countries because of their experience with the SARS outbreaks, which leads investors to respond more rapidly to Covid-19.

GOVERNMENT'S STRINGENT POLICIES ON STOCK PRICES

The unprecedented spread of Covid-19 has triggered various responses from governments worldwide. Government interventions have become more rigorous as the outbreak has spread. The shutdown measures, such as workplace closures, have disrupted the decision-making process in numerous financial institutions. In this regard, Alzyadat & Asfoura (2021) identify that the government's stringent measures have influenced corporate cash flow expectations. As a result, investors are less eager to invest in risky companies, leading the stock price to decline. Similarly, Agustin (2021) and Dai et al. (2021) demonstrate that higher Covid-19, along with government stringency, has a detrimental impact on the stability of the stock market due to the expected negative economic impact. This is because the imposed restrictions produce unanticipated economic disruption, which raises investor concern about the stock market's performance and decreases the stock price.

Some studies reveal that government stringency can enhance stock market returns. First, the government's stringent responses to restrict the outbreak's spread have effectively boosted the stock market due to investor confidence in the country's capacity to control the crisis. As a result, the adequate duration taken by the government in reacting to the crisis is essential in offsetting the impacts of the outbreak, which effectively raises the stock price (Alam et al. 2020; Bouri et al. 2021; Ellahi & Ahmad 2021). Furthermore, Zarembo et al. (2020) show that early government involvement provides investors with the first chance to respond to changes in economic intervention. However, when investor confidence grows, they can tolerate this stringent government policy, causing the stock price to rise. Similar finding is observed

by Keh and Tan (2021) that government stringency policy aiming at dampening Covid-19 has a favourable outcome to stock market. Although Ming and Jais (2021) deal with MCO, the focus is more the right strategy to strategically plan the right timing to sell and buy in order to gain from their investment.

However, Gormsen & Kojien (2020) reveal that government stringency policy does not impact the stock price. For example, the US government has taken multiple measures to soothe the market on Black Monday in 2020. Although the economic and fiscal stimulus packages increased stock returns, market expectations did not rise as expected. The flaw in this argument is that the stock market's reaction to the outbreak is being discussed throughout Covid-19's early stages. Covid-19 is considered unfinished business, requiring nations to continue their stringency policies. Therefore, this study provides evidence regarding the effect of government stringency policy on Covid-19, which leads to an increase (or decrease) in Islamic stock market return, specifically in the most recent Covid-19 period: July 2020 to June 2021. To our understanding, we could not find any study that examine the moderating role of MCO on Covid-Islamic stock relationship, although the closest study by Hersh et al. (2023) could be the only exception.

METHODOLOGY

In this study, we use the Adaptive Market Hypothesis (AMH) that the country's economic and financial situation heavily influences stock price volatility, substantially impacting investor attitudes toward stock price performance. This study suggested that the stock price is influenced by investor sentiments surrounding the situation. As a result, the impacts of Covid-19 on stock prices are empirically constructed to comprehend the interrelationship of these outbreaks on Islamic stock price indices, particularly concerning the worldwide market. The stock price function can be specified as follows:

$$SP = (SV, COV, GOV) \quad (1)$$

where SP is Stock price, SV is stock volume, COV denotes Covid-19. As for the proxies, we use Covid-19 contamination cases and deaths as proxies for COV . Covid-19 cases and deaths are used to study the effects of Covid-19 on stock prices. Furthermore, as numerous studies have shown, government regulation of nations significantly impacts stock prices. According to Feng et al. (2014), logarithmic transformation is a handy way to turn a highly skewed variable into a more normalized dataset. Then we describe and evaluate the following econometric models in natural logarithm form.

$$\ln SP_{i,t} = \alpha + \beta_1 \ln SV_{i,t} + \beta_2 \ln COV_{i,t} + \beta_3 \ln GOV_{i,t} + \varepsilon_{i,t} \quad (2)$$

Government policy is essential in regulating the country's Covid-19. Thus, GOV signifies a stringency policy that influences Covid-19 and substantially impacts the stock price. Furthermore, to investigate our primary objective of the study, that government stringency such as Movement Control Order (MCO) can be a determining factor governing the positive or negative effects of Covid-19 on Islamic stock price, we extend Eq. (2) by including our Covid-19 and government stringency interaction terms. As a result, the model is recreated in the following manner:

$$\ln SP_{i,t} = \alpha + \beta_1 \ln SV_{i,t} + \beta_2 \ln COV_{i,t} + \beta_3 \ln GOV_{i,t} + \beta_4 (\ln COV_{i,t} * \ln GOV_{i,t}) + \varepsilon_{i,t} \quad (3)$$

