Disaster Relief, Inc.

Hao Liang Cara Vansteenkiste *

Abstract

We investigate the motivations and value implications of corporate philanthropy in a global sample of firms providing relief to disaster-affected communities. We use an event-study setting around sudden disasters to show that although, on average, donations decrease returns, the saliency of large, attention-grabbing disasters amplifies the strategic benefits of donating. Exploiting disaster timing as an exogenous source of variation in the donation decision, we find that returns increase with disaster severity and saliency. Donations affect returns by strengthening customer awareness, sales, and stakeholder support. Overall, we show that corporate philanthropy increases shareholder value if the strategic benefits are sufficiently large.

Keywords: Natural disasters, corporate philanthropy, shareholder value, strategic benefits, agency costs

JEL Classifications: G32, G34, L21, M14

* Liang is at the Lee Kong Chian School of Business, Singapore Management University. Address: 50 Stamford Road, Singapore 178899. Email: hliang@smu.edu.sg. Tel: +65 6828-0662. Vansteenkiste is at the University of New South Wales. Address: School of Banking & Finance, UNSW Business School, UNSW, Sydney 2052, Australia. Email: c.vansteenkiste@unsw.edu.au. Tel: +61 2 9385 5709. We have benefited from conversations with Ron Masulis, Jianfeng Hu, Alexander Ljunqvist, Roger Loh, Michael Weisbach, Joe Zhang, as well as conference and seminar participants at FIRN, Asia-Pacific Corporate Finance Online Workshop, Australasian Banking and Finance Conference, PRI Academic Seminar Series, Financial Markets and Corporate Governance Conference, Fordham University, Fudan University, Peking University HSBC Business School, Singapore Management University, University of New South Wales, and Yonsei University.

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Corporate philanthropy is increasingly popular across the world, with corporate giving amounting to more than US$21 billion in 2019 in the United States alone.[1] This tradition can be traced back to the 17th century when the first modern corporations were established in Europe. For example, every buyer and seller that transacted with the Dutch trading company Compagnie van 's Gravenhage entered a contract that required that person to pay up to 15% of the total transport cost to support the poor people of the Dutch Republic.[2] Today, corporations typically donate millions of dollars in cash or resources to charities through corporate foundations and corporate giving programs, particularly in the context of disasters (Ballesteros, Usteem, and Wry, 2017). For example, the Great East Japan Earthquake and Tsunami, which occurred in March 2011 off the Pacific coast of Tohoku, claimed over 15,000 lives, and displaced about 500,000 people. The disaster triggered a humanitarian response of more than US$3.5 billion in donations, with two-thirds coming from non-governmental organizations and at least US$300 million from corporations.[3] More recently, the COVID-19 pandemic resulted in corporate donations of over US$9 billion worldwide, representing 44% of the total amount donated.[4]

Despite its long tradition and prevalence, standard economic theory predicts that corporate philanthropy should be uncommon (Benabou and Tirole, 2010; Kitzmueller and Shimshack, 2012). According to neoliberal economic theories, the prime function of any business enterprise is to generate profits, and its central responsibility is to its shareholders, not the community. They regard the idea that businesses should also seek to perform social tasks as incompatible with a

[1] Source: Giving USA 2020.
[2] Source: prospectus of The Hague Company, Leiden Regional Archives.
[3] Source: International Development Center of Japan; U.S. Chamber of Commerce Foundation Corporate Aid Tracker.
[4] Source: Candid. https://candid.org/explore-issues/coronavirus.

company's raison d'être (Salter, 2019). Friedman (1970) for example states that corporations should not engage in charity, unless doing so can maximize their profitability. Given the enormous amounts of money spent on charitable giving, it is worth asking why firms donate and what the value implications for shareholders may be. Yet, these issues remain underexplored in the literature.

The literature offers various views on corporate philanthropy, with different implications for firm value and societal welfare. Consistent with the idea that corporate philanthropy contradicts the profit-making purpose of a company, the prevailing view is that corporate giving is usually motivated by insiders' pursuit for private benefits at the cost of shareholders. For example, Masulis and Reza (2015) find that CEOs often use corporate resources to give to charities in which they or other insiders serve as trustees, directors, or advisers. Such affiliated donations typically represent a misuse of corporate funds, which may distort investment and financing decisions (Masulis and Reza, 2020), and impair independent directors' monitoring incentives (Cai, Xu, and Yang, 2021). This view considers corporate giving as a manifestation of deeper agency issues in the firm, and as such is often dubbed the "agency view" of corporate philanthropy (Masulis and Reza, 2015).

However, corporate philanthropy can also bring reputational benefits to firms. The strategic philanthropy view links corporate giving to the firm's business interests, and suggests that corporate philanthropy can increase firm value by enhancing the firm's reputation, social image, and customer awareness (Navarro, 1988). This may help attract customers and increase sales (Madsen and Rodgers, 2014), reduce future litigation and regulatory enforcement costs (Godfrey, Merrill, and Hansen, 2009), and serve as a community investment that increases support from local stakeholders and employees (Montgomery and Ramus, 2007). Based on this "doing well by doing good" view, corporate giving can result in better financial performance.[5]

[5] Corporate giving can also be motivated by firms seeking political influence, e.g., through donating to congressional districts whose representatives are on committees that are strategically relevant to the firm (Bertrand, Bombardini,

Distinguishing these two views is not a straightforward exercise, as they are often contested in the literature and have received mixed empirical support. This is at least partly driven by the endogenous nature of philanthropic giving and the lack of detailed data on firms' donations. The decision to donate is not a random choice. Donating can be the result of a firm's financial and operating performance, and corporate philanthropy and firm performance may both be driven by unobservable firm or industry characteristics. Moreover, corporate donations are generally disclosed in the end-of-year annual report, together with a broad range of information on nonphilanthropic activities, accounting data, firm performance, etc., complicating the analysis of the direct effects of giving on firm value. As a result, researchers have been unable to identify the true motivations and consequences of corporate philanthropy.

In this paper, we address these challenges by exploiting corporate giving in the context of natural disasters. Natural disasters are large, salient shocks that attract extensive media coverage and draw attention from customers, stakeholders, as well as shareholders (Barber and Odean, 2008). Research in psychology and behavioral economics has shown that people tend to exaggerate the probability of extreme events (such as natural disasters) and react disproportionally as extreme events come to mind more easily and induce an "availability heuristic" (Bordalo et al., 2012; Dessaint and Matray, 2017). In financial markets, such disproportional reactions usually lead to an excessive premium for rare risk and the actions taken to mitigate it (Bordalo et al., 2013). In addition, higher salience comes with increased media coverage, which is often associated with higher customer awareness and reputational gains (Servaes and Tamayo, 2013; Madsen and Rodgers, 2014). For example, the Chinese sports company Hongxing Erke went viral on Chinese

Fisman, and Trebbi, 2021), which is consistent with the strategic philanthropy view. However, political motivations are less likely to drive corporate giving in a natural disaster setting, where recipient districts are determined by the disaster zone.

social media and saw sales skyrocket to 52 times their normal levels following the announcement of a US$7.7 million donation to victims of major floods in the Henan Province in late July 2021.[6] In other words, the social capital- and reputation-building benefits of corporate giving are amplified in the context of salient events, such that strategic philanthropy becomes relatively more important in a disaster setting relative to a non-disaster setting.

