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Full length article

Stock price reaction to appointment of a chief health officer during COVID-19

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This study examines how appointing a chief health officer (CHO) at the corporate-board level during the COVID-19 outbreak affects the stock returns of US firms. As the COVID-19 progressed, the negative abnormal return (CAR) is $-7.5\%$. In contrast, shares of firms that had appointed a CHO before or during the window surrounding the date of the first reported COVID-19 case (the WHO declaration) exhibited positive CAR of $+6.29\% (+0.136\%)$. CARs surrounding the exact CHO appointment date once the COVID-19 had already broken out the effect was even stronger, $+6.91\%$. Size, leverage, growth, and R&D intensity influence significantly returns during the outbreak.

1. Introduction

The unprecedented escalation of the 2020 Novel Coronavirus (COVID-19) epidemic turned the world upside down. On January 20th 2020, the USA registered the first COVID-19 case. The epidemic has escalated and resulted in the World Health Organization declaring the epidemic as pandemic on March 11th. Subsequently, over 220 countries were affected, the USA being among the countries with most confirmed cases (World Health Organization, 2020) - 19,228,424 as of December 28th 2020 (Centers for Disease Control and Prevention, CDC).

The emergence of the pandemic has a significant socio-economic impact. Abmar and del Val (2020) find that the COVID-19 pandemic can trigger various channels: labor markets, international supply chains, production patterns, and consumption behaviors, all of which have a direct impact on the global economy. While COVID-19’s total impact is difficult to quantify currently, financial markets have already responded to the short-term impact with dramatic movements and increased volatility (Baker et al., 2020; Liu et al., 2020; Harjoto et al., 2020; Heyden and Heyden, 2020; Al-Awadhi et al., 2020).

Along these lines, this study first quantifies the current estimate of the economic impact of the COVID-19 pandemic upon the stocks listed on NYSE and NASDAQ Composite. It investigates the economic impact of the epidemic around two major events: the first reported case of COVID-19 in the USA, and the declaration of the global pandemic by the World Health Organization (WHO). This study finds that the overall cumulative abnormal returns (CARs) are negative prior and up to ten days after the first reported COVID-19 case. Following the first reported COVID-19 case, the WHO’s declaration of the outbreak as pandemic has an even more negative impact on returns.

This leads to explore whether the existence (or addition) of a relatively new top-level corporate position — the Chief Health Officer (CHO) mitigates the negative impact of the epidemic. In other words, does the existence of CHO create shareholder value? There are at least three channels through which this may occur: (i) amelioration of immediate negative effects — e.g. health concerns for the employees, consequential loss of productivity; (ii) higher growth opportunities that arise from the COVID-19 crisis — e.g. telemedicine; (iii) immediate, but short-term, effects due to appearance rather than substance in taking action. For example, Peters et al. (2019) note that certain board-level

1 Inspired by AMC Theatres (world’s largest chain of movie cinemas) statement: “The only way people are going to go to movie theaters is if people trust theater operators to run their theaters safely and cleanly. It became quite obvious to us in April that we were going to have to seek out the best experts on the planet to advise us what to do”. https://fortune.com/2020/07/08/chief-public-health-officer-business-coronavirus-amc-movie-theaters/.

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corporate positions – the corporate sustainability officers, in their case – may be of a more symbolic rather than substantive importance (short-term window dressing). The underlying hypothesis is that stock market participants value positively the CHO at the top corporate level to navigate through the COVID-19, looking from investor sentiment perspective (Baker and Wurgler, 2007). This study finds that capital markets do indeed value the newly created CHO position positively. The higher a firm’s R&D, the more positive are CARs around the two landmark events of the pandemic. This is consistent with the second point above that the CHO position may create future growth opportunities similar to chief technological officers (e.g. Medcof and Lee, 2017) and/or reduce risk via chief risk officers (e.g. Pagach and Warn, 2011).