THE MARGINAL EFFECT OF DIFFERENT CATEGORIES OF INDEPENDENT VARIABLES

In the regression model provided in Eq. (3), the marginal impact of an independent variable of (COV*GOV) quantifies the percentage change of the dependent variable (e.g., Stock Price) versus a 1% change in the independent variable while maintaining all other independent variables constant. This is because the coefficients β_2 and β_3 only indicate the influence of government stringency (or Covid-19) on the stock price when Covid-19 (or government stringency) does not exist. Since our hypothesis states that SP will grow if and only if β_2 decreases, we should anticipate β_3 to rise. In this regard, the government stringency policy works as a solution, and it is intended to mitigate the impact of Covid-19 on stock prices. As a result, the β_4 is expected to be marginally positive or negative depending on the strictness of government stringency.

$$\frac{\partial \ln SP_{i,t}}{\partial \ln COV_{i,t}} = \beta_2 + \beta_4 \ln GOV \quad (4)$$

To put it another way, the model demonstrates that COV has a constant impact on SP, while the interaction model demonstrates that the impact of a change in COV on SP depends on the value of GOV. The significance of marginal effects is evaluated by computing the new standard error. For more robust results, the marginal effects are evaluated based on the descriptive analysis of the variable, such as at level mean, minimum and maximum.

PANEL UNIT ROOT AND PANEL COINTEGRATING REGRESSION

The panel cointegrating regression approach is chosen to explore the long-term cointegration correlations among the variables. Furthermore, a regression with cointegrated variables contains a stationary error component, $\varepsilon_{i,t}$, suggesting that all essential integrated factors have been included. As a result, discovering cointegration

has a significant implication, with no crucial integrated variables in the cointegrating vector being ignored. Therefore, a generic specification for our panel data regression models is specified as follows:

$$nSP_{i,t} = \alpha + \beta_1 \ln SV_{i,t} + \beta_2 \ln COV_{i,t} + \beta_3 \ln GOV_{i,t} + \beta_4 (\ln COV_{i,t} * \ln GOV_{i,t}) + \varepsilon_{i,t} \quad (5)$$

After testing for cointegration, the next step in the study is to examine Eq (5). Pedroni (2000) demonstrates how panel data estimates may be obtained using Fully Modified OLS (FMOLS) techniques. When applied to a heterogeneous panel of I (1) variables, this approach beats the OLS. While the OLS does not give consistent

standard errors when endogenous regressors were present, FMOLS findings produced consistent standard errors and hence consistent t-statistics.

From July 6, 2020, to June 18, 2021, we collected data on 14 nations from both the Islamic and developed worlds and one market from the Global Islamic Index. These indices cover a wide range of geographies and economic circumstances. The Covid-19 era was defined as the period from July to December 2020, while the post-Covid-19 era was portrayed as the period from January to June 2021. We used daily data because the Covid-19 data varies regularly, indicating the stock price’s response. Table 2 categorizes the dependent variable data for Islamic stock prices and the independent variable data.

TABLE 2. List of variables, definitions, and sources

Variable	Definition	Sources
SP	The daily closing price of the stock	} Bloomberg
SV	The daily closing volume of stock transaction	
COV:		
CASE	The daily new cases of Covid-19	} World meter
DEAT	The daily new deaths of Covid-19	
GOV	The Government Stringency Index	} Our World in Data

Note: Bloomberg can be accessed with subscription to its panel. World Meter can be retrieved from <https://www.worldometers.info/coronavirus>. Our World in Data is available from <https://ourworldindata.org>.