In contrast to other types of corporate giving, disaster relief donations are typically revealed in highly visible announcements made in the days and weeks following a disaster. This enables the use of an event study approach investigating stock market returns around the disaster and the donation announcement to directly capture investors' reactions to corporate disaster relief giving. Therefore, while on average market reactions may reflect agency-motivated giving, they are more likely to reflect the strategic benefits of donating following more salient events, which we capture by calculating cumulative abnormal returns (CARs) around disaster relief donations.

We hypothesize that the extent to which CARs reflect strategic philanthropy depends on the saliency of the disaster: larger, more salient disasters attract more media coverage and stakeholder attention, and increase the perceived legitimacy of using corporate funds to provide relief. We exploit contextual factors such as disaster severity, relevance, timing, the form and amount of disaster relief, as well as various firm-, industry-, and country-level characteristics to capture saliency and to distinguish strategic philanthropy from agency-motivated giving.

Based on an international sample of 20,467 firms across 37 countries over the period 2006–2018, we find that disaster relief giving by firms in unaffected areas is associated with 1.4%-2% lower CARs in the [-1,+21]-day window following the disaster. This is equivalent to a US$7.9 million loss in market value, far exceeding the direct mechanical effect of giving away cash

[6] https://www.forbes.com/sites/markfaithfull/2021/08/05/sales-soar-at-ailing-chinese-brand-erke-after-good-deed-goes-viral

resources (US$0.5 million). Instead, these negative market reactions are consonant with the idea that, on average, disaster relief giving reflects agency-motivated giving. However, consistent with saliency amplifying the strategic benefits of donating, we find that returns to corporate giving increase with disaster saliency. Proxying saliency through disaster severity (in terms of damage caused) and relevance (in terms of web search intensity), every percentage point increase in severity and search intensity boosts the returns from donating by 0.6% and 1.7%, respectively. In other words, market reactions reflect the higher strategic benefits of donating as disaster saliency increases.

We address the concern that a firm's decision to donate is not random by using the timing of the disaster relative to the firm's financial and calendar year as an instrument for donation propensity. Firms' propensity to donate is higher for disasters occurring early in their financial year, as firms often set aside a fixed amount of funds for charity at the start of the year, and for disasters occurring in December, when most tax-driven charitable giving tends to take place. Our data indeed shows that the likelihood of unaffected firms donating is 3-5 times higher for disasters that occur at the start (end) of the financial (calendar) year than for disasters occurring in other months of the year. We confirm our baseline results in this instrumental variable setting and find that a higher donation likelihood is positively related to CARs for large disasters. We obtain similar results when using a firm's geographical proximity to the disaster as an alternative instrument in a sample where we exclude firms with customers, subsidiaries, or suppliers in the disaster zone.

To mitigate the concern that we capture market reactions to the indirect effects of the disaster on the firm's operations or stakeholders, we manually collect data on announcements of firms' disaster relief efforts in media releases. We confirm that over 95% of firms announce their donations in the [-1,+21]-day window around the disaster event, and that [-1,+1]-day CARs around

the disaster relief announcement significantly increase as disaster saliency increases.

Next, we distinguish strategic philanthropy from agency-motivated giving by focusing on firm- and industry-level characteristics. We find that returns are higher for donating firms with more domestically oriented operations and for firms that rely more on marketing in their day-to-day operations. Conversely, we find that returns are more likely to reflect agency-motivated giving (i.e., are more negative) in firms with poor governance. We also find that a country's institutional environment matters: returns are lower for donors in countries where governments and other organizations provide more disaster relief funding.

Next, we find that donating affects returns by improving the firm's reputation and by increasing stakeholder support. Firm-specific web searches increase by 34% for firms donating to a large disaster relative to nondonating firms, as do employee satisfaction scores, consistent with greater customer awareness and employee support following large disasters. When investigating donation-specific characteristics, we find that very large or very small donations as well as cash donations are associated with more negative returns. We further manually confirm that the firms in our sample are unaffected by excluding those with subsidiaries, suppliers, or customers in affected areas, and confirm our results for various subsamples and specifications.

Overall, our results suggest a more nuanced view of corporate philanthropy. Although the strategic benefits of corporate giving on average do not outweigh the costs stemming from agency problems, corporate philanthropy can add value for shareholders when firms use their giving to build social capital and stakeholder support in the context of salient, attention-grabbing events. This is consistent with the Friedman doctrine (Friedman, 1970): corporate philanthropy has existed for centuries because in certain circumstances, it can contribute to firm profitability.

Two guideposts can be used to place our findings in the literature. First, exploiting natural

disasters as a shock to corporate philanthropy allows us to distinguish the agency view from the strategic philanthropy view and enables a more precise analysis of the motivations and value implications of corporate philanthropy. The prevalent view in the literature is that corporate giving reflects agency problems, which has received empirical support (Fich, Garcia, Robinson, and Yore, 2009; Masulis and Reza, 2015; Cai et al., 2021). However, our setting allows us to identify the strategic dimension of corporate giving, which has not received much attention in the literature.[7] Existing studies use different empirical methodologies to reduce endogeneity concerns, such as a Heckman selection model (e.g., Fich et al., 2009), a difference-in-differences setting using the 2003 U.S. Dividend Tax Reform Act (Masulis and Reza, 2015), or an instrumental variable approach (Cai et al., 2021), but these are typically limited to country-specific examinations. Our study uses disaster timing and disaster location to address the endogeneity of the decision to donate in an international event study setting. Moreover, although our analysis focuses on natural disasters, its implications likely hold for other salient events, including social movements and pandemics, which occur frequently across the world.

Second, our work contributes to the broader literature on corporate social responsibility (CSR). Corporate philanthropy is an important element of CSR (Benabou and Tirole, 2010) but has not received much attention, likely due to the limited availability of donation data and significant challenges in addressing endogeneity issues. In addition, CSR and philanthropy cannot easily be differentiated from each other, as the terms are often used interchangeably. Philanthropy is typically seen as financial contributions, although it can also include the provision of employee time, equipment, or infrastructure (Seifert, Morris, and Bartkus, 2004; Godfrey, 2005). CSR is

[7] A notable exception is Madsen and Rodgers (2014), who similarly argue that stakeholder attention, driven by the legitimacy, urgency, and enactment of disaster relief, is a key determinant of performance. Our finding that CARs are higher for donations to more salient, attention-grabbing disasters supports this hypothesis. Madsen and Rodgers (2014) however exclude non-donating firms from their sample and do not account for the role of agency-motivated donations.

embedded in the firm's business model and its business practices. By investigating philanthropy in a disaster relief setting, we can separate the strategic and opportunistic motivations for giving, which is difficult to do when studying CSR. In this regard, we join others who examine whether corporations should be shareholder- or stakeholder-centric and the trade-off between shareholder value and societal welfare (Kitzmueller and Shimshack, 2012; Allen, Carletti, and Marquez, 2015; Ferrell, Liang, and Renneboog, 2016).

