



Market valuation of crisis-responsive corporate social responsibility



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Purpose: This study examines the impact of corporate social responsibility (CSR) initiatives during a major public crisis on stock performance. We explore whether and why crisis-period donations could serve as credible market signals that affect market value, and how ownership type and industry characteristics moderate these effects.

Design/methodology/approach: Utilising a sample of 260 listed firms that donated during the coronavirus disease 2019 containment, we conduct a market model to estimate abnormal returns (ARs). We employ an event-study method to investigate the relationship between crisis-period CSR and market value and test contingent effects by ownership type and industry characteristic.

Findings/results: Crisis-responsive donations generated significantly positive ARs, suggesting that capital markets reward crisis-responsive CSR. However, long-term analyses show limited sustained effects, indicating that donations primarily function as short-term crisis signals. Moreover, value gains are stronger for non-state-owned enterprises (NSOEs) and for non-direct-contact industries.

Practical implications: Given the short-lived nature of CSR signals, firms must complement donations with long-term capability building. Firms should treat CSR as a strategic trust-building tool in crises, with NSOEs leveraging autonomy, state-owned enterprises (SOEs) enhancing transparency and firms in non-direct-contact industries mitigating hygiene concerns.

Originality/value: This study extends crisis management and signalling theory by (1) identifying CSR as a survival premium during crises, signalling resilience and resource sufficiency; (2) demonstrating that institutional embeddedness shapes CSR credibility, with SOE donations often seen as policy-driven while NSOE donations are viewed as discretionary and credible and (3) uncovering a crisis-induced consumer proximity liability, where industry context conditions CSR effectiveness.

Keywords: corporate social responsibility; market valuation; crisis response; event study; major public crises.

Introduction

How organisations operate during crises is becoming a growing focus of scholarly inquiry (Cao et al., 2025; Müller et al., 2025), as crises are frequently beyond the control of any organisation and can generate severe negative consequences (Raithel & Hock, 2021). Thus, organisations must not only maintain operations but also build resilience in such a crisis context (Issah et al., 2023).

Corporate social responsibility (CSR) initiatives represent a central means through which firms signal commitment to recovery and public accountability (Xiao et al., 2024). However, whether CSR is a worthwhile investment under resource-constrained environments remains contested (Ham & Kim, 2019). Some studies emphasised that crisis events intensify resource scarcity, prompting investors to view CSR activities as a drain on limited assets and raising concerns about financial stability (Xiao et al., 2024). Other studies highlighted that crises heighten the visibility of CSR, amplifying its role as a signal of responsibility and resilience (Glavas & Visentin, 2024).

Donations are particularly salient among CSR initiatives (Xiao et al., 2024), as Cao et al. (2024, p. 184) observe, 'although CSR involves economic, legal, ethical and philanthropic responsibilities, firms seem to view philanthropic donations as easy-to-implement'. This is because philanthropic donations often represent a discretionary allocation of resources, delivered through cash, goods or services, with immediacy and specificity (Cao et al., 2024). Meanwhile, they reveal a firm's

financial condition and may be perceived as strategically deploying surplus resources to build reputational capital (Glavas & Visentin, 2024). Donations are highly visible, especially in crises where media coverage, government announcements and beneficiary acknowledgements rapidly disseminate donation information (Borello & Muri, 2024). Consequently, donations hold both public and strategic significance, making them one of the most representative forms of CSR (Zhong et al., 2022).

Donations are usually expected to bring economic benefits by improving a firm's reputation, but in times of crisis, these effects are much less predictable (Houque et al., 2021). Their impact depends on factors such as the firm's operational conditions, industry characteristics and the specific type of crisis (Chang et al., 2018; Tilcsik & Marquis, 2013). Under these circumstances, investors tend to interpret donations in different ways, either as signals of responsibility and resilience or, conversely, as misallocations of limited resources (Bitektine & Song, 2022; Xiao et al., 2024). This difference in perceptions weakens the consistency of the relationship between donations and market value. While prior studies have recognised both the potential benefits and risks of CSR in crisis contexts, the mechanisms through which donations shape market value remain underexplored, especially under conditions of heightened uncertainty. Accordingly, a critical question emerges: Do crisis-period donations generate market value and through what mechanisms?

The coronavirus disease 2019 (COVID-19) pandemic provides a unique setting to address this question. Its sudden and global outbreak created distinct temporal boundaries, enabling the identification of donation-related market effects (Zhou et al., 2021). Because it affected almost all industries at once, investors paid closer attention to donation activities, and the influence of industry-specific differences was reduced (Lu et al., 2021b). Moreover, the severe shortage of medical supplies and protective equipment made donations highly visible (Borello & Muri, 2024), with symbolic significance surpassing that of routine CSR activities (Han et al., 2024). In this context, donations functioned not only as acts of responsibility but also as signals of resilience, reputation and institutional capital (Xiao et al., 2024). However, existing studies have rarely examined the mechanisms through which such signals operate or how their credibility and distinctiveness evolve over time, leaving important gaps in our understanding of investor responses during crises.