RESULTS AND DISCUSSION

TABLE 3. Descriptive statistic

Variables	Mean	Max	Min	Std. Dev.
InSP	7.27	9.44	3.79	1.20
InSV	18.48	24.17	11.53	2.82
InCOV:				
InCASE	6.73	13.62	0.00	2.61
InDEAT	2.91	8.91	0.00	2.20
InGOV	4.15	4.47	3.16	0.20

The analysis begins with descriptive analysis. Table 3 presents the results of stock market return characteristics and summary statistics (mean, maximum, minimum, and standard deviation) about the Islamic index. In Table 3, the results show that the stock price has positive mean returns, indicating an apparent stock recovery during the Covid-19 outbreak. All the series’ mean values are positive, showing that all stock indexes recorded greater mean Stock Volume (SV) by 18.48% from July 2020 to June 2021, illustrating that higher stock prices correspond

with higher stock volume. However, the Covid-19 CASES also indicate a higher mean value of 6.73%, demonstrating that many countries struggle to reduce Covid-19 contamination cases. Similarly, the DEATH highest value is 8.91%, while the minimum value is zero. All indices show positive maximum government stringency by 4.47%, while the minimum is 3.16%. Standard deviation is the distance of the observation from the sample average.

TABLE 4. Correlation analysis

	InSP	InSV	InCASE	InDEAT	InGOV
InSP	1.00				
InSV	0.11	1.00			
InCASE	0.11	-0.12	1.00		
InDEAT	0.03	-0.01	0.80	1.00	
InGOV	0.08	-0.18	0.13	0.09	1.00

The data correlation matrix is shown in Table 4. The most substantial relationship exists between stock volume and daily Covid-19 cases and deaths. The finding suggests that a higher correlation between these two variables indicates that this variable significantly impacts the stock return. Government stringency (GOV) also shows the second-highest positive correlation between the stock price with 0.08. Furthermore, a 0.03 correlation between InSP and InDEATH might indicate that the number of Covid-19 deaths can no longer predict stock prices well. The unexpected results provide quantitative proof that the indices function as expected, offering some confidence to investigate these factors further.

Dealing with economic information that varies over time may invite a unit root problem. The ordinary least square technique may result in a spurious regression in a unit root problem. The augmented Levin-Lin-Chu (LLC) and Im-Pesaran-Shin (IPS) test is conducted to confirm the existence of unit root. The results of the tests reveal that InSP, InCASE, InDEAT, and InGOV are non-stationary at a level. After taking the first difference, it is discovered that all variables are integrated in the order I(1), as indicated in Table 5.

TABLE 5. Unit root hypothesis

Variables	Levin, Lin & Chu		Im, Pesaran & Shin	
	Intercept	Trend	Intercept	Trend
Panel I: Level				
InSP	0.14	0.8	1.76	-1.74
InSV	-8.34*	-10.59*	-15.01*	-15.47*
InCASE	-0.39	3.27	0.1	3.82
InDEAT	-0.19	0.99	-0.83	0.28
InGOV	-1.14	0.18	-1.1	-0.86
Panel II: First Difference				
InSP	-15.41*	-18.36*	-24.99*	-24.67*
InSV	-17.66*	-19.33*	-47.76*	-49.64*
InCASE	-6.79*	-6.91*	-35.88*	-37.34*
InDEAT	3.75*	7.69*	-41.93*	-44.01*
InGOV	-15.31*	-17.8*	-25.33*	-25.31*

Note: Two lags were selected to adjust for autocorrelation. Asterisk * denotes significance at a 10% critical value.

After determining the integration order of the variable, a bound cointegration test is performed to validate the existence of a long-run cointegration correlation between the variables. The calculated F-statistic for Pedroni residual cointegration test for

rho-statistic and PP-statistic, and ADF-statistic for Koa residual cointegration test, is more significant than 1.8 or at least 1% and 5% significant, which is -4.76, -4.26, and 2.02 respectively. As a result, we may argue that all variables are cointegrated (see Table 6).

TABLE 6. Panel cointegration test

	Model 1: COV = CASE		Model 2: COV=DEAT	
	Statistic	Probability	Statistic	Probability
<i>Pedroni residual cointegration test</i>				
Panel rho-Statistic	-1.814	0.035**	-4.757	0.000***
Panel PP-Statistic	-2.028	0.021**	-4.263	0.000***
Panel ADF-Statistic	2.898	0.998	1.225	0.8896
<i>Kao residual cointegration test</i>				
ADF-Statistic	1.977	0.024**	2.020	0.022**

Note: Asterisks **, *** denote significant at 5%, and 1% critical values, respectively.