1. Data and Empirical Strategy

In this section, we explain our data sources and show the summary statistics of our key variables. We also discuss our empirical strategy.

1.1 Data

Our sample consists of 20,467 international, publicly listed firms for which accounting and financial data are available from Datastream, Compustat, or CRSP. As we are interested in the value implications of donating around natural disasters, we measure shareholders' market reactions around the disaster using an event study approach. We calculate a firm's CARs relative to expected capital asset pricing model (CAPM) returns based on the local market index of the firm's home country and use an event window of one day before the disaster to 21 days after the disaster to ensure we capture the majority of firms' disaster relief announcements following the event.[8,9] For example, Apple donated US$2 million immediately after Hurricane Harvey hit Texas on August 24, 2017 but the bulk of its donation (US$5 million) was granted 15 days after the

[8] We consider the country where the firm is headquartered as the home country, rather than the country of incorporation, as the headquarters location is typically where most business is conducted, where the firm is listed, and where most employees, customers, and suppliers are located.

[9] We include one day before the disaster to account for the possibility that some firms proactively announce their donation prior to the actual disaster hits, and for cases where disasters happen late in the day.

disaster on September 8. Similarly, AkzoNobel and Honeywell donated US$250,000 and US$2 million, respectively, to Hurricane Harvey victims on September 7, two weeks after the disaster hit.[10] Based on a sample of disaster relief press releases and media announcements, we confirm in Figure 1 that less than 5% of donations were made outside the [-1, +21]-day window around the disaster. This alleviates the concern that our event window may capture market reactions to events other than the donation announcement.[11]

[Insert Figure 1 about here]

We obtain data on natural disasters from EM-DAT, an international disasters database that includes all disasters worldwide since 1900 for which at least 10 or more deaths occurred, 100 or more people were affected, a state of emergency was declared, or a call for international assistance was made. The database lists the cities, counties, and regions affected by the disaster, allowing us to distinguish firms headquartered in affected areas from those located elsewhere. As we are interested in firms' market reactions following a natural disaster, our unit of observation is at the firm-disaster level. We consider all firm-disaster pairs where the disaster occurred in the same country as the firm's headquarters.[12] In order to ensure the disaster is unanticipated, we focus on sudden disasters, defined as those categorized as an "earthquake," "landslide", or "volcanic activity," or under the sub-categories "tropical storm," "flash flood," "tropical cyclone," or "tsunami" (sub-categories of storm types) in EM-DAT.[13] This results in a total sample of 53,388

[10] Although the actual transfer of the donation may occur months after the disaster, the announcement of the donation is likely to be made in the three weeks following the event. Similarly, although firms' disaster relief programs may be long-term projects covering months or years, their announcement is likely to shortly follow the event.
[11] EM-DAT identifies the disaster start date as the first date the disaster caused substantial damage. For example, Hurricane Harvey reached tropical storm status on August 17, but it only made landfall on August 24. Therefore, August 24 is considered as the start date. Subsequent landfalls in other areas are not listed as separate events.
[12] In unreported tests, we find that our results also hold when considering donations by firms located outside of the country where the disaster occurred. However, the effects are economically smaller.
[13] Non-immediate disasters, such as droughts or extreme heat and cold waves, can to a certain extent be anticipated and may be viewed as less salient by investors and the public. There is often no clear-cut start date for a long-term disaster, with the scale of the disaster typically only becoming clear weeks or months later.

observations covering 330 natural disasters in 37 countries, of which 52,536 observations are firms located in ZIP or Postal Codes not directly affected by the disaster (the remaining 852 observations are firms in affected areas). Most disasters occurred in China (82), the U.S. (58), and Japan (41), as shown in Internet Appendix IA.A. Our main analysis focuses on firms in unaffected areas to avoid capturing market reactions to disaster-induced operational or financial changes in the firm.

We obtain data on firm-level donations from Foundation Maps, which collects worldwide data on foundations and grants since 2006. It provides highly detailed information on funders, grant descriptions, and recipients. Foundation Maps collects data from various sources, including government filings, websites, news items, and other funder networks. Funders and recipients can also submit their own information. Foundation Maps covers grants by individuals, corporations, governments, public charities, and nongovernmental organizations. To our knowledge, it is the most comprehensive data source for donations information—especially for corporate philanthropy—with global coverage. For the purpose of our analysis, we collect data on grants by publicly listed corporations (ad hoc, via a corporate giving program, or via a company-sponsored foundation) and that can be linked to disaster and emergency management or that have disaster victims as the targeted population.

We manually match corporate grant information from Foundation Maps to our sample of publicly listed firms based on foundation and donor names, descriptions, and locations. We match each grant to a firm-disaster pair based on the recipient's location and grant description. This allows us to identify market reactions to a firm's disaster relief donation decision while accounting for the severity of the disaster. For example, our matching identifies Mitsubishi's US$1.7 million donation to victims of the 2011 Great East Japan Earthquake and Apple's US$2.5 million grant to victims of the 2012 Hurricane Sandy.

Although the percentage of publicly listed firms making disaster-specific donations is relatively small, the large coverage of our analysis means the donation-level sample still consists of 1,219 disaster-specific grants by 433 firms. The large share of nondonating observations arises from the fact that a vast majority of publicly listed firms do not donate to small- or medium-sized disasters.[14] Figure 2 provides a geographic overview of our sample distribution, where darker shades indicate countries that are represented more frequently in our sample. Countries with more disasters (e.g., the U.S. and China) or with more publicly listed firms (e.g., Japan, Australia, and India) appear more often in our sample. Countries that have no recorded disasters in the EM-DAT database between 2006 and 2018 or that have no publicly listed companies in CRSP or Compustat are not included in our sample and are indicated in gray.

[Insert Figure 2 about here]

1.2 Summary statistics

Table 1 provides summary statistics for our sample consisting of 52,536 firm-disaster observations. We consider a range of variables that may affect philanthropy and market reactions around disasters, discussed in more detail in Section 1.3. Stock market reactions following a natural disaster are close to zero at 0.1% (10 basis points). Given that these are firms located in unaffected areas, the small economic effect is not surprising. 2.3% of firms make disaster relief donations, for an average amount of US$502,680. The average sudden disaster results in US$4 billion in damages.