Drawing on this context, this study examines Chinese listed firms and their donations during the pandemic. Employing an event study method, it analyses stock market reactions and further assesses the moderating roles of ownership type and industry characteristics. The findings show that: (1) Crisis-period CSR generates significantly positive abnormal returns (ARs); (2) investors respond more positively to donations from non-state-owned enterprises (NSOEs) than from state-owned enterprises (SOEs) and (3) firms in non-consumer-contact industries gain more investor approval than those in consumer-contact industries.

This study makes three key contributions. Firstly, it extends CSR research into crisis contexts by demonstrating the market value of donations under abnormal conditions (Glavas & Visentin, 2024). Secondly, it uncovers that investor reactions differ by ownership type and industry characteristics, enriching the understanding of the effectiveness of signalling (Han & Lee, 2021; Zou et al., 2025). Thirdly, by comparing donation impacts before and after the crisis and examining longer-term impacts, it reveals the temporal dynamics of CSR effectiveness (Risi et al., 2023).

Theoretical backgrounds and hypotheses development

Crisis and corporate social responsibility

A crisis is commonly defined as a major, unpredictable event accompanied by potential negative impacts that may seriously damage an organisation and its employees, products, services, financial status and reputation (Lee et al., 2019). Its features are low probability, high impact and strong uncertainty (El Idrissi et al., 2023). Crises disrupt the regular operations of organisations and pose significant threats to their survival and development (Müller et al., 2025). With globalisation, firms face heightened exposure to crises such as natural disasters, financial turmoil and public health emergencies (Glavas & Visentin, 2024).

Among diverse crisis types, the COVID-19 pandemic has common impacts. Its abrupt onset, global reach and prolonged duration made it a typical crisis, severely disrupting supply chains, labour allocation and capital markets (Han et al., 2024). The lockdown of Wuhan in late January 2020, along with subsequent social distancing measures, transformed societal operations and brought many industries to a standstill. The pandemic is notable not only for its scale and severity but also because it provides a clear context to study how organisations sustain survival and development when resources are limited and uncertainty is high (Chen et al., 2022). Studying organisational responses to COVID-19 thus contributes to a general understanding of crisis behaviour rather than merely documenting an isolated case.

Crises simultaneously generate threats and opportunities, compelling organisations to develop novel strategies (Kozachenko et al., 2021). Corporate social responsibility frequently serves as a central method in this process. According to Carroll (1979), firms are expected to meet legal, ethical and philanthropic responsibilities in addition to economic ones. During crises, CSR allows firms to address urgent social needs and restore trust through actions such as donations, welfare programmes and employee support initiatives (Malik et al., 2023). Among these, donations are especially strategic: they are immediate, highly visible and easily attributed, enabling firms to demonstrate signals of responsibility and resilience under crises (Muller & Kräussl, 2011).

Existing research presents divergent perspectives on the market effects of CSR in crises (Li & Wang, 2024). On one hand, CSR can enhance corporate reputation, strengthen stakeholders' emotional identification, and generate positive market responses (Gao et al., 2023). On the other hand, resource constraints during crises may lead CSR to be viewed as an additional burden, raising investor concerns about financial stability and triggering negative market reactions (Yi et al., 2022; Zhang et al., 2020). Thus, the market value of CSR in crises is highly contingent on context.

Corporate social responsibility and firm value: A signalling perspective

Major crises increase market uncertainty (Taffler et al., 2024), limiting investors' ability to assess firms' performance and viability. This uncertainty generates information asymmetry (Hao et al., 2025). Signalling theory (Connelly et al., 2025) suggests that firms can mitigate such asymmetry by sending credible signals of resource strength and value through observable external actions. Corporate donations, as a prominent form of CSR, represent a particularly salient signal during crises (Gardberg et al., 2017; Zhou & Chang, 2024).

Firstly, donations involve real and irreversible resource commitments (e.g. cash transfers or material contributions), which enhance signal credibility (Yang & Chen, 2022). Financially weak firms are less able to afford such expenditures, whereas firms that donate demonstrate underlying strength in liquidity and resilience (Han et al., 2024). Secondly, donations are highly visible during crises, with media, public and government attention amplifying their signalling effects (He et al., 2025). These donations are often perceived as symbols of corporate responsibility and alignment with societal needs (Rolf, 2023). Investors may therefore perceive donations as signals of stability, leading to upward revisions in stock return expectations. Therefore, we propose:

H1: CSR initiatives during major crises significantly enhance firm value.

The effectiveness of signalling depends on both credibility and distinctiveness (Bettinazzi et al., 2024; He et al., 2025). Ownership type plays a vital role in shaping how donation signals are perceived. For SOEs, donations are often perceived as compliance with policy mandates rather than voluntary acts of responsibility (Duan et al., 2025). This perception reduces distinctiveness and undermines the credibility of donations as signals of financial strength. By contrast, NSOEs lack institutional support and face higher costs when donating during crises (Zhang et al., 2020). Their donations are therefore less expected and more credible, signalling that the firms have extra resources and resilience (Cao et al., 2025). Investors are consequently more responsive to NSOE donation signals. Therefore, we propose:

H2: CSR initiatives by NSOEs generate greater value enhancement than those by SOEs.

