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*Article*

# The Impact of COVID-19 Prevention Policy on Stock Market Return of China

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**Abstract:** In the wake of the COVID-19 outbreak, China implemented emergency epidemic prevention and control measures, which played a positive role in economic and social development as well as the containment of the epidemic. Based on stock trading data from February 2020 to December 2022, this paper examines the impact of these measures on the stock returns of A-share listed companies. The findings of the study indicate that social distancing and health measures generally increase stock market returns, despite the varying magnitude of their effects. In addition, the analysis of two aspects, namely the listed sectors and the industry response analysis, further corroborates the main conclusion that social distancing policies have a more pronounced effect on the stock market. The study helps investors understand how the stock market responds to government announcements and enables policymakers to further explore the impact of policy responses during major public health events and their influence on economic and social welfare.

**Keywords:** COVID-19 Pandemic; Government Policy; Stock Market Return; Social Distancing

## 1. Introduction

The outbreak of COVID-19 posed a serious threat to human health with unprecedented uncertainty. In response, governments around the world implemented emergency measures, such as social distancing, public awareness campaigns, contact tracing, testing and vaccine programs. These actions aimed to slow the spread of the epidemic while minimizing its negative economic effect. Theoretically, disease prevention policies could have two opposing effects on the stock market. First, government intervention to restrict social mobility has a negative impact on the real economy, which, in turn, can be easily transmitted to the stock market. Industries like catering, lodging and entertainment were severely affected by social distancing, and other industries suffered due to the loss of transportation support and reduced consumer spending power. Second, compared with Western countries, the Chinese public demonstrated a high level of trust in the government. When COVID-19 developed into a major public health emergency, the trust improved the public's response to the outbreak, which contributed to stable social expectations and the containment of the epidemic. Therefore, government policies that provided clear and positive information can alleviate investor pessimism and thus result in higher stock market returns.

Existing research on the stock market's response to epidemic prevention and control focused primarily on the countries such as the United States, Europe, Australia, and the Asia-Pacific region,

among others. In the initial stages of policy implementation, such policies adversely affected the stock market. Several studies suggest that government intervention leads to a significant decline in stock returns, possibly due to the negative impact on the economy (Albulescu, 2021 [1]; Ashraf, 2020a [2]; Bakry et al., 2022 [3]; Zaremba et al., 2020 [4]). According to Aharon and Siev (2021) [5], social distancing failed to alleviate the pessimism and restore the markets as the public feared that unexpected closures and excessive restrictions would worsen the economic situation. For instance, China's main stock index plunged by 2.75% upon Wuhan's closure and, despite a series of policy controls, it reopened with a substantial decline of 8.73%—the largest one-day drop since 2007. In contrast, Ashraf (2020b) [6] and Zaremba et al. (2021) [7] argue that stock returns eventually recover or even improve in most countries once health measures are implemented. In the case of China, during the middle and late stages of the epidemic spread, the stock market gradually showed positive responses to the epidemic control, especially after the State Council released 20 anti-epidemic policies on November 11, 2022. The performance suggested that the policies announced by the Chinese government had a significant positive impact on stock market returns. In addition, some scholars pointed out that all industries in China, except for the pharmaceutical industry, were negatively affected by the epidemic. In particular, the wholesale and retail, transportation, entertainment, and other service industries were hardest hit. Consequently, stock market performance in response to government actions may vary across industries.

However, the existing research on the impact of government policies during the epidemic has not reached a consensus and this uncertainty is further compounded by the unique characteristics of the Chinese stock market. As a result, the long-term effects of these government interventions on the stock market remain uncertain. Based on the above analysis, it can be postulated that epidemic prevention and control measures can have both positive and negative impacts on stock returns, and the final effect depends on the relative magnitude of these two aspects. Specifically, the study examines how the stock market responds to two government announcements: social distancing and containment and health measures. Social distancing measures include school and factory closures, public transportation cancellations, travel restrictions, and bans on public gatherings. On the other hand, containment and health measures consist of public awareness campaigns, contact tracing, testing, and vaccination.