[Insert Table 1 about here]

[14] In order to address the concern of imbalance between donating and non-donating firms, we perform tests based on geographical matching between these two types of firms in Table 5. We also confirm our results for a subsample that does not include disasters for which no donations materialized (results available on request).

Table 2 shows summary statistics for donating and nondonating firms. CARs are 0.4% lower for donating firms, but the difference is not statistically significant. Donor firms tend to be larger in terms of total assets and market value, and they have a higher average sales-to-assets ratio. In line with the agency view of corporate philanthropy, donor firms also have weaker corporate governance, proxied by a higher value of the Entrenchment Index (E-Index). The E-Index is a self-constructed index for our international sample, which closely follows the U.S. E-Index developed by Bebchuk, Cohen, and Ferrell (2009). Firms that make disaster-specific donations tend to be more profitable, have more fixed assets, lower R&D expenses, and higher institutional ownership. One economic reason for firms to engage in philanthropy is the tax deductibility of donations (Navarro, 1988). Donors are indeed less likely to have zero or negative tax rates (i.e., tax rebates), and they have slightly higher effective tax rates.

[Insert Table 2 about here]

1.3 Methodology

To evaluate stock market reactions to corporate donations around natural disasters, we estimate the following regression:

$$CAR[-1,+21]_{i,d} = \alpha + \beta \cdot (Disaster\ Relief\ Donation)_{i,d} + \boldsymbol{\gamma \cdot (Controls)_{i,t-1}} + e_{c,t} + f_{j,t} + g_g + \varepsilon_{i,d},$$

where *Disaster Relief Donation* is a binary indicator for whether firm *i* donated following disaster *d*; and *Controls* is a vector of firm-level control variables, including an indicator for foreign activities, ROA, PPE-to-assets, firm size based on its total assets, and the firm's effective tax rate, measured in the year before the disaster happened. *e* denotes country × year fixed effects, *f* is a vector of industry × year fixed effects, and *g* denotes district (county, state, province, or administrative area) fixed effects. The inclusion of these various fixed effects subsumes all

country- and industry-level factors that may affect stock returns and corporate philanthropy decisions, and compares donors and nondonors within the same country-year and industry-year. In additional tests, we split the event window in a [-1,+3] and [+3,+21] window, and we use a [-1,+1] window for a subsample of donation announcements in media releases. To investigate the trade-off between agency costs and strategic philanthropy, we interact *Disaster Relief Donation* with variables that capture disaster saliency, such as damage caused and web search intensity, as well as a range of firm-, industry-, and donation-specific characteristics, including marketing intensity, industry regulations, and donation size and type. Variable definitions are in Appendix A.

Our identification strategy is based on natural disasters' unanticipated and attention-grabbing nature, which affects the trade-off between agency-motivated and strategic philanthropy. In addition, the use of CARs implies that we can capture market reactions to disaster-related corporate giving, rather than to other firm characteristics, as we can account for firms' normal returns absent a disaster. We also perform an instrumental variable test where we use disaster timing relative to the firm's fiscal year and the calendar year as an instrument for the endogenous decision to donate, as firms have more budget to dedicate to disasters occurring early in the financial year and as donation propensity is typically higher in December. For robustness, we use the firm's geographical proximity to the disaster as an alternative instrument for its donation decision, where we exclude firms with subsidiaries, customers, or suppliers in disaster-affected areas. In additional tests, we further control for a host of fixed effects, including firm fixed effects, which allows us to rule out a wide range of underlying drivers.

2. Results

In this section, we show our baseline results as well as results for tests that disentangle strategic

and agency-motivated philanthropy. We also test other potential channels, donation characteristics, and the determinants of disaster relief giving.

2.1 Main results

We investigate the relation between corporate philanthropy and firm value by considering CARs for donating and nondonating firms in unaffected areas following an unexpected, sudden natural disaster. Panel A in Table 3 reports the results from OLS estimations for our main specification as set out in Section 1.3. In all tests, we control for a firm's international focus (*Foreign Activities*), profitability (*ROA*), fixed assets (*PPE/Assets*), size (*Size*), and tax rate (*Effective Tax Rate*) and include country-by-year fixed effects, industry-by-year fixed effects, and firm district fixed effects.

Several important findings emerge. First, we show in column (1) that donating firms located in unaffected areas earn 1.4% lower returns in the [-1,+21]-day window around the disaster relative to nondonating firms in unaffected areas.[15] The negative stock market reaction is in line with findings in previous studies, and consonant with the notion that agency-related costs on average outweigh the strategic benefits associated with disaster relief giving. Although there may be a mechanical effect due to the firm giving away cash when making a donation, the average market value loss for donating firms far exceeds the average donation amount (US$500,000). The consistency with previous studies reduces the concern that our findings are driven by sample choice (i.e., international sample) or that they are specific to disasters. The coefficients for the control variables are largely insignificant, indicating that few other firm characteristics explain the CARs, reducing concerns that we capture effects not related to disaster relief donations.

Second, when we separate the 23-day event window into a [-1, +3]-day window (which is

[15] We perform a placebo test by calculating CARs over a [-30, -1] window before the disaster, and find no significant results. Results available upon request.

more likely to capture any direct disaster effects, column (2)) and a [+3, +21]-day window (which is more likely to capture the donation effect, column (3)), we find negative and significant coefficients for both windows. We however retain the [-1,+21]-window for our main tests as a sizeable fraction of firms announce their donation between days t_{-1} and t_{+3}. The returns for unaffected donating firms are 0.4% lower in the "disaster window" and 5% lower in the "donation window" relative to non-donating firms. These results suggest that the negative stock market reaction is not entirely triggered by a disaster per se, but to a large extent by a firm's disaster relief giving, and resonates with the agency view of corporate philanthropy. We additionally control for firm fixed effects, obtaining qualitatively similar results in column (4). However, the inclusion of firm fixed effects reduces our sample size somewhat as some firms do not have at least two (disaster donation) observations over our sample period. We therefore focus on the specification in column (1).

In Panel B, we investigate the hypothesis that the returns from donating increase with the saliency of the disaster, which increases the strategic benefits of giving. We capture disaster saliency by considering disaster severity and relevance. More severe disasters are generally subject to more extensive media coverage and publicity and increase the legitimacy of the donation. Firms' charity campaigns are more visible and can provide a stronger signal in terms of stakeholder commitment and support. We therefore expect that the returns from donating increase with the scale of the disaster.

We proxy for disaster saliency by considering disaster severity in terms of (the logarithm of) the total damage caused in dollar value.[16] Consistent with the notion that larger disasters attract

[16] Total damage only captures physical damage to infrastructure, pastures, etc., but does not account for human deaths. In Internet Appendix IA.B, we define disaster size based on total deaths. The coefficients are similar in terms of significance and magnitude.

more attention and increase the legitimacy of donating, we find in column (1) that corporate giving increases CARs by 0.06% for every percentage increase in disaster size. Expressed in terms of disaster size deciles, disaster relief donations in the lowest decile reduce returns by -3.8%, and moving up one decile increases returns by 0.4%, such that returns turn positive for disasters in the highest size decile.