Industry characteristics influence the visibility and amplification of donation signals. In consumer-contact industries such as retail, food, healthcare and digital platforms, firms maintain frequent interactions with the public, and brand image is closely tied to consumer perceptions (Flammer, 2015). Donations in these industries are quickly disseminated through media and public discourse, strengthening their signalling effects (Gao et al., 2019). Investors are thus more likely to perceive donations as signals of market potential and reputational capital, producing stronger positive reactions (Chen et al., 2022). Conversely, in industries with low consumer proximity, such as upstream manufacturing or heavy industry, firms have limited direct contact with the public, and their donations attract less attention (Huang et al., 2022). As a result, investors may view these expenditures as routine costs rather than meaningful signals, reducing their market impact (Jahani et al., 2021). Therefore, we propose:

H3: CSR initiatives by consumer-contact firms generate greater value enhancement than those by non-consumer-contact firms.

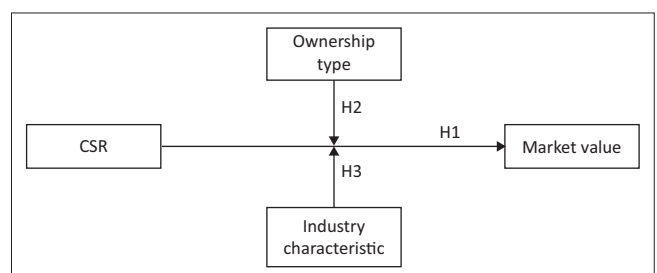
Figure 1 illustrates the theoretical model under consideration.

Methodology

Sample selection

Our sample comprises 260 A-share listed firms on the Shanghai and Shenzhen Stock Exchanges that issued their first donation announcements between 25 January 2020 and 31 March 2020. This period captures the critical phase of China's COVID-19 containment: January 25 marked the national lockdown initiation, while March 31 coincided with the subsidence of the first wave and the beginning of economic reopening (Pei et al., 2022). As the first country to impose a nationwide COVID-19 lockdown, China provided a uniquely clear and early crisis context for observing investor responses to CSR initiatives. Moreover, its distinctive institutional environment makes China a particularly salient setting for examining how ownership structures shape the credibility and interpretation of CSR signals. This temporal scope captures the peak of market uncertainty, when investor sensitivity to corporate social signals was particularly heightened (Sekerci et al., 2021).

Corporate donations are selected as the proxy variable of CSR (Zuo et al., 2022), supported by three theoretical



CSR, corporate social responsibility.

FIGURE 1: Theoretical model.

justifications. Firstly, in the context of public health crises, donations serve as an immediate and highly visible form of CSR, thereby reducing the ambiguity often associated with CSR behaviours (Zhong et al., 2022). Secondly, the monetary value of donations provides an objective and quantifiable measure, avoiding the subjective weighting bias inherent in multi-dimensional CSR indicators (Borello & Muri, 2024). Thirdly, crisis donations require substantial resource commitments, revealing organisational priorities and resource allocation capabilities more effectively than routine CSR activities (Zhong et al., 2022).

Donation data were systematically collected from regulatory filings on the China Securities Regulatory Commission (www.cninfo.com.cn), supplemented by financial variables from the China Stock Market and Accounting Research (CSMAR) database (<https://data.csmar.com/>) (Gao et al., 2019; Hu & Zhang, 2023). To ensure causal validity, we applied stringent screening criteria: (1) only firm-level cash and/or material contributions were included, excluding employee-driven initiatives to isolate strategic corporate decisions (Zhou et al., 2021); (2) only executed donations were counted, excluding pledged but unrealised amounts; (3) firms releasing concurrent major announcements (e.g. mergers and acquisitions, earnings revisions) within the [-5,+5] event windows were excluded (Chen et al., 2022).

The final sample covers 14 industries, with manufacturing firms constituting 67.69% ($n = 176$), a distribution consistent with China's industrial structure. Total donations amounted to ¥1.34 billion, averaging ¥5.22 million per firm, with significant variance (¥0.06–74 million), reflecting differences in corporate capabilities and CSR activities (Table 1).

Event study

This study employs the event-study method to assess the impact of donations during major crises on stock returns. The event-study method is widely used to measure the impact of discrete shock events on abnormal stock returns (Wang & Ngai, 2020). Specifically, it compares actual returns observed around the event day with expected returns that would have occurred in the absence of the event (Sorescu et al., 2017). This method assumes that stock prices adjust rapidly to new information (Fama, 1970). Under this assumption, donation disclosures provide investors with new signals about firms' future cash flows, and stock prices adjust accordingly to incorporate the market value of the disclosed information (Luffarelli & Awaysheh, 2018).

The event-study design is based on three temporal elements (Ullah et al., 2021). The event day is the date the firm

first publicly discloses donation information; this is the point at which the market receives the new information (Ullah et al., 2021). The event window is a short interval around the event day, used to capture potential pre-announcement leakage and any delayed market reactions (Sorescu et al., 2017). The estimation window is a prior period used to estimate a baseline (normal) return model for computing expected returns in the absence of the event (Aktas et al., 2007).

This method is particularly appropriate for this study for three reasons. Firstly, it directly captures the immediate market reaction to donation announcements, thereby minimising contamination from concurrent macroeconomic shocks or longer-term corporate developments (Aktas et al., 2007). Secondly, it reduces endogeneity concerns common in CSR research (Ongsakul et al., 2020). By focusing on the market's response to a specific and observable disclosure, the event study better isolates the effect of the announcement from pre-existing firm characteristics that may jointly influence both CSR activities and firm valuation. Thirdly, during crises such as the COVID-19 lockdown, firms are unlikely to time donation disclosures to exploit anticipated stock reactions. The unexpected and public nature of these announcements further weakens the probability of reverse causality.