The study examines the expected impact through an analysis of the stock market's reaction to these actions. To empirically test the above conjecture, a panel dataset was used that contained stock market returns and government policy indices for the period February 2020 to December 2022. First, the study indicates a positive association between government policy and stock market returns during the epidemic. Second, this effect is mainly observed in the increased stock returns of firms listed on the SSE (Shanghai Stock Exchange) and SZSE (Shenzhen Stock Exchange). Some high-tech companies on the GEM and SGX exhibited minimal impact from social distancing and instead showed negative returns on containment and health policies. Moreover, the response of different industries to COVID-19 and related policies varied considerably.

This paper differs from previous similar studies. First, it covers the data from February 2020 to December 2022, while other previous studies covered a much shorter period. Second, the relevant literature has not explored the policy effects of industry sectors. We are based on the Chinese stock market and differentiate the reactions of its sectors and industries. Overall, the findings can provide evidence for market participants to understand stock market performance and make rational

decisions, as well as help policymakers design and refine their policies.

## 2. Materials and Methods

### *2.1. Sample Construction*

This study collects data from three primary sources: stock market return data are obtained from CSMAR and WIND. To quantify government responses to COVID-19, the Oxford COVID-19 Government Response Tracker (OxCGRT) database (Hale et al., 2021) [8] is employed. The website tracks government intervention through a standardized set of indicators and creates composite indices to quantify the level of government response. The SI (Stringency Index) is one such composite index that captures information on eight items related to containment and closure policies, school and workplace closures, public event cancellations, party size restrictions, public transportation closures, home closures, internal mobility restrictions, and international travel controls. The CHI (Containment and Health Index) covers five indicators, including public awareness campaigns, testing, contact tracing, investment in emergency health care and vaccines. To obtain the SI and CHI indices, the researchers assigned scores between 0 and 100 for each indicator and then calculated the arithmetic average of those scores.

The sample period spans from February 2020 to December 2022, as both the defined period of COVID-19 and the government responses in China occurred during this period. To improve the sample quality, firms with consecutive losses and at risk of delisting were first screened out, followed by the removal of all observations with missing values for the required variables. The final improved sample consists of 144,861 monthly observations.

### *2.2. Data Description*

Table 1 reports the basic information of the sample data. The stock market returns variable shows a mean of 0.01 and a standard deviation of 0.153, affirming the random walk nature of stock market returns. The growth rate of industrial value-added ranges from -2.1 to 32.13, indicating that the epidemic prevention and control measures yielded positive outcomes throughout the implementation period. The government's response exhibited fluctuations, as evidenced by the varying minimum and maximum values.

**Table 1.** Statistical properties of the key variables.

| Variables | Obs. | Mean | Std. Dev | CV | Min | Max |
|---|---|---|---|---|---|---|
| **Ri** | 144861 | 0.010 | 0.153 | 15.300 | -0.882 | 4.563 |
| **SI** | 144861 | 4.266 | 0.100 | 0.023 | 3.965 | 4.379 |
| **CHI** | 144861 | 4.308 | 0.083 | 0.019 | 4.096 | 4.437 |
| **MV** | 144861 | 15.337 | 1.216 | 0.079 | 10.923 | 21.748 |
| **P/E** | 144861 | 26.530 | 3.416 | 0.129 | 20.814 | 34.611 |
| **BM** | 144861 | 0.002 | 0.043 | 21.500 | -0.077 | 0.0860 |
| **IOR** | 144861 | 2.307 | 0.292 | 0.127 | 1.669 | 2.696 |
| **GRO** | 144861 | 1.102 | 4.952 | 4.494 | -2.100 | 32.130 |
| **DJIA** | 144861 | 0.620 | 6.054 | 9.765 | -13.740 | 13.940 |

This table presents summary statistics for the main variables. Stock market returns are measures of the monthly changes in the major stock market indices. The SI represents social distancing, such as closing public places and restrictions on domestic and international travel, whereas CHI describes policies related to public awareness activities, testing, and contact tracing. Firm-level characteristics are measured by current market value, price-to-earnings ratio, and book-to-market ratio. The interbank lending rate reflects the supply and demand of short-term funds in the financial market, and therefore, this indicator is chosen to control the effect of market liquidity on stock returns. Since most of the macroeconomic variables are more than quarterly data, which does not coincide with the time unit designed in this paper, we use the growth rate of industrial value added as an approximate substitute. The U.S. Dow Jones index, as an international influence, has an impact on the stock market and is therefore controlled for. Few studies have employed new infections and deaths as variables for control, if adopted, the results are not very ideal. Furthermore, this article employs monthly data, but changes in the epidemic are predominantly happening daily. This may cause distortions if the data is converted to monthly. In conclusion, we did not use new cases or deaths as control variables.