In column (2), we investigate disaster relevance in terms of public awareness, proxied by web search intensity for disaster-related search terms. More salient disasters attract more attention, which should be reflected in how often they are detected in web searches. Search intensity is measured as the logarithm of the number of Google searches for a specific disaster in the month that it occurred (e.g., the frequency of people searching for information using keywords such as "hurricane," "tsunami," "earthquake," etc.). The results in column (2) align closely with those for disaster size: every percentage increase in search intensity increases firm returns by 1.7%. These results therefore reflect the increased strategic benefits of donating when public awareness of the disaster is higher.

We also construct indicators for small disasters (damage in the bottom quartile, i.e., less than US$2 million) and for large disasters (damage in the top quartile, i.e., greater than US$1.8 billion). Column (3) shows that the negative returns of donating for unaffected firms is driven by small-scale disasters, as only the interaction coefficient appears statistically significant. This aligns with our expectations that there are fewer strategic benefits from donating (through engaging in marketing, reputation-building, and community-building) following small disasters. In unreported tests, we find that the negative coefficient (-6.9%) is driven by "vague" donations for which little information is provided on how the funds will be used, and by overly large donations to small disasters: above-median donations (averaging US$509,533) to small disasters trigger up to -12.2%

lower returns, whereas below-median donations (averaging US$48,170) earn -1.0% lower returns.

Column (4) shows that donors earn 1.8% lower CARs than nondonors if the disaster is small or medium, but this effect is offset for large-scale, attention-grabbing disasters, resulting in zero net returns. This again confirms that disaster saliency matters: for firms in unaffected areas making donations following small-scale disasters, the lack of strategic benefits, reduced legitimacy, and potentially higher agency concerns result in negative shareholder returns. For larger, more salient disasters, the strategic value of disaster relief giving is higher, offsetting the agency-related costs.[17] A potential concern is that non-donating firms may be indirectly affected by the disaster, resulting in fewer resources to donate and lower returns (due to e.g., supply chain disruptions) following the disaster. We address this concern in Panel B of Internet Appendix IA.C. We obtain data on U.S. firms' subsidiaries (from WRDS Company Subsidiary Data), major customers (from WRDS Segments), and suppliers (from FactSet Revere) and manually verify whether these are located in affected states or counties. We then exclude firms with subsidiaries, customers, or suppliers that may be affected by the disaster, and find that our results remain strongly significant.[18]

[Insert Table 3 about here]

2.2 Instrumental Variable Approach

Although natural disasters are largely exogenous, the decision to provide disaster-relief giving is still an endogenous choice by the firm. We address this concern by using the timing of the disaster relative to the calendar year and the firm's financial year as an instrumental variable (IV) for the donation decision. The first underlying assumption is that, all else equal, firms are more

[17] We confirm these results in Panel A of Internet Appendix IA.C for a sample of U.S. firms as this is the benchmark sample used in the literature on agency-motivated donations. Our results remain unchanged.
[18] We further control for firms having affected subsidiaries, customers, or suppliers in column (7) in Table 11, where we find that the strategic benefits of donating are higher for firms with suppliers or customers in affected areas.

likely to donate if a disaster occurs at the start of the financial year. Firms often set aside a fixed amount for philanthropy at the start of the financial year: for example, the Ikea Foundation places funds with emergency relief organizations at the start of each year so that they can allocate it as needed.[19] If an unexpected disaster occurs later in the year, these funds may have been exhausted, decreasing the likelihood that the firm will provide a disaster relief donation. Second, charitable giving tends to cluster in December, driven by tax planning motives, traditional year-end fundraising campaigns, and the holiday season (Almeida et al., 2001; Yermack, 2009). Our data indeed shows that the likelihood of a firm donating at the beginning of its financial year is almost five times larger than the likelihood of donating in the middle of its financial year, and the likelihood of donating in December is three times larger than the likelihood of donating in the middle of the calendar year. This setting therefore allows us to exploit the arguably exogenous variation in firms' financial reporting dates, calendar dates, and disaster dates. We label this IV *Disaster Timing*, and test the relevance condition that it is correlated with *Disaster Relief Donation* below. In addition, it is unlikely that a firm's financial year-end date affects abnormal returns in the 3-week window after a disaster through channels other than the firm's decision to provide disaster-relief giving. To verify this, we compare firm × disaster observations where the disaster occurred in December or at the start of the firm's financial year to those where the disaster occurred at other times in the year in Internet Appendix IA.E. We find no significant differences in financial performance or in the degree to which the firm may be affected, suggesting that the donation decision is unlikely to be driven by firm-level fundamentals.

In Table 4, we instrument *Disaster Relief Donation* with *Disaster Timing*, and *Disaster Relief Donation* × *Large Disaster* with *Disaster Timing* × *Large Disaster*. Note that we exclude country

[19] https://ikeafoundation.org/about/the-way-we-work/

× year FE as there is relatively little cross-firm variation in financial year-end dates within countries. We find in columns (1) and (2) that firms are more likely to donate if a disaster occurs in December or at the start of their financial year (F-stat = 285.33), with both instruments being strongly positively related to the donation likelihood. In the second-stage estimation in column (3), we find that a higher donation likelihood, as predicted by disaster timing, is negatively related to CARs: donating decreases CARs by 7.9%. Disaster saliency however almost completely offsets this negative effect: donation likelihood is positively related to returns for large disasters, increasing returns by 5.7% (column (3)).

We report additional robustness tests in Appendix IA.F. We first address the concern that some types of disasters, such as cyclones and tropical storms, are more likely to occur at specific times in the year. The relevance condition could then be violated if firms anticipate such disasters to occur during certain seasons and account for this when setting aside annual philanthropy funds. In column (1) of Panel A, we exclude tropical storms and cyclones from the sample, and find that donating to large disasters is still strongly positively related to returns. In column (2), we perform a placebo test where we consider the firm's returns in a [-30,-1] window before the disaster. If disaster timing is related to returns only through the donation decision, we should not see any significant returns in a non-disaster window: as expected, we find no significant returns.[20]

In Panel B, we conduct an IV test using firms' proximity to the disaster zone as an alternative instrument. The underlying assumption is that firms in unaffected areas that neighbor the disaster zone are more likely to provide relief giving, as disasters are more salient to firms located closer to the disaster zone (Dessaint and Matray, 2017). We find in the first-stage estimations in columns

[20] It is possible that firms' incentives to donate are driven by the extent to which their supply chain is affected by the disaster. Barrot and Sauvagnat (2016) show that disaster-related shocks propagate through firms' supply chains via input specificity. In unreported tests, we show that our results still hold when accounting for input specificity, proxied by being in an industry with non-differentiated goods following Barrot and Sauvagnat (2016).