Notably, this research provides insights into estimating the FMOLS model to determine the long-run elasticity of the relevant variable on the Islamic stock price. Hence, Table 7 demonstrates the long-run elasticity of InSV, InCOV, InGOV, and InCOV*InGOV for all the selected countries. The regression analysis results in Table 7 show that the stock volume positively affects the return of the stock price and is statistically significant for all countries. The result suggests that a 1% increase in the stock volume corresponds to an increase in the 0.02% stock price. Our result is consistent with Bian et al. (2020) and Abbes (2013), who estimate that the stock

volume corresponds with the stock price as that investor confidence significantly influenced market volatility during the financial crisis. Hence, the overconfidence bias leads to a positive relationship between conditional volatility and trading volume. As the stock market strengthened and gained pace, it signalled to investors that the trend would continue to be strong, boosting investor confidence in purchasing stock. The findings support the idea that stock volume impacts the stock price in terms of economic success and boosting stock prices for nations worldwide.

TABLE 7. Long-run relationship [DV: InSP, COV=CASE]

	InSV	InCOV	InGOV	InCOV*GOV
Coefficient	0.0194	-0.0477	0.0542	0.0088
	(0.0000)***	(0.0144)**	(0.0968)*	(0.0584)*
Marginal Effects				
	Mean	- 0.0145**	Maximum	0.0084***
	Minimum	- 0.0755*		

Note: Asterisks *, **, *** denote significant at 10%, 5%, and 1% critical value, respectively. Figure in () stands for p-value.

On the other hand, for Covid-19 cases, these findings revealed a negative and statistically significant coefficient, which is consistent with previous studies such as those (Al-Awadhi et al. 2020; Albulescu 2020; Bissoondoyalbheenick et al. 2020; Lyócsa et al. 2020; Agustin 2021). This suggests that the Covid-19 contamination cases heightened investor concerns about the country's ability to recover from the outbreaks. Stock prices respond more aggressively as the number of confirmed cases rises, as investors lose faith in the country's stock price's capacity to increase under the stressful situation of dealing with the Covid-19 outbreaks. These results are consistent with Ashraf (2020), suggesting that financial markets reacted more promptly to an increase in confirmed cases than to an increase in deaths.

In the case of Covid-19, which has affected the entire country, the governments of each country have taken precautionary steps to prevent disease contamination. Therefore, the government stringency policy will effectively raise awareness and brings the Covid-19 cases

down. From Table 7, the negative impact of Covid-19 (i.e., -0.0477), but complemented by, albeit small, the positive role of government stringency policy (i.e., 0.0542) on stock prices may justify the need for and moderate effectiveness of MCO in promoting confidence among investors. Eventually, rising government stringency such as Movement Control Order (MCO) is effectively raising the stock price, while the positive effect can be traced back in its ability to reduce Covid-19 cases. The results indicate that investor confidence in the stock market strongly correlates to the country's capacity to control these diseases and improve its economic performance. Therefore, our results support the previous studies' findings (Baker et al. 2020; Kizys & Tzouvanas 2020; Zarembo et al. 2020).

Once the significant of interaction model has been confirmed, the marginal effect needs to be computed to confirm the moderating role of government stringency on Covid-stock relationship. To examine the marginal effects, we then calculate the new standard error and

evaluate them at mean, minimum, and maximum values of Covid-19. The results show that the marginal effects of the Covid-19 cases on government stringency are statically significant at all levels, but changes in sign when government policy stringency is at maximum. As an illustration, the marginal effects of Covid-19 for the global indices are - 0.0145 when evaluated at the mean level. This indicates that a 1% increase in Covid-19 cases is related to a 0.0145% reduction in stock price, when government introduces a moderate size of stringency to combat Covid-19. This also implies the need for a more stringent policy to be effectively cushioning the adverse effect of Covid-19 on Islamic stocks. This also means that government stringency may assist in limiting the detrimental impact of Covid-19 on Islamic stock prices but not fully when compared to the size of the marginal effect if government introduces very mild or weak policy (i.e., referring to -0.0755). Furthermore, when the government stringency policy is maximized, the marginal

effect of Covid-19 has led to stock price increases by 0.008%. This suggests that Covid-19 cases will no longer be the investors' concerns about the country's economic performance. The seriousness of the government in tackling the fundamental issue of Covid-19 may comfort the investors to stay and be active in the markets. This also means that government stringency, which is represented by the Movement Control Order (MCO), which restricts people's movement and interaction, can turn the negative impact of Covid-19 on stock price cases into a positive impact, demonstrating that the stock price is higher for countries with a higher stringency index. In summary, the adverse effects of Covid-19 cases on stock markets have started to fade, with government support playing a pivotal role in mitigating the pandemic's consequences (Topcu et al., 2020). In other words, when the country's government tightens its regulations, the detrimental impacts of Covid-19 contamination cases may fade and boost investors' confidence.