As it appears, the immediate relation between the shares returns and firms’ decisions to appoint a CHO has not yet been addressed in the past literature. This is surprising given that many of the other equivalent-level positions have been investigated (including: Kunisch et al., 2020; Medcof and Lee, 2017; Peters et al., 2019). This study contributes to the literature by examining the effect of investor sentiment on the financial markets by quantifying two contrasting effects of the epidemic: that COVID-19 triggers a negative sentiment effect among the stock market investors in general, but also COVID-19 in combination with the appointment of a CHO results in a positive incremental effect on stock returns.

2. Data

This study starts at observing the Centers for Disease Control and Prevention (CDC) database to determine the major COVID-19-related events for the USA. There are four major outbreak events: (i) the first registered COVID-19 case in the USA, 20.01.2020; (ii) the declaration of a “public health emergency” (PHE), 30.01.2020; (iii) the WHO’s declaration of the outbreak as pandemic, 11.03.2020; (iv) President Trump’s declaration of the national emergency, 13.03.2020. Some of these events overlap. This would lead to biased estimates. In addition, the PHE and President Trump’s declaration of the national emergency are excluded.

To construct the main variable CHO, BvDS Orbis is used. CHO equals to one if S&P500, NASDAQ Composite, and NYSE Composite companies employ a CHO at the board-level during the time period under study (first two quarters of 2020). The time period of appointment of the CHO is important since the study later differentiates the analyses based on whether a firm already had such a position prior to the COVID-19 situation, or had created this position only after the outbreak. To keep track of this difference, maintaining a sub-sample segmentation by time rather than by the CHO variable is more viable. The paper examines a complete data for 3,487 distinct firms. Of these, 781 have a CHO, 40 firms are identified as employing a CHO only after the COVID-19 outbreak, and the remaining 741 firms had already established a CHO position before the outbreak. The study further precisely determines the exact appointment date of the CHO for 36 firms employing a CHO during the COVID-19 outbreak. For the remaining, it can only be confirmed the month and the year of the appointment, but not the exact date. In addition, the study also identifies – by manually searching each company’s web pages – whether the appointed CHOs have a health/medical educational or professional background.

Third, to examine whether having a CHO has an impact on companies’ CARs during the pandemic, the study exerts the value-weighted CARs as calculated by the Refinitiv Datastream Event Study Tool.

Fourth, data on firm fundamentals is collected for the period of observation, the Q4 of 2019–Q2 of 2020, from Refinitiv Datastream (total assets, long- and short-term financial debt, total revenues, R&D expenditures).

3. Methodology

The event-study method is used to evaluate the economic impact of COVID-19 events upon companies’ stock returns through the one-factor value-weighted market model (e.g. Harjoto et al., 2020; Donadelli et al., 2016; Peress, 2014; Fang and Peress, 2009)

There are two major COVID-19 events included. The event study results would be biased due to the overlapping windows if all COVID-19 events were considered as independent.

To observe whether there is a statistically significant impact of employing a CHO on the CARs the following regression is ran (Donadelli et al., 2016; Kaplanski and Levy, 2010a,b; Kamstra et al., 2003; Brown and Warner, 1985):

\[
CAR_{i,t} = \gamma_0 + \gamma_1 \text{CHO}_{i,t} + \gamma_2 \text{Size}_{i,t} + \gamma_3 \text{Lev}_{i,t} + \gamma_4 \text{Rev.growth}_{i,t} + \gamma_5 \text{R Density}_{i,t} + \epsilon_t
\]

1) where CAR_{i,t} is the cumulative abnormal return of firm i on event window t, \( \gamma_0 \) is the regression intercept, \( \text{CHO}_{i,t} \) is a dummy variable denoting firms that appointed a CHO at the board level, \( \text{Size}_{i,t} \) is the natural logarithm of total assets, \( \text{Lev}_{i,t} \) is firm’s long- and short-term financial debt scaled by total assets, \( \text{Rev.growth}_{i,t} \) is the revenue growth from the previous period, \( \text{R D density}_{i,t} \) is R&D expenses scaled by total revenues.