(1) and (2) that geographic proximity is indeed positively related to donation likelihood. The second-stage results in column (2) echo our main findings, with a negative relation between donation likelihood and CARs for small disasters, but a positive relation for large disasters. One may be concerned that geographically closer firms are more likely to be indirectly affected via suppliers or customers in disaster areas, which could be reflected in returns following the disaster. However, in this scenario, we would expect to find *lower* returns to donating firms, rather than higher returns. Nevertheless, to further alleviate this concern, in column (4), we exclude firms with subsidiaries, customers, or suppliers in affected states for a sample of U.S. firms and find that our results still hold.

[Insert Table 4 about here]

2.3 Donation announcement dates

A potential concern is that our 23-day event window captures market reactions to the effects of the disaster on the firm's operations, customers, or suppliers, rather than the effects of the donation. To address this concern, we manually collect information on the announcement dates of firms' disaster relief donations from press releases and media articles. Although this approach considerably reduces our sample size due to data availability (i.e., the sample is bounded by the information about donation announcements we can find online ex post), it provides a more precise way of gauging market reactions to firms' giving. Where firms make follow-up grant announcements, we measure market reactions to the first announcement following the disaster event. By using a short [-1,+1] window around the donation announcement, we can more precisely capture the effect of the donation rather than that of the disaster or other confounding factors.

In Table 5, we show results for a matched sample where we match every firm × disaster

donation observation to two control observations using nearest-neighborhood matching with replacement, where observations are matched based on country, industry, ROA, PPE/Assets, size, foreign activities, and effective tax rate. The results echo our main results in Table 3: returns increase as disaster severity and relevance increase (columns (1) and (2)), and returns are 0.8% (= 2.2% - 1.4%) higher for firms donating to large disasters relative to non-donating firms (column (3)).[21] Despite the change in sample and event window, the results in Table 5 confirm our main findings: CARs around disaster relief donations increase with disaster saliency, which proxies for public awareness and donation legitimacy.[22]

[Insert Table 5 about here]

2.4 Distinguishing strategic and agency-motivated philanthropy

We next distinguish agency-motivated donations from strategic donations by investigating firm- and industry-level proxies. We first interact the donations indicator with an indicator for the firm's geographic focus (*Domestic Focus*). Internationally active firms source inputs or sell products abroad, have foreign subsidiaries, and overall rely less on customers and suppliers in their home country. A domestic natural disaster is then less relevant to their overall reputation. In contrast, firms with a domestic focus have more to gain from using donations to build their social capital with the local community and stakeholders. In column (1) of Panel A in Table 6, we find that donations by international firms are associated with 2.1% lower returns, while donations by

[21] In unreported results, we test a sample of donor firms only. We find that every percentage increase in damage and search intensity increases returns by 0.7% and 0.6%, respectively. In addition, returns are 2.6% higher for large-scale disasters, relative to small- and medium-scale disasters.

[22] In Panel B of Internet Appendix IA.D, we investigate agency-motivated giving aimed at boosting CEOs' personal reputations, where we capture CEO reputational incentives by considering whether the CEO name is mentioned in the press release, and where we proxy for agency-motivated giving by looking at excessively large donations (donated amount > median) and donations by powerful CEOs. We find that although returns are on average higher for donations announced in press releases where the CEO is mentioned, they become negative if the donation is large, if it is made by a powerful CEO, or if it is made to a less well-known NGO.

domestic firms are associated with 0.9% (= 2.1% - 1.2%) lower returns, indicating that the strategic benefits for domestic firms are greater and offset some of the agency costs (although the net effect is still negative).

In column (2), we focus on firms that spend relatively more on marketing, as these firms may benefit more from the increased visibility and awareness of their charity programs (Servaes and Tamayo, 2013). We consider whether a firm has above-average selling, general, and administrative expenses (*High SG&A Expenses*) as a proxy for its marketing intensity. We find that donations by firms with low SG&A expenses are associated with 2.2% lower returns, but this is almost completely off-set for firms with high SG&A expenses. We perform a similar test where we focus on firms' R&D expenses. Navarro (1988) and Brown, Helland, and Smith (2006) show that high R&D firms (e.g., pharmaceutical firms) can benefit more from making donations, given that they are often subject to public scrutiny and rely more on intangibles. Consistent with this conjecture, we find in column (3) that low-R&D firms' donations decrease shareholder value by 1.5%, whereas donations by high-R&D firms increase returns by 3% (= 4.5% - 1.5%).

We next consider firms in regulated industries, as these firms can use donations to lower the expected costs of future regulatory and enforcement actions by improving their public image and enhancing their standing with regulatory agencies and legislators (Godfrey et al., 2009; Masulis and Reza, 2015). In column (4), we find that donations by firms in regulated industries earn 1.0% higher returns than donations by firms in other industries.[23]

[Insert Table 6 about here]

As indicated by the negative coefficient on the donation dummy in Table 3, our disaster relief

[23] In additional unreported tests, we investigate whether firms in more competitive markets are more likely to use donations to build their brand. We find that returns increase by 0.6% for donating firms in highly competitive industries, proxied by being in a below-average Herfindahl-Hirschman Index (HHI), relative to nondonors in less competitive industries.

context does not eliminate agency-motivated giving, despite increasing the strategic benefits of donating. To further demonstrate the agency view on corporate giving, we focus on firm characteristics that increase the potential for agency-motivated giving in Panel B. Following the literature, we focus on several proxies for the quality of corporate governance, as poor governance is usually associated with greater agency costs. We first consider the MSCI Governance Index, which comprehensively captures various dimensions of firm-level governance, such as board independence, anti-takeover provisions, as well as accounting quality and board diversity. We find in column (1) that donor firms with lower (i.e., below-average) governance scores earn -0.5% (=1.7% - 2.3%) lower returns than nondonor firms, consistent with agency-motivated philanthropy. We find similar results for firms with low levels of institutional ownership in column (2), as institutional investors help improve portfolio companies' governance (e.g., Aggarwal et al., 2011).

We next investigate the ratio of the CEO's total wage relative to the wage of the second highest-paid executive in the firm ("CEO pay slice"), which has been used as a proxy for how powerful a CEO is within the top management team (e.g., Bebchuk, Cremers, and Peyer, 2011). Firms with powerful CEOs are more likely to have agency concerns. Donating firms with powerful CEOs are indeed associated with 4.4% lower returns relative to other firms (column (3)). Next, we construct an entrenchment index (E-Index) following the U.S. version of the E-Index compiled by Bebchuk et al. (2009), which measures managerial entrenchment based on the presence of staggered boards, poison pills, supermajority requirements, and other anti-takeover provisions. In column (4), we show that donating firms with a higher E-Index (worse governance) earn 0.4% lower returns. The international scope of our sample limits the use of affiliated charities as a proxy for agency-motivated giving as in Cai et al. (2021). Nevertheless, we believe our governance proxies comprehensively capture agency problems within donating firms. Overall, these results

confirm that donating is related to lower returns in firms with poor governance, consistent with previous studies.