### *2.3. Research Model*

The following pooled panel model is specified to investigate the direct effect of government actions on stock market returns.

$$R_{i,t} = \alpha_0 + \beta \times Government\ \text{response}_t + \gamma \times \text{Controls}_{i,t} + \mu_i + \varepsilon_{i,t} \quad (1)$$

Here, $R_{i,t}$ is the dependent variable and measures the stock market return of each firm at day t. $\alpha_0$ is a constant term. The government response is represented by two response indices from the OxCGRT dataset: the Stringency Index and Containment and Health Index. The stock market is also sensitive to the macroeconomic environment, such as disruptions in production, increases in interest rates and other events. The control variables are used to control for the macro- systemic risk. $\varepsilon_{i,t}$ is an error term.

## 3. Empirical Findings

### *3.1. Granger tests*

This section reports empirical results. Following Dumitrescu-Hurlin (2012) [9], the relationship between government policies and stock market returns is tested, preceded by benchmark regressions. Table 2 shows the relationship between the two through the significance of the z-statistic. The analysis reveals that epidemic prevention and control policies are the Granger cause of stock market returns, where first-order and second-order lags yield the same results.

**Table 2.** Results of Granger's causality test.

| Lag phase | Original hypothesizes | Z-statistic | P-value |
|---|---|---|---|
| **Lag: 1** | (1) SI does not Granger-cause Ri | 5.2739 | 0.0000*** |
| | (2) CHI does not Granger-cause Ri | -7.4714 | 0.0000*** |
| **Lag: 2** | (1) SI does not Granger-cause Ri | 5.8268 | 0.0000*** |
| | (2) CHI does not Granger-cause Ri | -3.4847 | 0.0005*** |

Granger (1969) [10] pioneered a method for analyzing causality in time series data, and Dumitrescu-Hurlin (2012) [9] subsequently extended it by providing a method for testing causality in panel data. Accordingly, we empirically test the relationship between government responses and stock market returns in China, where the z-statistic is the basic premise for testing the presence or absence of causality for all individuals in the panel.

### *3.2. Benchmark Regression*

Table 3 reports the main empirical results. The government policy variables enter positive and significant, suggesting that the stock market responds positively to social distancing and health measures. However, the result regarding social distancing diverges from previous studies such as Al-Awadhi et al. (2020) [11], Aharon and Siev (2021) [5], and Ashraf (2020a) [2]. They argue that the stock market reacts strongly and negatively to social distancing. One possible explanation for the discrepancy is regulatory information may leak, prompting the market to respond early. The restrictions may cause immediate panic among the public shortly after their release, leading to investor concern about their investments and subsequent declines in stock market returns. Over time, however, this pessimism gradually diminishes, and there may be a lag before the effect is reflected in the stock market. As a result, the government responses for February-April 2020, as used in previous studies, may not fully reflect the overall policy effect. Taken together with the empirical results, stock market returns may indeed fall initially, but eventually, the interventions reduce market volatility, which can lead to higher returns.

**Table 3.** Impact of epidemic prevention and control on A-share returns.

| Variables | Panel A | Panel B |
|---|---|---|
| | Ri | Ri |
| **SI** | 0.0467*** | |
| | (0.00413) | |
| **CHI** | | 0.0643*** |
| | | (0.00564) |
| **MV** | 0.0893*** | 0.0876*** |
| | (0.00117) | (0.00118) |
| **PE** | 0.00638*** | 0.00687*** |
| | (0.000166) | (0.000174) |
| **BM** | -0.313*** | -0.331*** |
| | (0.00993) | (0.00973) |
| **IOR** | -0.0297*** | -0.0265*** |
| | (0.00180) | (0.00181) |
| **GRO** | 0.000588*** | 0.000810*** |
| | (0.000088) | (0.000087) |
| **DJIA** | 0.00264*** | 0.00262*** |
| | (0.000078) | (0.000078) |
| **Constant** | -2.022*** | -2.088*** |
| | (0.0385) | (0.0415) |
| **Stock-level Effect** | Yes | Yes |
| **Observations** | 144,861 | 144,861 |
| **R-squared** | 0.103 | 0.103 |

Note: *** represent statistical significance at 1% levels. ** represent statistical significance at 5% levels. * represent statistical significance at 10% levels.