4. Results

4.1. Event study

Table 1 accompanied by Fig. 1 summarize the CARs around the main COVID-19 events separately for: (i) all firms; (ii) firms employing a CHO before the events; and (iii) firms first appointing a CHO during the COVID-19 events. Panel A shows that the CARs for all firms in the sample around the first COVID-19 case in USA are statistically significant and negative prior and up to ten days after the event, reflecting the increasing awareness of possible negative consequences of the disease on the US economy. For example, the results for the [0, +10] event window reveal negative CARs of ≈3%, significant at the 1% level (see Patell’s Z-scores column for all event windows). Similarly, the WHO’s declaration of the outbreak reveals significant and even more negative CARs, in

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2 Corporate positions at the board-level are often termed C-suite positions. According to the Cambridge English Dictionary, the term C-suite “the group of the most important managers in a company, for example, those whose titles begin with the letter C for ‘chief’”.

3 See: https://covid.cdc.gov/covid-data-tracker/#cases.

4 For the purpose of consistency with other data items, calendar quarter-based periods on Refinitiv Datastream’s classification are used.

5 Bernard (1987) finds that overlapping of event windows results in cross-correlation of the stock returns. The bias which he finds to be downward-directed he defines as \( \frac{1}{\sqrt{\text{Overlap}}} \left[ \frac{\text{Overlap}}{\text{Overlap}} \right] \left[ \frac{\text{Overlap}}{\text{Overlap}} \right] \left[ \frac{\text{Overlap}}{\text{Overlap}} \right] \), where C denotes the correct covariance matrix of the OLS-based coefficients, \( \text{Overlap} \) is a vector with kth element equal to one and other elements equal to zero, and X is a matrix of independent variables.

6 As explained above, the study excludes the Public Health Emergency status event (30.01.2020), and President Trump’s declaration of National Emergency event (13.03.2020) from the analyses due to noise in the estimates as a result of overlapping event windows.

7 Significance of the CARs is presented through various parametric and non-parametric tests. Under the Patell Z-score each security’s abnormal return is normalized by its estimation period standard deviation to limit the impact of stocks with high return volatility. The standardized cross-sectional Z-score (StdCoef Z) serves to account for event-induced volatility and serial correlation

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Table 1

Market reaction around COVID-19 events.

Panel A. All companies

| Event Window                          | No. of obs. | CAR (%) | Patell Z score | StdCsect Z | G.SIGN Test Z |
|---------------------------------------|-------------|---------|----------------|------------|---------------|
| 1st COVID-19 case in USA (20.01.2020) |             |         |                |            |               |
| [−10, +10]                            | 3487        | 2.175** | −15.904        | −12.051    | −8.131        |
| [−5, +5]                              | 3487        | −0.494  | −3.220         | −2.662     | −4.522        |
| [0, +10]                              | 3487        | 2.905** | −19.641        | −16.447    | −7.644        |
| WHO's declaration of the outbreak as being pandemic (11.03.2020) |             |         |                |            |               |
| [−10, +10]                            | 3487        | −7.507** | −79.153        | −28.633    | −11.425       |
| [−5, +5]                              | 3487        | −18.823** | −185.744      | −30.851    | −23.011       |
| [0, +10]                              | 3487        | 3.026   | −43.213        | −11.806    | −29.124       |

Panel B. Companies employing CHO

| Event Window                          | No. of obs. | CAR (%) | Patell Z score | StdCsect Z | G.SIGN Test Z |
|---------------------------------------|-------------|---------|----------------|------------|---------------|
| 1st COVID-19 case in USA (20.01.2020) |             |         |                |            |               |
| [−10, +10]                            | 781         | 1.527** | −4.399         | −3.220     | −2.676        |
| [−5, +5]                              | 781         | −0.295  | −0.553         | −0.427     | −0.418        |
| [0, +10]                              | 781         | 2.773** | −6.903         | −5.415     | −2.676        |
| WHO's declaration of the outbreak as being pandemic (11.03.2020) |             |         |                |            |               |
| [−10, +10]                            | 781         | 1.417** | −8.991         | −3.561     | −1.228        |
| [−5, +5]                              | 781         | −14.715*** | −46.274      | −11.390    | −5.462        |
| [0, +10]                              | 781         | −0.640** | −3.992        | −1.928     | 1.807         |