2.5 Roles of institutions and other donors

We next investigate country-level characteristics that affect the costs and benefits of donating. Although corporations provide a considerable amount of relief following a natural disaster, most funding is provided by governments and NGOs. Markets are likely to react more negatively to corporate donations if other parties already provide sufficient funding, as the perceived need and therefore the legitimacy of using corporate funds for disaster relief is lower.

We investigate the amount of grants provided by noncorporate and nongovernmental charities as a fraction of GDP, interacted with *Disaster Relief Donation*. We find in column (1) in Table 7 that returns for donating firms are 3.3% lower if other charities provide an above-average amount of disaster relief. Similarly, we consider the number of rules and regulations with regards to environmental issues and other social causes in a country: environmental and social organizations are more likely to provide funding after or even before (in a preventative sense) a disaster in countries with stronger ESG regulations. In column (2), abnormal returns are 2.2% lower if firms provide disaster relief in a country with a socially conscious government (i.e., having strong ESG regulation), relative to those in a less socially conscious country. These effects are also reflected in column (3), where we directly capture the amount of disaster relief funding provided by the government as a fraction of GDP. Returns are significantly lower if firms provide disaster relief grants in a country where the government already provides high amounts of funding. The results in columns (1)–(3) indicate a substitution effect in terms of corporate versus other types of funding, where CARs reflect the lower perceived legitimacy of corporate giving.

In column (4), we find that being in a country with high religiousness (i.e., having an above-median religiousness ratio) offsets the negative effect of donating. Donations by firms in less religious countries are considered value-destroying, with 1.2% lower CARs relative to nondonor firms, whereas the CARs for donations by firms in more religious countries offset the negative returns, resulting in a zero net effect on shareholder wealth. This suggests that societal norms that support philanthropy and altruism can further increase the strategic value of corporate philanthropy. It also illuminates a third "delegated philanthropy" view on corporate giving, which states that corporate giving reflects stakeholder and societal demands for firms to assume social responsibilities because coordination problems complicate scaling up individual stakeholder's philanthropic efforts (Benabou and Tirole, 2006, 2010). Overall, the results in Table 7 suggest that corporate giving is viewed as more legitimate when social norms promote social responsibility or when the institutional environment is weak in supporting philanthropy (e.g., when government funding is low).

[Insert Table 7 about here]

2.6 Strategic philanthropy channels: reputation, sales growth, and employee satisfaction

We next take a more in-depth look at the channels through which donating affects firm value and shareholder returns. As an illustrating example, consider the case of Chinese sports company Hongxing Erke, whose donation to victims of the 2021 Henan floods went viral on the internet, sparking a 280% increase in sales. The firm received praise from government authorities, and local attractions offered discounts to Erke employees.[24] This anecdotal evidence suggests that donating can boost returns by increasing customer awareness, sales, and employee satisfaction. In Table 8,

[24] https://www.scmp.com/news/people-culture/environment/article/3142732/china-floods-sports-brand-erke-gear-flies-shelves

we first investigate whether public awareness increases more for donor firms relative to nondonor firms, where we capture awareness via the intensity of firm-specific Google web searches in the month of the disaster. We find that donor firms obtain a 15.6% increase in web searches relative to nondonor firms during the disaster month (column (1)), with the effect increasing to 33.8% (= 8.3% - 4.2% + 29.6%) for donations following large disasters (column (2)). Therefore, disaster relief giving indeed increases public awareness of the donating firm, and this effect strengthens with disaster saliency.

Next, we investigate whether stronger awareness translates into higher sales growth. On average, donating decreases sales by 4.4% relative to not donating (column (3)), consistent with the CARs results in Table 3 and suggesting that agency-motivated donations can hinder sales growth. However, donating results in 1.8% higher (less negative) sales growth following large disasters relative to donating following a small disaster (column (4)). Moreover, we find that donating not only affects returns by increasing public and customer awareness, it also affects support from stakeholders such as employees. Although donating on average is not significantly related to employee support (proxied by the percentage change in employee satisfaction, where the sample is limited to firms with data coverage in Refinitiv ESG, column (5)), it increases the employee satisfaction score by 1.8% (= 3.0% - 1.2%) following large disasters (column (6)). Taken together, these results show that donating affects returns through fundamental changes in future cash flows, by increasing firm reputation, customer awareness, and by building stakeholder and employee support. [25]

[Insert Table 8 about here]

2.7 Donation characteristics

[25] In additional tests, we find further evidence for the firm reputation and stakeholder support channel by showing that donating increases the likelihood of winning a CSR award in the year following the disaster.

We also examine the role of donation-specific characteristics, such as donation size. On the one hand, donating large amounts of cash to disaster relief can decrease shareholder value if the costs of reduced cash reserves outweigh the benefits. Shareholders may view such donations as reflecting severe agency problems of "doing good with other people's money". On the other hand, large donations can have more strategic value for the firm if they attract more media and investor attention and if they are perceived to achieve a larger social impact. Similarly, a firm donating an amount perceived to be disappointingly small may face public outrage, which may negatively affect its reputation and sales.

To test the effect of donation size, we regress CARs on the donated amount as a fraction of firm assets. Due to data limitations in Foundation Maps, our sample shrinks to 325 firm-disaster level observations. We find in column (1) of Table 9 that every percentage point increase in the donated amount decreases CARs by 0.6%. However, the relation between donated amount and shareholder value is not necessarily linear, as small donations may disappoint the public, whereas donations that are overly large may disappoint shareholders. We find in column (2) that there is indeed a quadratic, concave relation between donation amount and shareholder value, with higher returns for medium-sized donations but lower returns for small and large amounts. Firms therefore face a trade-off between public and shareholder sentiments, reflected in the concave relation between donation size and firm value.

The type of donation, notably cash donations versus in-kind donations, can also influence the cost-benefit tradeoff of giving (Seifert et al., 2003). Cash donations directly reduce the firm's liquid resources and can be used by managers to tunnel money to affiliated charities. Conversely, in-kind donations, in which firms donate products or equipment, enable firms to reduce excess inventories or written-off equipment and may be perceived as active firm participation in relief

efforts (Madsen and Rodgers, 2014). In column (3), we find that whereas cash donations reduce CARs by 1.4%, in-kind donations increase returns by 1.1% (= 2.5% - 1.4%) relative to not donating.