Following the methodology of Ullah et al. (2021), the event in this study is defined as the first public announcement of donations made between 25 January 2020 and 31 March 2020. If no trading occurs on the announcement date, the first subsequent trading day is designated as the event day. An excessively long estimation window may introduce confounding influences from unrelated market events, while an overly short window may compromise the accuracy of regression coefficient estimation (Sorescu et al., 2017). Therefore, we select a 30–60-day period before the event day as the estimation window (Zhao et al., 2019). Given the stock market's high sensitivity to new information, the effects of donation announcements are expected to manifest rapidly (Xiao et al., 2024). To account for both early information leakage and potential delayed reactions, we define a 7-day event window, spanning 3 days before and 3 days after the event day (Ji et al., 2024; Lumbantoruan et al., 2021).

Model selection

Assuming there are N listed companies to be tested, a set of time series data of daily returns can be obtained by using Equation 1:

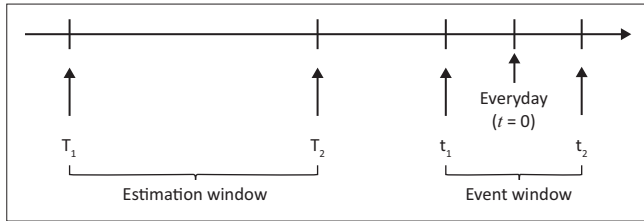
$$R_{it} = \begin{cases} t = t_2 \\ t = T_1 \end{cases} \quad [\text{Eqn 1}]$$

Where T_1 is the start of the estimation window, T_2 is the end of the estimation window, T is the event day, t_1 is the start of the event window, t_2 is the end of the event window and the time node of the entire window can be seen in Figure 2.

TABLE 1: Descriptive statistics of the donation amount.

N	Sum (million)	Mean (million)	Max (million)	Min (million)	Med (million)	SD
260	1340.52372	5.21605	74	0.06	2	917.79

SD, standard deviation.



Source: Adapted from Ullah, S., Zaefarian, G., Ahmed, R., & Kimani, D. (2021). How to apply the event study methodology in STATA: An overview and a step-by-step guide for authors. *Industrial Marketing Management*, 99, A1–A12. <https://doi.org/10.1016/j.indmarman.2021.02.004>

FIGURE 2: Illustration of an event timeline.

We use the market model to calculate the cumulative abnormal return (CAR), and its formula is as follows (Ullah et al., 2021):

Firstly, we run a regression between the stock and the return from T_1 to T_2 to estimate α_i and β_i (Equation 2 and Equation 3):

$$R_{it} = \alpha_i + \beta_i R_{mt} + \mu_{it} \quad [\text{Eqn 2}]$$

$$R_{it} = (P_{it} - P_{it-1}) / P_{it-1} \quad [\text{Eqn 3}]$$

$$(i = 1, 2, \dots, n; t = T_1, \dots, T_2)$$

where R_{it} is the return for the firm i on day t , R_{mt} is the market return of each company's corresponding market on day t . R_{it} is calculated according to the stock price of firm i , which is the closing price of firm i in the current period (P_{it}) minus the closing price of firm i in the previous period (P_{it-1}).

Secondly, we calculate the daily AR, which is obtained by subtracting the expected return from the firm's actual return during the event window (Xiao et al., 2024) (Equation 4):

$$AR_{it} = R_{it} - \hat{R}_{it} \quad [\text{Eqn 4}]$$

$$(i = 1, 2, \dots, n; t = t_1, \dots, t_2)$$

where R_{it} is the actual return of firm i on day t , \hat{R}_{it} is the expected return of firm i on day t , AR_{it} is the AR of firm i on day t because of the occurrence of the event.

We do the time-aggregation by calculating CAR for the individual firms as (Xiao et al., 2024) (Equation 5):

$$CAR_{it} = \sum_{t=t_1}^{t_2} AR_{it} \quad [\text{Eqn 5}]$$

$$(i = 1, 2, \dots, n; t = t_1, \dots, t_2)$$

where CAR_{it} is the cumulative abnormal return of firm i during the window period from t_1 to t_2 .

We calculate the daily average abnormal return (AAR) by (Equation 6):

$$AAR_{it} = \frac{1}{N} \sum_{i=1}^N AR_{it} \quad [\text{Eqn 6}]$$

$$(i = 1, 2, \dots, n; t = t_1, \dots, t_2; N \text{ is the } e \text{ sample size})$$

Average abnormal return is used to calculate the average cumulative abnormal return (CAAR) of the sample in the entire window period (Equation 7):

$$CAAR_{it} = \sum_{t=t_1}^{t_2} AAR_{it} \quad [\text{Eqn 7}]$$

$$(i = 1, 2, \dots, n; t = t_1, \dots, t_2)$$

Thirdly, the statistical method of the T -test is used to verify whether the CAR generated by this event is significant.