Difference in coefficients test (Panel A–Panel B)

| Event Window                          | Diff. in coeff. | Test statistics |
|---------------------------------------|-----------------|-----------------|
| 1st COVID-19 case in USA (20.01.2020) |             |                |
| [−10, +10]                            | −0.648**       | −2.021          |
| [−5, +5]                              | −1.099         | −1.322          |
| [0, +10]                              | −0.132         | −1.598          |
| WHO's declaration of the outbreak as being pandemic (11.03.2020) |             |                |
| [−10, +10]                            | −6.090***      | −3.211          |
| [−5, +5]                              | −4.106**       | −2.599          |
| [0, +10]                              | −2.386**       | −2.530          |

Panel C. Companies employing CHO during COVID-19

| Event Window                          | No. of obs. | CAR (%) | Patell Z score | StdCsect Z | G.SIGN Test Z |
|---------------------------------------|-------------|---------|----------------|------------|---------------|
| 1st COVID-19 case in USA (20.01.2020) |             |         |                |            |               |
| CHO appointment date                  | 40          | 6.293** | 2.387          | 1.425      | 0.886         |
| [−10, +10]                            | 40          | 3.829*  | 1.709          | 0.951      | 1.962         |
| [−5, +5]                              | 40          | 2.423   | 0.327          | 0.327      | 0.380         |
| CHO appointment date                  |             |         |                |            |               |
| [−10, +10]                            | 40          | 0.136   | 0.835          | 0.728      | 0.063         |
| [−5, +5]                              | 40          | −13.073*** | −4.583      | −1.415     | 0.508         |
| [0, +10]                              | 40          | 1.139   | 0.496          | 0.294      | 1.079         |
| CHO appointment date                  |             |         |                |            |               |
| [−10, +10]                            | 36          | 6.913   | 1.200          | 0.589      | 1.038         |
| [−5, +5]                              | 36          | 7.899** | 2.503          | 1.129      | 2.220         |
| [0, +10]                              | 36          | 5.490*** | 2.813        | 1.488      | 0.969         |

Difference in coefficients test (Panel B–Panel C)

| Event Window                          | Diff. in coeff. | Test statistics |
|---------------------------------------|-----------------|-----------------|
| 1st COVID-19 case in USA (20.01.2020) |             |                |
| [−10, +10]                            | −7.820***      | −4.219          |
| [−5, +5]                              | −4.224**       | −2.601          |
| [0, +10]                              | −5.196***      | −2.920          |
| WHO's declaration of the outbreak as being pandemic (11.03.2020) |             |                |
| [−10, +10]                            | −1.553**       | −2.014          |
| [−5, +5]                              | −1.642**       | −2.231          |
| [0, +10]                              | −1.779**       | −2.256          |

Note: The Cumulative abnormal returns (CARs) are calculated using the value-weighted market model. 100 trading days are positioned in the estimation of the market model ending 3 days prior to the event day, i.e. day 0. Only COVID-19 events with non-overlapping event windows are used. The following procedure is used to select the events. The selection criterion, which has a label “the first occurrence”, selects events in chronological order (sequence). It starts with the first event in the sample, ignores all events showing up in the following 5 or 10 days – depending on the length of the event window ([−10, +10], [−5, +5] and [0, +10]). Then, the next event in succession is taken ignoring the events during the following 5 or 10 days, and so on. Subsequent columns report the Patell Z-score, the standardized cross-sectional Z-score, and the generalized sign test, respectively. Asterisks *, **, and *** denote significance at 10%, 5%, and 1% levels, respectively.

As the pandemic progresses, both in increased number of infected cases and duration, the CARs become less positive. Eventually, as the first death cases are reported as outcomes of COVID-19 infections, stock market participants price-in the expected negative impact of the pandemic (Ashraf, 2020). One reason for COVID-19’s powerful effects on the stock market is that the pandemic has grave implications for public health due to the severity of the disease, apparent ease at which it spreads, and high mortality rate (Baker et al., 2020). Another partial answer lies in the information-transmission mechanism to the financial markets. Information about the disease is much richer and disseminates much more rapidly nowadays than it did a century ago (Baker et al., 2020).