TABLE 8. Long-run relationship [DV = lnSP, COV=DEAT]

	lnSV	lnCOV	lnGOV	lnCOV*GOV
Coefficient	0.0189	-0.0516	0.0785	0.0105
	(0.0000)***	(0.0362)**	(0.0004)***	(0.0733)*
	Marginal Effects			
	Mean	0.0047***	Max	0.0080***
	Min	- 0.0184**		

Note: Asterisks *, **, *** denote significant at 10%, 5%, and 1% critical values, respectively. Figure in () stands for p-value.

Under Covid-19 deaths, the results from Table 8 show that lnDEAT has a positive effect on the stock price. Because Covid-19 death is the result of a confirmed case and usually occurs several days after someone is infected with Covid-19, the raises in deaths will not strongly affect investors' confidence. Moreover, daily death for every nation represents a lower value than the daily Covid-19 cases. Agustin (2021) highlights that the investor is more likely to respond to a statement relating to the daily increase in total confirmed cases rather than the number of fatalities. As a result, the spike in death does not imply investor concerns about investing as the country's economy continues to grow to suggest a possible market correction. Hence, improvement in the country's economy will eventually raise the stock price regardless of the increase in daily deaths. After verifying the beneficial function of government stringency, we move on to the condition that government stringency would successfully reduce Covid-19 cases or raise knowledge of the risk of this Covid-19, which will affect investor attitude regarding the country's stock price performance. The results from Table 8 demonstrate similar finding as in Table 7 that individually, Covid-19 has an unfavorable effect on stock prices, while government stringency policy has a convincing role on stock prices, which call for a potential moderating role of

government stringency policy to be introduced to revert investors' confidence on the prospect of market recovery. A study by Ozili & Arun (2023) demonstrate that increased government restrictions on internal mobility and tighter fiscal policy had a beneficial influence on economic activity, even though the daily of Covid-19 continues to rise. Government stringency is one of the platforms that demonstrate the success of the countries in battling this pandemic. Therefore, government stringency can raise the stock price concerning investor reactions to government containment efforts.

After proving the beneficial influence of government stringency policy on stock price, we change the condition for government stringency to successfully bring Covid-19 down or create awareness about the risks of Covid-19, which can lead to deaths. Table 8 indicates that the coefficient of the interaction variable is positive at 0.0105%, demonstrating that government stringency can overturn the adverse impact of Covid-19 deaths into a neutral or neglected one if government can signal that the stringent policy is coming to resolve the pandemic. Therefore, as higher stringency of government policy is expected to successfully lower the number of deaths, in turn, investors regain their confidence to continue active in stock market. We then computed the marginal effects of changes in stock price due to the changes in Covid-19

deaths, conditional upon the level of government stringency policy. Table 8 illustrates that the increase in Covid-19 deaths will eventually reduce the stock price depending on the level of government stringency. The results show that marginal effects between the stock price and Covid-19 deaths are positive at the mean, minimum,

and maximum levels. For example, the stock price increased by 0.0047% concerning the rise in Covid-19 deaths at the mean levels. Notably, the marginal effect shows higher positive coefficient of 0.008% when government stringency is set at the most stringent level.

TABLE 9. Regional analyses [DV: lnSP, COV=CASE]