Ethical considerations

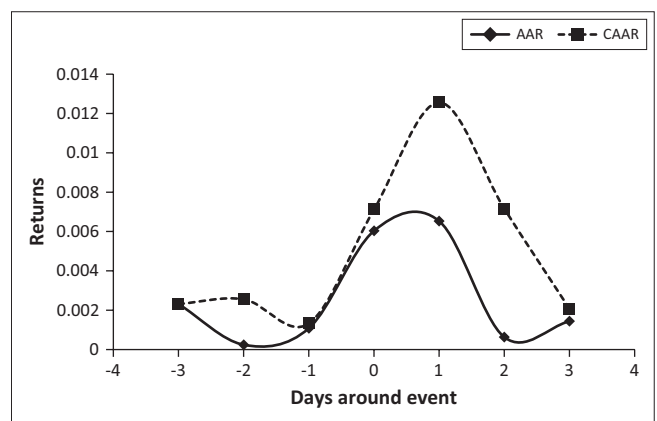
The authors confirm that the study relied exclusively on publicly available secondary data concerning publicly listed companies. Consequently, no human participants or animals were involved, and no informed consent was required.

Results

Event study analysis of full sample

By analysing the full sample data of 260 companies, we examine how AAR and CAAR evolve during the event window. As shown in Figure 3, the horizontal axis represents the event window timeline, and the vertical axis represents the return rate (ROR). On the event day, the market reaction is significantly positive, with an AAR is 0.6%. Average abnormal return and CAAR display a pattern of initial decline, subsequent increase and a final decline around the announcement date. The maximum CAAR is 1.26% on the day after the announcement. The stock market's strongest positive reaction coincides with the event day, when ARs peak.

As shown in the Table 2, the CAAR is significantly positive at the level of 5% in the interval of $[-1,1]$, $[-2,2]$, $[-3,3]$. It confirms that donation announcements have a positive impact on stock market performance, supporting H1. Donation disclosures provide investors with additional decision-making information, thereby enhancing perceptions of firms' operating conditions and future potential (Chen et al., 2022).



AAR, average abnormal return; CAAR, average cumulative abnormal return.

FIGURE 3: Average abnormal return and average cumulative abnormal return chart.

Nonetheless, the observed difference between the actual and estimated returns during the event window raises the question of whether the increase in stock returns is due to donation behaviour or broader market factors. To address this concern, we employ propensity score matching (PSM) to mitigate potential confounding effects (Zhou et al., 2021). Specifically, we identify firms that did not issue donation announcements related to epidemic prevention and control and match them with donating firms based on ROA, firm size (logarithm of employees), leverage ratio, ownership type, proportion of independent directors, largest shareholder ownership and industry classification. Using 1:1 nearest-neighbour matching without replacement, we obtain 260 non-donating firms, of which 255 remain after excluding those with incomplete stock return data.

For the matched non-donating sample, we adopt 02 March 2020 (the midpoint of the sample period) as the pseudo-event day (Wang & Li, 2016), define the estimation window as 30–60 days before this pseudo-event day, and take the trading days within 3 days before and after it as the event window (Nicolau & Santa-María, 2015). Test statistics for CARs show no significant deviation from 0 ($t = -0.3819, p > 0.5$). In addition, a two-sample t -test comparing CARs between donating and non-donating firms reveals a significant difference in means ($t = -2.05, p < 0.05$; Table 3). Together, these results provide robust evidence that the positive ARs observed are largely driven by donation announcements rather than extraneous market factors.

TABLE 2: Average cumulative abnormal return.

Event windows	CAAR	N	Mean	SD	Min	Max
[-0,0]	0.0060** (2.3113)	260	0.006	0.0421	-0.0863	0.2167
[-1,1]	0.0136*** (2.7970)	260	0.0136	0.0787	-0.1794	0.3976
[-2,2]	0.0145** (2.2860)	260	0.0145	0.1024	-0.2517	0.5776
[-3,3]	0.0183** (2.4700)	260	0.0183	0.1193	-0.2525	0.6668

Note: t -statistics in parentheses.

SD, standard deviation; Min, minimum; Max, maximum; CAAR, average cumulative abnormal return.

** $, p < 0.05$; *** $, p < 0.01$.

TABLE 3: Results of the two-sample t -test.

Donation	Obs	Mean	SE	SD	95% Confidence	Interval
0	255	-0.0025	0.0071	0.1123	-0.0166	0.0112
1	260	0.0183	0.0074	0.1193	0.0037	0.0328
combined	515	0.0079	0.0051	0.1164	-0.0022	0.0180
Diff	-	-0.0210	0.0102	-	-0.0411	-0.0009
diff = mean(1) – mean(0)	-	-	$t = -2.0500$	-	-	-
Ho: diff = 0	-	-	$df = 513$	-	-	-
Ha: diff < 0	-	Ha: diff != 0	-	Ha: diff > 0	-	-
$Pr(T < t) = 0.0204$	-	$Pr(T > t) = 0.0409$	-	$Pr(T > t) = 0.9796$	-	-

SD, standard deviation; SE, standard error; Obs, observation; df , degrees of freedom.

TABLE 4: Results of the two-sample t -test between different ownership.