(Boehler et al., 1991). Furthermore, a nonparametric test in the form of the generalized sign test (Gen Sign Z) is reported. This test shows the proportion of positive and negative CARs against an assumed 50% split under the null hypothesis of no reaction to the event (Cowan, 1992). Lastly, a post-estimation test to assess whether the difference in coefficients between the panels are jointly equal to zero, or significantly different is presented. Test statistics is the ratio of the departure of the estimated value of a parameter from its hypothesized value to its standard error.

general across all event windows. One can conclude that, in general, the COVID-19 events are perceived negatively by the capital markets’ participants and that the WHO declaration amplified these perceptions.
Panel B presents the CARs for the companies with a CHO appointed at the board level, regardless of whether the CHO was employed before or during the outbreak. For both COVID-19 events considered, the CARs are negative and significant, except for the [-5, +5] window for the first reported COVID-19 case. For the [-5, +5] window, the estimates are in line with the rest of the results, but are not statistically significant. The analyses presented in Panel B are viewed as an important extension to the results presented in Panel A: the CARs are less negative and statistically weaker compared to the overall sample (that already includes firms with a CHO; excluding those would result in more negative CARs in Panel A). Roughly speaking, the difference among the CARs from the two samples is at least 1 percentage point across the three event windows. One potential explanation for this effect is that investors recognize that having a CHO position appointed implies that they operate (and had already operated) in a more demanding environment. Another potential explanation would be that the companies with CHOs may had anticipated more comprehensively and/or earlier the potential seriousness of the upcoming epidemic.

Panel C presents CARs for the companies that appointed a CHO only after the COVID-19 outbreak. It stresses that of the 781 companies employing a CHO at the board level, only 40 appointed a CHO once the pandemic had spread. For the first COVID-19 case, and the WHO's declaration of the outbreak as pandemic, the CARs are generally positive and statistically significant, albeit not for all events and all windows. Due to the small number of cases this is to be expected. For example, the [-10, +10] event window yields positive CARs of ≈6.3%, significant at 5% level. Separately, Panel C presents also the CARs around the CHO appointment date, as the appointment was a precisely timed event during the outbreak. The number of observations drops to 36, since there are only 36 exact appointment dates confirmed. For the remaining 4, it can only be determined the month and year of appointment. The analyses record positive and statistically significant CARs for the [-5, +5] and [0, +10] event windows (7.5% and 5.5%, significant at 5% and 1% level, respectively) around the appointment date. Positive CARs are recorded for the [-10, +10] event window, too, but are not statistically significant. This does not necessarily mean that there is no underlying effect upon this window's CARs but that it cannot simply be observed, possibly due to small sample size.

Overall, the event study analyses in Panel C support the prediction: that employing a CHO only after the COVID-19 outbreak, but not before, is positively recognized by the financial market.

4.2. Regression analyses

Results examining the effect of appointing a CHO on CARs are presented in Table 2. Panels A, B and C of Table 2 summarize the results of the regression analysis in model (1). Panel A focuses on the effect of employing a CHO regardless of the outbreak. In both examined events, the first COVID-19 case in the USA and WHO global pandemic, employing a CHO has a positive impact on CARs, for all event windows examined (e.g., the CHO, regression coefficient for the [-10, +10] window is 0.0206, significant at 1% level, and 0.0695, significant at 1% level for the first COVID-19 case and the WHO global pandemic events, respectively). Consistent with the event study results above, this result conforms to the prediction that stock market participants value the presence of a professional within the company, specialized in dealing with health issues. In addition, there are control variables added for company’s size, leverage, growth and R&D intensity, as well as time and industry controls. The estimated regression coefficients on size vary in sign, magnitude and significance among the events and event windows. As the pandemic starts with the first COVID-19 case, it appears that large firms are negatively exposed to the event in terms of CARs. This finding is consistent with Liu et al. (2020) who find that U.S. stock indexes – and mainly large caps - plunged the most in the 24 days after the first reported COVID-19 case. As the pandemic progresses until the WHO declares the global pandemic, the larger the firm the better its stock market performance (note for example the coefficient for the [-10, +10] window: 0.0115, significant at 1% level). The controls for leverage and growth are as expected: highly leveraged firms are affected more negatively than less leveraged firms, and the contrary holds...
| Panel A. Firms employing CHO |
|---------------------------|
| **Table 2** |
| The impact of appointing a CHO on CARs. |