	Asia	Non-Asia	Developed Countries	Emerging Countries	MENA	Other Regions	Muslim Majority	Muslim Minority
Panel I: Regression Output								
InSV	0.18 (0.00)***	0.01 (0.23)	-0.22 (0.00)***	0.09 (0.00)***	0.063 (0.00)***	0.04 (0.00)***	0.09 (0.00)***	0.40 (0.00)***
InCOV	0.51 (0.01)**	-0.23 (0.00)***	0.13 (0.2)	-1.09 (0.00)***	-2.41 (0.00)***	-0.05 (0.07)*	-1.21 (0.00)***	0.08 (0.59)
InGOV	0.89 (0.00)***	-0.31 (0.01)***	0.43 (0.01)**	-1.12 (0.01)**	-3.06 (0.01)**	0.03 (0.56)	-1.36 (0.02)**	0.47 (0.04)**
InCOV*GOV	-0.14 (0.00)**	0.05 (0.00)***	-0.03 (0.21)	0.25 (0.00)***	0.58 (0.00)***	0.01 (0.16)	0.28 (0.00)***	-0.04 (0.23)
Panel II: Cointegration Test								
PP-Statistic	-2.71 (0.00)***	-1.43 (0.08)*	-2.03 (0.02)**	-2.65 (0.00)***	-2.17 (0.02)**	-1.66 (0.05)*	-2.70 (0.00)***	-2.60 (0.00)***
ADF-Statistic	0.92 (0.18)	-0.26 (0.40)	0.21 (0.42)	-0.57 (0.28)	-1.15 (0.13)	1.06 (0.15)	-1.12 (0.13)	1.60 (0.05)*
Panel III: Marginal effect								
Mean	-0.06*	-0.01**	0.00	-0.04*	0.01**	-0.01*	-0.03***	0.00
Min	0.06*	-0.06***	0.00	-0.21**	-0.38**	-0.02*	-0.22***	0.00
Max	-0.11**	0.01*	0.00	0.03**	0.17*	-0.01*	0.05***	0.00

Note: PP-Statistic represents the Pedroni Cointegration test and ADF-Statistic represents the Kao Cointegration test to determine the evidence of the long-term relationship between the variables. *p-value* is reported in (). Asterisks *, **, and *** denote the significance level of 1%, 5% and 10%, respectively.

ADDITIONAL ANALYSES

ASSESSMENT OF VARIOUS GEOGRAPHICAL REGIONS

As further analysis, we performed additional testing for different parts of regions of the world. The results in Table 9 and Table 10 (in Appendix) demonstrate that the stock volume influences the stock price's performance positively and statistically significant for all the selected regions except for the developed nation, which shows a negative coefficient between the stock volume and stock price. This occurred because different countries responded to the crisis differently, encouraging investors to liquidate their investments because of panic overselling in the market. Therefore, this result is consistent with the study's findings by De Souza et al. (2018) and Gervais et al. (2001), which show a negative relationship between volatility and stock volume.

The result from Table 9 reveals that Covid-19 cases in non-Asia, emerging, MENA, other parts of the region, and Muslim-majority countries are negative coefficients, which aligns with previous research such as Aharon & Siev (2021) and Rahman et al. (2021). For example, more persons infected with Covid-19 in emerging nations like Malaysia, Qatar, Turkey, Morocco, Kuwait, and others may raise fear about the country's economic performance, leading the stock price to decline. However, the marginal effect indicates that increased stringency will compensate for the adverse effects of Covid-19 cases, causing the stock price to rise. Enforcing stricter regulations will limit the number of Covid-19 cases since people's movements will be restricted, slowing disease spread. As a result, marginal effects suggest that government stringency will reduce Covid-19 cases and eventually enhance the stock price.

TABLE 10. Regional analyses [DV: lnSP, COV = DEAT]

	Asia	Non-Asia	Developed Countries	Emerging Countries	MENA	Other Regions	Muslim Majority	Muslim Minority
Panel I: Regression Output								
InSV	0.20 (0.00)***	0.018 (0.08)	-0.12 (0.00)***	0.08 (0.00)***	0.06 (0.00)***	0.30 (0.00)***	0.07 (0.00)***	0.36 (0.00)***
InCOV	0.94 (0.00)***	0.39 (0.01)***	0.41 (0.00)***	-1.21 (0.00)***	-1.05 (0.07)*	0.36 (0.01)**	-1.08 (0.00)***	0.48 (0.00)
InGOV	0.33 (0.12)	0.38 (0.00)***	0.13 (0.18)	-0.21 (0.25)	-0.07 (0.83)	0.20 (0.16)	-0.14 (0.52)	0.47 (0.00)***
InCOV*GOV	-0.23 (0.00)***	-0.09 (0.00)***	-0.09 (0.00)***	0.27 (0.00)***	0.24 (0.08)*	-0.08 (0.01)**	0.24 (0.00)***	-0.12 (0.00)***
Panel II: Cointegration Test								
PP-Statistic	-2.71 (0.00)**	-1.43 (0.06)*	-2.02 (0.02)**	-2.65 (0.00)***	-2.16 (0.01)**	-1.65 (0.04)**	-2.69 (0.00)***	-2.60 (0.00)***
ADF-Statistic	0.92 (0.18)	-0.25 (0.39)	0.20 (0.41)	-0.57 (0.28)	-1.14 (0.12)	1.05 (0.14)	-1.12 (0.13)	1.60 (0.05)*
Panel III: Marginal effect								
Mean	-0.02*	0.01***	0.04***	-0.06**	-0.02**	0.01**	-0.06**	-0.05**
Min	0.19**	0.10**	0.12*	-0.25*	-0.19*	0.09*	-0.22***	0.07**
Max	-0.09**	-0.02***	0.01*	-0.01*	0.03**	-0.02*	0.01*	-0.09*