Ownership	Obs	Mean	SE	SD	95% Confidence	Interval
0	221	0.0172	0.0055	0.0810	0.0064	0.0279
1	39	0.0062	0.0097	0.0608	-0.0259	0.0135
combined	260	0.0136	0.0049	0.0787	-0.025234	0.0233
diff	-	0.0234	0.0136	-	-0.06033	0.0502
diff = mean(1) – mean(0)	-	-	$t = -1.7192$	-	-	-
Ho: diff = 0	-	-	$df = 258$	-	-	-
Ha: diff < 0	-	Ha: diff != 0	-	Ha: diff > 0	-	-
$Pr(T < t) = 0.9566$	-	$Pr(T > t) = 0.0868$	-	$Pr(T > t) = 0.0434$	-	-

SD, standard deviation; SE, standard error; Obs, observation; df , degrees of freedom.

Event study analysis of ownership differences

We further divide the sample into two groups: SOEs and NSOEs. Mean CAR differences between the two groups are tested using Stata software. As shown in Table 4, the sample includes 39 SOEs and 221 NSOEs. Both groups exhibit significantly positive CARs; however, the mean CAR of SOEs is significantly lower than that of NSOEs. It suggests that NSOEs experience a stronger positive market response to donation announcements, supporting H2.

Event study analysis of industry differences

We classify firms by consumer contact using industry codes. Industries producing goods or services in direct contact with consumers are recorded as 1 (including communication and cultural industry, real estate, food and beverages, social service, daily chemical products, bicycle manufacturing, motorcycle manufacturing, automobile manufacturing, apparel and textiles, finance, insurance, retail, air transportation, clock manufacturing, household electrical appliances manufacturing, household plastics, household rubber products, 16 industries in total) and 0 otherwise. We then conduct a difference test of mean CARs across the two groups using Stata. Results, shown in Table 5, show that firms in the non-consumer-contact group exhibit positive mean CARs. This indicates that non-consumer-contact firms are more positively affected by donations than consumer-contact firms.

These findings contradict H3. The divergence is explained by the unique nature of COVID-19 compared with other natural disasters: its transmission occurs through direct human-to-human contact (Chen et al., 2022; Li et al., 2021). Firstly, the severe disruption of the pandemic forced many consumer-contact industries to halt production (Jum'a et al., 2024). For such firms, donations heightened investor concerns about operational continuity rather than mitigating them. Secondly, the risk of viral transmission raised consumer hygiene concerns for firms whose products involved physical contact (Siddiqi et al., 2022). Consequently, the capital market reacted less favourably to their donations. In contrast, firms without direct consumer contact faced lower infection-related risks, allowing their donations to generate a stronger reputational and signalling effect.

Additional analysis

We further investigate whether the market valued donations before the COVID-19 pandemic. Firms' donations in 2018 and 2019 are used as proxies for pre-pandemic CSR engagement. We examine the market response in 2019–2020 and 2020–2021, respectively. Market response is measured by the annual stock ROR (Dang & Nguyen, 2021). We control for ROA, firm size, cash holdings, leverage (Lev), Tobin's Q, ownership type (SOE) and time to market (TTM) (Hao et al., 2025). We use ordinary least squares (OLS) regression analysis and include industry and city fixed effects and cluster standard errors at the industry level (Cho et al., 2024).

As reported in Table 6, Models M1–M4 show no significant association between donations and market response. This

suggests that investors paid limited attention to CSR in normal times. Combined with the results of the event analysis, the market primarily recognises the value of CSR under crisis conditions.

We also examine the long-term impact of donations made during the COVID-19 pandemic. We link firms' donation behaviour in the lockdown to their subsequent stock returns from 2020 to 2022. This allows us to assess whether donations generated enduring reputational and relational capital or only short-term market benefits. Table 7 shows that only Model M5 yields a significant result, while Models M6 and M7 do not. The findings indicate that the value of donations lies mainly in short-term crisis response rather than in building sustainable competitive advantage.

TABLE 7: Future impact of coronavirus disease 2019 donations.

Variables	M5	M6	M7
	(ROR_2020)	(ROR_2021)	(ROR_2022)
Donate_Covid	0.034* (0.02)	0.038 (0.025)	0.014 (0.011)
ROA	0.151 (0.122)	0.015 (0.021)	0.041* (0.021)
Size	0.081 (0.047)	0.024 (0.016)	-0.024 (0.016)
Cash	0.023 (0.022)	-0.055*** (0.013)	-0.003 (0.009)
Lev	-0.052*** (0.015)	0.025*** (0.003)	0.017*** (0.004)
Tobin's Q	0.129*** (0.012)	-0.025*** (0.002)	-0.015*** (0.004)
SOE	-0.028 (0.019)	-0.059*** (0.019)	0.074** (0.032)
TTM	-0.003** (0.001)	0.005*** (0.001)	0.003* (0.001)
Observations	4167	4324	4390
R-squared	0.231	0.072	0.091

Note: Donate_i denotes the firm's total donations in year i, ROR_i denotes the stock annual return rate in year i; robust standard errors in parentheses.

ROR, return rate; SOE, state-owned enterprises; TTM, time to market; ROA, return on assets. *, $p < 0.1$; **, $p < 0.05$; ***, $p < 0.01$.

TABLE 5: Results of the two-sample *t*-test between different industries.