**CHO**-employment in a company increases cumulative abnormal returns (CARs) in the [-10, +10] event window, statistically significant at 10%, 5%, and 1% levels, respectively. The results are presented in Panel A. 

| CHO  | Size | Leve | Rev. growth | R&D intensity | R² | Obs. | Time and ind. controls |
|------|------|------|-------------|---------------|----|------|------------------------|
| CAR [10, +10] | 0.0206*** | −0.0091*** | −0.0062 | 0.0001** | 0.0067*** | 0.308 | 5,597 | Yes |
|     | (3.04) | (−6.44) | (3.02) | (2.29) | | | |
| CAR [5, +5] | 0.0081* | −0.0090 | −0.0011*** | 0.0056*** | | 0.176 | 5,597 | Yes |
|     | (1.70) | (3.90) | (1.57) | (3.28) | | | |
| CAR [0, +0] | 0.0077* | 0.0004 | −0.0134** | 0.0036 | 0.0020* | 0.207 | 5,597 | Yes |
|     | (1.79) | (0.41) | (2.53) | (1.07) | (1.91) | | |

WHO's declaration of the outbreak as being pandemic

| CHO  | Size | Leve | Rev. growth | R&D intensity | R² | Obs. | Time and ind. controls |
|------|------|------|-------------|---------------|----|------|------------------------|
| CAR [10, +10] | 0.0789*** | −0.0010 | −0.0263 | 0.0011 | 0.0072*** | 0.163 | 5,597 | Yes |
|     | (6.76) | (−0.38) | (1.43) | (2.61) | | | |
| CAR [5, +5] | 0.0526*** | 0.0115*** | −0.1096*** | 0.0008 | 0.0057** | 0.199 | 5,597 | Yes |
|     | (5.01) | (5.68) | (4.80) | (2.27) | | | |
| CAR [0, +0] | 0.0228*** | 0.0020 | −0.0025 | 0.0005 | 0.0003 | 0.132 | 5,597 | Yes |
|     | (3.35) | (0.97) | (0.17) | (0.95) | (0.00) | | |

**Panel B. Firms employing CHO only after COVID-19 outbreak**

| CHO  | Size | Leve | Rev. growth | R&D intensity | R² | Obs. | Time and ind. controls |
|------|------|------|-------------|---------------|----|------|------------------------|
| CAR [10, +10] | 0.0664*** | −0.0073*** | −0.0135 | 0.0012*** | 0.0059*** | 0.139 | 5,597 | Yes |
|     | (3.32) | (−3.03) | (3.01) | (3.97) | | | |
| CAR [5, +5] | 0.0329*** | −0.0031*** | −0.0132 | 0.0070*** | 0.0051*** | 0.075 | 5,597 | Yes |
|     | (2.10) | (−2.54) | (3.74) | (11.73) | | | |
| CAR [0, +0] | 0.0032 | 0.0015 | −0.0189** | 0.0039 | 0.0014* | 0.028 | 5,597 | Yes |
|     | (0.31) | (1.50) | (2.17) | (1.11) | (1.88) | | |

WHO's declaration of the outbreak as being pandemic

| CHO  | Size | Leve | Rev. growth | R&D intensity | R² | Obs. | Time and ind. controls |
|------|------|------|-------------|---------------|----|------|------------------------|
| CAR [10, +10] | 0.0850*** | −0.0003 | −0.0112 | 0.0001 | 0.0096*** | 0.022 | 5,597 | Yes |
|     | (2.83) | (−0.45) | (1.46) | (9.99) | | | |
| CAR [5, +5] | 0.0887* | 0.0106** | −0.0955** | 0.0008 | 0.0076** | 0.119 | 5,597 | Yes |
|     | (2.22) | (2.13) | (1.17) | (9.18) | | | |
| CAR [0, +0] | 0.0142 | 0.0004 | 0.0082 | 0.0005 | 0.0017 | 0.030 | 5,597 | Yes |
|     | (0.84) | (0.13) | (0.38) | (0.88) | (1.19) | | |