Note: PP-Statistic represents the Pedroni Cointegration test and ADF-Statistic represents the Kao Cointegration test to determine the evidence of the long-term relationship between the variables. *p-value* is reported in (). Asterisks *, **, and *** denote the significance level of 1%, 5% and 10%, respectively.

Meanwhile, the cointegrating regression analysis of Covid-19 deaths reveals a positive long-term correlation for Asia, non-Asia, developed, and other parts of the region, as shown in Table 10. In other words, the stock price for this region grows in tandem with the number of deaths. For example, nations in Asia (e.g., Malaysia, India, Qatar, and Bahrain) and developed nations (e.g., the United States, Canada, Australia, and Japan) have more deaths due to Covid-19. However, as the economic and governmental stability of the country improves, the increase in deaths has less influence on investor confidence. As a result, economic improvement has become one of the primary draws for investors interested in the country's potential to recover from Covid-19. Surprisingly, when examining the marginal effect, government stringency has shifted the positive effects of Covid-19 deaths into negative. If the government increases the restrictions, the number of cases will decrease. However, the number of fatalities will continue to rise because it relates to the previous of someone getting infected, causing investors to be concerned about the country's capacity to control the outbreak.

CONCLUSION

Government stringency, such as MCO, is crucial for nations in decreasing Covid-19 transmission. However, as time passes and new vaccinations become available, the argument of whether this stringency is effectively lowering Covid-19 transmission and raising the stock price arises. Therefore, this study will examine whether government stringency policy is moderating the adverse effects of Covid-19 on global Islamic stock returns. Under Covid-19 cases, our findings based on the Cointegration analysis give supporting evidence that the adverse effect of Covid-19 on Islamic stock prices can be mitigated by executing the government's stringency policy. Examining the marginal effect, it appears that when government stringency increases, it compensates for the negative impact of Covid-19 on stock prices by increasing public knowledge of the importance of MCO in lowering Covid-19 transmission. This demonstrates that enforcing the movement control order by restricting social gatherings and closing schools and workplaces will gradually reduce people's activities, decreasing

Covid-19 transmission. As the number of Covid-19 cases decreases, countries' performance improves, indicating their capacity to battle Covid-19. This will enhance investor trust in the country's stock performance, causing the stock price to rise considerably. As a result, it is crucial to encourage government stringency, which will increase stock prices by reducing Covid-19 cases.

Although the key objective of imposing MCO is to reduce and eventually, put to stop the issue of Covid-19, the dominant positive moderating role of MCO in cushioning the adverse effect of Covid-19 on stock prices should not overshadow the potential of MCO to be less welcome in the future. This is because MCO by itself has a negative effect in most sub-analyses but turn out to be acceptable or having desirable effect only with the hope that it could reduce Covid-19 cases and death. Moreover, given the huge differences in the extent of MCO imposed in each country, which is not fully controlled in this study but could reflected in the case of developed countries, the importance or effectiveness of MCO could almost negligible. In other words, most likely a simple strategy of social distancing, mask wearing, and no mass gathering could be enough to curb Covid-19, or any future unexpected similar or worse diseases or any events should be first resorted to non-MCO strategy. Since this study focuses only on Islamic stocks, proper comparison could be done. However, the resilience of Islamic stocks against shock if we refer to Muslim majority case. Therefore, strengthening the fundamental aspect of Islamic capital markets, especially those related to Islamic values such as responsible investment could be the key in facing future uncertainty and sudden shocks.

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