This table reports results on the impact of government actions on stock market returns. Stock market returns measured by the monthly major stock index. The Stringency index represents the government control of public social distance, while Containment and Health index covers efforts to protect the health of individuals. Current market value is measured as multiplying the number of shares tradable by the share price, which represents a company's liquidity. P/E is measured as the ratio of a stock's price to its earnings per share over a period. Generally, higher earnings result in lower P/E and vice versa. The book-to-market ratio is an important investment indicator that reflects the difference between a company's book value and its market value.

### *3.3. Robustness Tests*

Several robustness tests are performed to reinforce the findings mentioned above. First, the sample size is adjusted by excluding companies listed on the STAR and the GEM. Second, regressions are performed on the provinces where local controls were first implemented to ensure that the policies do not produce systematic differences. As shown in Table 4, the main results remain consistent with those in Table 3, even when specific macro-level control variables are substituted.

**Table 4**. Robustness checks.

| NO. | Robustness Check | SI | CHI |
|---|---|---|---|
| (1) | Remove some samples | 0.0653*** | 0.0930*** |
| | | (0.00467) | (0.00633) |
| (2) | Partially controlled area | 0.0369*** | 0.0567*** |
| | | (0.00851) | (0.0116) |
| (3) | Changes control variables | 0.0520*** | 0.0742*** |
| | | (0.00409) | (0.00561) |

### *3.4. Heterogeneity Analysis of Listed Boards*

**Table 5.** The impact on the returns of listed companies in different segments.

| Variables | SSE | | SZSE | | GEM | | STAR | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| **SI** | 0.0677*** | | 0.0669*** | | 0.0101 | | 0.0235 | |
| | (0.00661) | | (0.00711) | | (0.00882) | | (0.0183) | |
| **CHI** | | 0.0647*** | | 0.113*** | | -0.0557*** | | -0.0517** |
| | | (0.00883) | | (0.00969) | | (0.0117) | | (0.0256) |
| **Constant** | -1.616*** | -1.589*** | -2.578*** | -2.772*** | -2.875*** | -2.577*** | -0.851*** | -0.516*** |
| | (0.0490) | (0.0538) | (0.0591) | (0.0653) | (0.0731) | (0.0818) | (0.107) | (0.130) |
| **FE** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Obs** | 51,654 | 51,654 | 47,381 | 47,381 | 33,773 | 33,773 | 10,027 | 10,027 |
| **R-squared** | 0.084 | 0.084 | 0.113 | 0.114 | 0.131 | 0.132 | 0.158 | 0.158 |

Note: In particular, health policies (including public awareness campaigns, testing and vaccines in addition to social distancing) have a more significant impact on stock market returns, suggesting that a combination of policies has a more significant impact on stock market returns than a single. In addition, GEM and STAR are not positively affected by relevant policies compared to SSE and SZSE, which may be related to the high-risk and high-return characteristics of these markets.

This subsection includes the examination of how government policies affect the returns of different listed sectors. As shown in Table 5, for Shanghai and Shenzhen stock exchanges, both SI and CHI enter positive and significant, confirming the previous regression findings. However, as for GEM and STAR, the results for the Stringency Index are not statistically significant, suggesting that the stock market's response to social distancing, though positive, lacks a substantial effect. On the contrary, the health measures are negative and significant. During the epidemic, stringent government measures triggered a surge in the online consumption sphere among the public, which created opportunities for several fast-growing small and medium-sized enterprises. Moreover, health measures increased demand for medical supplies and digital technology, which form the backbone of these two sectors. However, due to their relatively high stock prices and higher risk profiles, investors may opt for a more conservative and safer investment strategy amidst increased economic uncertainty, resulting in lower returns for GEM and STAR. These results collectively suggest that government health measures may be more effective in generating impact on the stock market, while social distance measures have a comparatively weaker influence.