Industry	Obs	Mean	SE	SD	95% Confidence	Interval
0	188	0.0280	0.0091	0.1164	0.0111	0.0469
1	72	-0.0070	0.0126	0.1226	-0.0254	0.0245
combined	260	0.0415	0.0074	0.1193	0.0037	0.0328
diff	-	0.0295	0.0153	-	-0.0006	0.0596
diff = mean(1) – mean(0)	-	-	$t = 1.9272$	-	-	-
Ho: diff = 0	-	-	$df = 258$	-	-	-
Ha: diff < 0	-	Ha: diff != 0	-	Ha: diff > 0	-	-

SD, standard deviation; SE, standard error; Obs, observation; *df*, degrees of freedom.

TABLE 6: Market response to donations before the coronavirus disease 2019 pandemic.

Variables	M1	M2	M3	M4
	(ROR_2019)	(ROR_2020)	(ROR_2020)	(ROR_2021)
Donate_2018	-0.012 (0.01)	-0.027 (0.017)	-	-
Donate_2019	-	-	0.02 (0.015)	-0.02 (0.015)
ROA	0.041 (0.044)	0.148 (0.119)	0.149 (0.121)	0.022 (0.018)
Size	0.018 (0.016)	0.076* (0.043)	0.074 (0.045)	0.004 (0.011)
Cash	0.050*** (0.007)	0.032* (0.018)	0.031 (0.019)	-0.039*** (0.009)
Lev	-0.045*** (0.005)	-0.051*** (0.015)	-0.051*** (0.015)	0.029*** (0.003)
Tobin's Q	0.081*** (0.007)	0.126*** (0.012)	0.127*** (0.012)	-0.030*** (0.002)
SOE	0.023 (0.015)	-0.028 (0.017)	-0.029 (0.018)	-0.055*** (0.014)
TTM	-0.003*** (0.001)	-0.006*** (0.001)	-0.005*** (0.001)	0.002*** (0.001)
Observations	3554	3554	3773	3772
R-squared	0.174	0.234	0.233	0.076

Note: Donate_i denotes the firm's total donations in year i, ROR_i denotes the stock annual return rate in year i; robust standard errors in parentheses.

ROR, return rate; SOE, state-owned enterprises; TTM, time to market; ROA, return on assets.

*, $p < 0.1$; ***, $p < 0.01$.

Discussion and conclusion

General discussion

Drawing on signalling theory, this study explores how donations during the COVID-19 pandemic function as a strategic signal to the capital market (Connelly et al., 2025). In crisis contexts, where information asymmetry between firms and investors is more pronounced (Hao et al., 2025), donations become a credible signal of financial stability, organisational resilience and social commitment.

Firstly, we find that donations generate a significant positive market response, with CARs remaining above zero at the 95% confidence level during the event window. This suggests that investors perceive donations not only as acts of CSR but also as credible signals of profitability and resource sufficiency (He et al., 2025). By voluntarily allocating substantial financial or material resources in a period of high uncertainty, firms reduce ambiguity about their operational health and viability (Xiao et al., 2024). Moreover, donation announcements enrich the information available to investors, thereby reducing information asymmetry and enabling more informed investment decisions (Cho et al., 2024).

Secondly, the heterogeneous effect across ownership types can also be explained through signalling theory. For SOEs, donations are often perceived as politically driven (Gao et al., 2019). Consequently, the signalling value of such donations is weaker, as investors discount their informational content, perceiving them as obligations rather than discretionary acts. In contrast, NSOEs operate with greater autonomy in decision-making (Cao et al., 2025). When these firms engage in charitable giving, the action is perceived as a voluntary and costly signal of goodwill and organisational capacity. Because signals are more credible when they involve sacrifice or resource commitment, investors assign greater weight to the donations of NSOEs, resulting in more significant positive ARs.

Thirdly, industry characteristics moderate the signalling effect of donations (He et al., 2025). Firms whose products are in direct contact with consumers experience weaker or even negative market reactions. In the unique context of COVID-19, where the risk of viral transmission was associated with physical interaction, donations from such firms inadvertently drew investor attention to potential hygiene concerns and operational risks (Siddiqi et al., 2022). In this case, the signal was partially overshadowed by negative associations with health, safety and production uncertainty. Conversely, firms without direct consumer contact faced fewer such risks. Their donations therefore operated as clearer, more unambiguous signals of CSR and financial soundness, enhancing reputational benefits and strengthening investor confidence.

Fourthly, the analysis of long-term effects reveals that the signalling value of donations is largely short lived (Zhou & Chang, 2024). Our results show no significant

relationship between pre-pandemic donations (2018–2019) and subsequent market responses, suggesting that investors paid limited attention to CSR engagement under normal conditions. Likewise, when examining stock performance in the 2 years following the lockdown (2020–2022), a significant association is observed only in 2020, not in the following years. This indicates that the capital market primarily recognises the value of donations as short-term crisis-response signals, rather than as drivers of enduring competitive advantage. From a signalling perspective, donations during crises act as event-contingent signals. Their credibility and salience are heightened by extraordinary uncertainty, but their informational content diminishes as the crisis subsides (Xiao et al., 2024).