**Panel C. CHO appointment date**

| CHO  | Size | Leve | Rev. growth | R&D intensity | R² | Obs. | Time and ind. controls |
|------|------|------|-------------|---------------|----|------|------------------------|
| CAR [10, +10] | 0.0581*** | −0.0073*** | −0.0137 | 0.0012*** | 0.0059*** | 0.134 | 5,597 | Yes |
|     | (3.18) | (−3.01) | (3.01) | (3.96) | | | |
| CAR [5, +5] | 0.0325** | −0.0030** | −0.0133 | 0.0070*** | 0.0051*** | 0.074 | 5,597 | Yes |
|     | (2.04) | (−2.52) | (3.74) | (11.73) | | | |
| CAR [0, +0] | −0.0001 | 0.0015 | −0.0190** | 0.0004 | 0.0014* | 0.028 | 5,597 | Yes |
|     | (−0.01) | (1.50) | (2.17) | (1.11) | (1.88) | | |

WHO's declaration of the outbreak as being pandemic

| CHO  | Size | Leve | Rev. growth | R&D intensity | R² | Obs. | Time and ind. controls |
|------|------|------|-------------|---------------|----|------|------------------------|
| CAR [10, +10] | 0.0735** | −0.0022 | −0.0135 | 0.0011 | 0.0096*** | 0.019 | 5,597 | Yes |
|     | (2.23) | (−0.44) | (1.46) | (9.98) | | | |
| CAR [5, +5] | 0.0739* | 0.0106** | −0.0999** | 0.0008 | 0.0076** | 0.117 | 5,597 | Yes |
|     | (1.80) | (2.13) | (1.17) | (9.19) | | | |
| CAR [0, +0] | 0.0046 | 0.0004 | 0.0081 | 0.0005 | 0.0017 | 0.020 | 5,597 | Yes |
|     | (0.26) | (0.13) | (0.37) | (0.88) | (1.19) | | |

Note: This table summarizes the results of the regression analysis in model (1). CARs are calculated using the value-weighted market model. Panel A focuses on the effect of employing a CHO regardless of the outbreak. Panel B analyzes the firms appointing a CHO only after the COVID-19 outbreak began. Panel C observes firms' stock performance on the exact day of CHO appointment. Firm fundamentals are used as controls. T-statistics are in parenthesis, and asterisks ‘*’, ‘**’, and ‘***’ denote significance at 10%, 5%, and 1% levels, respectively.

For the firms with higher growth last, but not least, the more a firm invests in R&D, the better it is perceived by the stock market resulting in positive CARs. Panel B examines the data for the firms appointing a CHO only after the COVID-19 outbreak began. For both events examined, employing a CHO during this period has a positive impact on CARs for the [-10, +10] and [-5, +5] event windows, statistically significant at 5% level or better (e.g. column CHO_covid). Controlling for firm accounting fundamentals yields results in line with the control variables estimates presented in Panel A, but of higher statistical significance.

For the firms employing a CHO only after the COVID-19 outbreak began, first the exact CHO appointment date is recorded, and the stock return performance on the day of the appointment observed. Results are presented in Panel C. The coefficient of CHO_app is positive and statistically significant for both events and for both [-10, +10] and [-5, +5] windows. Complementing the findings from the previous panels, more debt reduce CARs, and higher growth positively affects CARs. Similarly, R&Dintensity, shows that the more a specific firm invests in R&D the better its CARs performance.

5. Concluding remarks

This study documents that having a chief health officer (CHO) appointed during the COVID-19 pandemic results in positive cumulative abnormal returns for firms listed on US stock exchanges. Tests reveal that size, leverage, growth, and degree of R&D intensity play significant role in companies’ financial performance during the outbreak.

This study is limited to the ability to study the short-term effects of COVID-19 on the stock markets in the US simply because of the time proximity of these events. Another limitation is that the analysis does not differentiate among various types of
investors. However, it is important and worth documenting these effects early: as the pandemic is still ongoing, firms may find the bottom-line result that the CHO is positively valued by the capital markets as an incentive to re-consider their existing strategies.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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