### *3.5. Heterogeneity Analysis of Industry*

The section proceeds to examine how the impact of government action on stock returns differs across industries, particularly those more affected by the epidemic. Table 6 reports the results, which are consistent with the underlying regression findings. Returns for medical biology, transportation, and communication services display a negative association with social distancing. However, the response to containment and health policy is heterogeneous, especially in the medical biology industry, where the effect is slightly negative and statistically insignificant. One possible reason for this is that the mid-to-late-stage implementation of these policies has intensified competition in the industry, with increased participation by various firms in the production of medical products. In addition, the communication services sector enters negatively and significantly, while the response of the transportation sector to these policies, although positive, is not robust. These findings confirm that government policies in containment and health do not significantly mitigate the negative impact of the increase in confirmed cases.

**Table 6.** The impact of social distancing and health policies on medical-biological, transportation, communication, wholesale-retail, and social services.

| Variables | Medical Biology | | Transportation | | Communication Services | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| **SI** | 0.0815*** | | 0.0936*** | | 0.0538*** | |
| | (0.0155) | | (0.0217) | | (0.0143) | |
| **CHI** | | -0.0199 | | 0.0428 | | 0.0422** |
| | | (0.0202) | | (0.0286) | | (0.0187) |
| **Constant** | -3.045*** | -2.552*** | -7.681*** | -7.300*** | -6.564*** | -6.524*** |
| | (0.153) | (0.159) | (0.354) | (0.347) | (0.185) | (0.201) |
| **FE** | Yes | Yes | Yes | Yes | Yes | Yes |
| **Obs** | 10,538 | 10,538 | 2,952 | 2,952 | 9,914 | 9,914 |
| **R-squared** | 0.078 | 0.075 | 0.195 | 0.191 | 0.178 | 0.177 |

**Table 6 (continued).**

| Variables | Wholesale and Retail | | Social Services | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| **SI** | 0.0553*** | | -0.0130 | |
| | (0.0205) | | (0.0317) | |
| **CHI** | | 0.0135 | | 0.00607 |
| | | (0.0269) | | (0.0421) |
| **Constant** | -3.743*** | -3.511*** | -4.899*** | -4.999*** |
| | (0.225) | (0.229) | (0.346) | (0.386) |
| **FE** | Yes | Yes | Yes | Yes |
| **Obs** | 4,586 | 4,586 | 2,024 | 2,024 |
| **R-squared** | 0.122 | 0.120 | 0.169 | 0.169 |

Note: During the epidemic, social distancing led to higher returns for the medical biology sectors, while the release of the health policy failed to realize this and instead lowered their returns. We speculate that the benefits of these policies may have directly offset the negative effects of the epidemic. According to the relevant data collected, the recurrence of the epidemic in the middle and late phase, combined with extreme weather conditions such as floods in many parts of the country, led to high fluctuations in the returns of the transportation industry, resulting in the implementation of relevant policies to no great extent. In addition, the urgent increase in the demand for communication also made the policy play a more prominent role. Conversely, wholesale and retail trade, social distance and containment and health policies played a minor role due to the severe impact of the epidemic.

By comparison, wholesale and retail and social services exhibit relatively fewer positive responses, as shown in Table 6 (continued). Social distance measures are positively and significantly associated with retail trade while remaining insignificantly negative for social services. In addition, containment and health policies show only a weak and insignificant effect on the returns of these two sectors. The stock market effects of policies may largely stem from the unpredictability of the macro environment during COVID-19. On the one hand, people are gradually adapting to social distancing, leading to increased optimism about economic recovery and favoring consumer spending, particularly in the online retail sector, which consequently yields higher returns. On the other hand, while the containment and health policy may reduce the number of diagnoses, it might not directly benefit sectors beyond healthcare due to their lack of targeted focus on these industries alone.

## 5. Conclusions

In this study, an analysis was conducted regarding the expected economic impact of the Chinese government's policies, with a particular focus on the impact of the social distancing and health measures implemented during COVID-19 on the stock market. The empirical results are based on the stock market returns and government policies from February 2020 to December 2022. The findings revealed that, in general, social distancing generally correlated with positive stock market returns, possibly due to the favorable impact on economic activities. Health measures including public awareness campaigns, testing, contact tracing and vaccine program mostly result in positive market returns as well. However, upon further examination of certain industries, strict social distancing measures have a more significant impact on the sectors. That is to say, health measures appear to be less effective than social distancing, which holds positive implications not only for investment

confidence but also for market expectations. One possible reason is that health measures may struggle to reduce uncertainty in industries other than medical biology, thereby dampening investor confidence in the prospects for these industries.