Theoretical implications

This study makes the following contributions. Firstly, we extend organisational crisis management theory by clarifying how CSR creates a survival premium during crises. In stable environments, CSR is typically regarded as a reputational asset with uncertain financial returns (Cho et al., 2024). In contrast, our findings show that investors generally pay little attention to CSR activities under normal conditions; however, during crises, CSR becomes a credible signal of resilience and resource adequacy (Dang & Nguyen, 2021). Investors reward crisis-driven CSR with valuation premiums because donations signal firms' operational strength and capacity to withstand uncertainty (Gao et al., 2019). This reframes CSR from a reputational accessory into a strategic capability for navigating crises (Falck & Heblich, 2007).

We further advance the literature by exploring the temporal dynamics of CSR signalling (Hu & Zhang, 2023). Our results reveal that the positive market response to donations is largely short lived. Corporate social responsibility donations function mainly as crisis-specific signals: they gain prominence and credibility during periods of uncertainty, but their impact diminishes once conditions stabilise (Gardberg et al., 2017). This temporal perspective refines signalling theory by showing that the value of CSR signals depends not only on cost and visibility but also on the broader environmental context in which they are perceived.

Secondly, we contribute to signalling theory by showing how ownership types shape the credibility and interpretation of CSR signals. Contrary to the common assumptions that state ownership enhances CSR legitimacy (Li & Sasaki, 2024), we find that donations by SOEs are often viewed as responses to government mandates rather than voluntary initiatives. As a result, their market impact is weaker. In contrast, donations by NSOE are perceived as more voluntary and authentic and thus generate stronger positive reactions from investors. This highlights how ownership influences investors' perceptions of the authenticity and significance of CSR signals during crises.

Thirdly, we extend signalling theory by identifying a crisis-induced consumer proximity liability. Prior studies emphasise

the reputational gains of CSR in consumer-contact industries (Han & Lee, 2021). However, our findings show that during a contagious health crisis, close contact with consumers amplifies concerns over operational and hygiene risks, reducing the market value of CSR efforts in these sectors. Conversely, non-consumer-contact industries face lower exposure risks and send clearer signals, thereby gaining stronger reputational and financial benefits from their CSR efforts. This demonstrates that industry context plays a decisive role in shaping the effectiveness of CSR signals during crises (Arian et al., 2023).

Practical implications

This study provides actionable insights for enterprises and policymakers seeking to leverage CSR as a strategic tool during crises.

Firstly, investors now assess firms not only by financial returns but also by their social value lenses (Lu et al., 2021a). Transparent CSR actions reduce perceived risk, build stakeholder trust and strengthen market reputation (Gardberg et al., 2017). Therefore, enterprises should embed CSR into their governance systems, treating it not as optional philanthropy but as a strategic investment in intangible assets that enhance resilience and market performance under uncertainty.

Secondly, for NSOEs, proactive CSR engagement generates stronger market rewards because investors view these initiatives as signals of adaptive governance and strategic agility (Yi et al., 2021). Non-state-owned enterprises should adopt value-driven CSR strategies that align social initiatives with brand positioning and stakeholder trust-building. In contrast, SOEs face scepticism (Hu et al., 2023), as their donations are frequently perceived as politically mandated rather than voluntary. To address this, SOEs need to innovate in donation practices, improve communication and enhance transparency to strengthen the credibility of their CSR efforts. Policymakers can support this shift by replacing administrative mandates with incentive-based frameworks that encourage strategic autonomy while maintaining social objectives.

Thirdly, firms in non-consumer-contact industries receive stronger market rewards for their CSR efforts during health crises, as their actions are perceived as more credible and less burdened by operational risk concerns. Accordingly, firms should tailor CSR strategies to industry-specific risk perceptions and communicate them with narratives that maximise reputational and financial gains (Arian et al., 2023).

Fourthly, since the signalling effect of crisis donations is short lived (Taffler et al., 2024), firms should not rely on one-off philanthropy for lasting market advantages. Instead, CSR should be embedded into long-term governance and resilience strategies (Cao et al., 2024), allowing social responsibility to evolve from a temporary crisis signal into a durable source of competitive strength.

Research limitations

We strive to be accurate and rigorous in this study, but several limitations remain.

Firstly, the findings are shaped by the unique context of COVID-19, which combined high public health urgency with severe shortages of medical resources – conditions that amplify market sensitivity to CSR visibility. Although we have sought to generalise the conclusion through theoretical framing, the type of crisis (e.g. natural disasters, economic downturns) and its duration may influence CSR effectiveness. Future research should test these dynamics across different crisis contexts.

Secondly, the sample focuses on Chinese A-share listed companies, which limits the external validity of the results. China's institutional context, characterised by strong state involvement and high social expectations of enterprises, may shape both corporate donation behaviour and investor perceptions differently from other markets. Comparative studies across countries and institutional settings are needed to validate the generalisability of our findings.

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Competing interests

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ORCID iD authorship contribution

Ya Su: Conceptualisation, Data curation, Methodology, Writing – original draft. Fei Tang: Formal analysis, Methodology, Supervision, Writing – review & editing. All authors reviewed the article, contributed to the discussion of results, approved the final version for submission and publication and take responsibility for the integrity of its findings.

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Data availability

The data that support the findings of this study are available from the corresponding author, Fei Tang, upon reasonable request.

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