This paper provides evidence aimed at assisting investors in their understanding and prediction of emergency policy effects. The study indicates that social distancing positively affects stock market returns, while some studies such as Ashraf et al. (2020a) [2], Aharon and Siev (2021) [5], and Bakry et al. (2022) [3], suggest that such measures are counterproductive. Therefore, it is difficult to predict their net impact on economic outcomes This underscores the need for further research with more comprehensive data to gain a deeper understanding of the economic impact of these government measures work towards a consensus on the effectiveness and implications of social distancing policies and other related emergency measures.

Furthermore, our research presents original and essential policy perspectives. Firstly, as the effect of epidemic prevention and control policies on stock market returns differs across industries, it will offer valuable guidance for risk evaluation for stock market portfolio managers. On the flip side, policymakers must customize regulatory measures for each industry to reduce their negative effects on the financial market which may involve implementing a system for financial risk warning and monitoring.

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## References

[1] Albulescu, C.T. Covid-19 and the United States Financial Markets' volatility. *Finance Research Letters*, **2021**, 38, 101699. DOI: https://doi.org/10.1016/j.frl.2020.101699.

[2] Ashraf, B.N. The economic impact of government interventions during the COVID-19 pandemic: International Evidence from Financial Markets. *Journal of Behavioral and Experimental Finance*, **2020a**, 27, 100371. DOI: https://doi.org/10.1016/j.jbef.2020.100371.

[3] Bakry, W.; Kavalmthara, P.J.; Saverimuttu, V.; Liu, Y.; Cyril, S. Response of stock market volatility to COVID-19 announcements and stringency measures: A comparison of developed and emerging markets. *Finance Research Letters*, **2022**, 46, 102350. DOI: https://doi.org/10.1016/j.frl.2021.102350.

[4] Zaremba, A.; Kizys, R.; Aharon, D. Y.; Demir, E. Infected markets: Novel coronavirus, government interventions, and stock return volatility around the Globe. *Finance Research Letters*, **2020**, 35, 101597. DOI: https://doi.org/10.1016/j.frl.2020.101597.

[5] Aharon, D.Y.; Siev, S. Covid-19, government interventions and emerging capital markets performance. *Research in International Business and Finance*, **2021**, 58, 101492. DOI: https://doi.org/10.1016/j.ribaf.2021.101492.

[6] Ashraf, B.N. Stock markets' reaction to COVID-19: Cases or fatalities? *Research in International Business and Finance*, **2020b**, 54, 101249. DOI: https://doi.org/10.1016/j.ribaf.2020.101249.

[7] Zaremba, A.; Kizys, R.; Aharon, D.Y. Volatility in international sovereign bond markets: The role of government policy responses to the COVID-19 pandemic. *Finance Research Letters*, **2021**, 43, 102011. DOI: https://doi.org/10.1016/j.frl.2021.102011.

[8] Hale, T.; Angrist, N.; Goldszmidt, R.; Kira, B.; Petherick, A.; Phillips, T.; Webster, S.; Cameron-Blake, E.; Hallas, L.; Majumdar, S.; Tatlow, H. A global panel database of pandemic policies (Oxford Covid-19

Government response tracker). *Nature Human Behavior*, **2021**, 5, (4), pp. 529–538. DOI: https://doi.org/10.1038/s41562-021-01079-8.

[9] Dumitrescu, E.-I.; Hurlin, C. Testing for Granger Non-Causality in Heterogeneous Panels. *Economic Modelling*, **2012**, 29, pp. 1450-1460. DOI: https://doi.org/10.1016/j.econmod.2012.02.014.

[10] Granger, C.W.J. Investigating Causal Relations by Econometric Models and Cross-Spectral Methods. *Econometrica*, **1969**, 37, pp. 424-438. DOI: https://doi.org/10.2307/1912791.

[11] Al-Awadhi, A. M.; Alsaifi, K.; Al-Awadhi, A.; Alhammadi, S. Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns. *Journal of Behavioral and Experimental Finance*, **2020**, 27, 100326. DOI: https://doi.org/10.1016/j.jbef.2020.100326.



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