[Insert Table 9 about here]

2.8 Determinants of disaster relief giving

We next directly investigate firms' incentives to donate in a logit model, where we regress firms' disaster relief giving decision on our previously tested proxies for strategic and agency-motivated philanthropy. In column (1) of Table 10, we find that firms are 0.2% more likely to donate for every percentage point increase in disaster severity, corroborating the notion that the increased attention to larger disasters increases firms' incentives to donate. In column (2), we find that firms that rely more on marketing in their day-to-day operations are 0.6% more likely to donate. In column (3), we show that high R&D firms are less likely to donate, which could indicate that they have less cash to allocate to giving because much of their resources are committed to R&D spending. In column (4), we find that firms in regulated industries are 0.9% more likely to donate, suggesting that these firms aim to reduce future regulatory enforcement costs by enhancing their social image. Column (5) shows similar results on each strategic philanthropy proxy.

We next consider proxies for corporate governance to capture agency-motivated giving. Following Masulis and Reza (2015), we consider the quality of corporate governance at the firm level. In column (6), we find that firms with a higher value on the E-Index (reflecting higher entrenchment) are more likely to donate. We find similar results in column (7) which shows that firms with a below-average MSCI Governance Index (reflecting worse governance) are 0.9% more likely to donate. We also find that firms with low institutional ownership ratios, that is, with potentially poorer governance, are 0.5% more likely to donate (column (8)) and that firms with

more powerful CEOs (proxied by having a higher CEO pay slice) are 0.8% more likely to donate (column (9)). Column (10) shows qualitatively similar results for all agency proxies.

Overall, these results confirm prior studies which show that corporate philanthropy is a manifestation of agency problems and poor governance. However, our disaster-based framework provides evidence that strategic philanthropy is an equally important driver of corporate giving and that donating can increase firm value if the strategic benefits are sufficiently large.

[Insert Table 10 about here]

3. Robustness and Post Hoc Tests

In this section, we show various robustness tests to rule out alternative explanations and discuss the social welfare implications of our results.

3.1 Robustness tests

3.1.1 Donating firms in affected areas. We first investigate the cost-benefit trade-off of donating from an alternative perspective by considering firms located in affected areas. If the strategic benefits of donating increase with disaster saliency, we expect to find higher returns for donations by firms in affected communities, as long as these firms are not severely affected. In addition, if they have the financial resources to donate, affected firms can benefit from higher strategic benefits relative to unaffected firms: donating can signal their financial and operational resilience, help rebuild the local community, and boost the firm's reputation among local stakeholders. In Internet Appendix IA.G, we find that, on average, the returns for affected firms are 1.2% lower relative to firms in unaffected areas over the 23-day event window (column (1)) and that affected firms earn 0.40% lower returns in the [-1,+3]-day window immediately following the disaster (column (2)), whereas returns are not significantly different from zero in the [+3,+21]-day window (column (3)).

Next, confirming our results in Table 3, we find in column (4) that donating firms in unaffected areas earn 1.4% lower returns, but donating firms in affected areas earn 8.7% (= 11.5% - 1.4% - 1.4%) higher returns relative to nondonating, unaffected firms.[26] We also find that the donation-specific effects are significant in both event windows (columns (5) and (6)), but they become stronger in the longer-term window as that is when the majority of firms announce their donations (column (6)). Moreover, the interaction between the donation indicator and *Affected* remains positive and highly significant. These results strengthen our confidence that we are capturing market reactions to firms' disaster relief giving rather than to the disaster event itself.[27]

3.1.2 Sample and specification changes. We perform additional robustness tests and report their results in Table 11. First, due to the coverage of Foundation Maps and disaster frequency in the U.S., a large fraction of our sample consists of U.S.-based firms, which may drive our results. In columns (1) and (2), we split the sample into U.S. and non-U.S. firms. Our findings are sustained for both subsamples, with returns from donating turning a significantly positive 4.1% (= 5.1% - 1%) for non-U.S. firms. This suggests that agency-motivated giving may be more prevalent in the U.S., highlighting the importance of an international study on corporate giving.

Second, we try to rule out other unobservable drivers at the disaster, industry, and firm levels. We first focus on long-term disasters such as droughts, floods, and heat waves. Because firms are unlikely to donate in the [-1, +21]-day window following the start of a long-term disaster, we should not expect to see abnormal returns in this window. This is confirmed by the insignificant

[26] An alternative explanation for the negative market reaction is that it reflects investors' concerns regarding managers' overreaction to the perceived increase in the future risk of natural disasters. Dessaint and Matray (2017) find that firms in neighbouring areas of the counties hit by natural disasters disproportionately increase their cash holdings and interpret this as managers overreacting to salient risks. If investors perceive disaster relief giving as an overreaction to the perceived increase in disaster risk (as firms want to build reciprocity for future disasters), this further increases the costs associated with corporate giving. However, following Dessaint and Matray (2017), it is more plausible that overreacting managers of firms in unaffected areas hoard cash and do not donate at all.

[27] In additional tests, we find that the positive returns to affected donors are driven by firms that are not financially constrained.

coefficients in column (3). In column (4), we exclude firms that have their main exchange listing outside of the headquarter country (4% of the sample), as a domestic disaster should be less salient to international investors. We again find that our results remain. We next want to ensure we capture firms' disaster-specific philanthropy, rather than their overall donating behavior. We consider whether the firm engaged in non-disaster related philanthropy in the disaster year (proxied by firms' annual giving) and find in column (5) that market reactions are driven only by firms' disaster-specific giving. Next, we investigate whether firms' disaster relief giving is unanticipated, as market reactions should be stronger for unexpected donations. We compare donating firms that did not donate to the last large disaster in the firm's country to firms that donated for both disasters and find in column (6) that returns are driven by unexpected disaster relief giving.

We next investigate whether the firm's supply chain was directly affected by the disaster in the spirit of Barrot and Sauvagnat (2016). We find that returns are less negative for donating firms with an affected customer or supplier, consistent with the disaster being more salient to firms that are directly or indirectly affected (column (7)). We further test whether more environmentally conscious firms benefit more from donating to climate-related disasters in column (8), where we consider firms' environmental performance score in terms of emissions reductions, resource reductions, and environmental R&D. Our sample size is reduced to 785 observations due to data coverage. We find that every unit increase in the environmental score (ranging from -50 to +50) increases returns from donating by 0.03%. These results suggest that the market perceives donations by less environmentally conscious firms as less legitimate, limiting their strategic benefits.[28]

[28] In Appendix IA.K, we investigate whether the effect of environmental performance depends on the disaster type. Columns (1)–(3) investigate firms' incentives to donate following climate-related disasters, such as floods or extreme storms, whereas columns (4)–(6) consider nonclimate-related disasters, such as earthquakes. We find that firms are more likely to donate to both types of disasters. However, less environmentally friendly firms are less likely to donate

[Insert Table 11 about here]

3.1.3 The role of ownership structure. We next seek to further distinguish strategic philanthropy from agency-motivated giving by investigating ownership structure in terms of family ownership and institutional ownership. In family firms, insiders have few incentives to funnel corporate funds to affiliated charities. Similarly, firms with higher levels of institutional ownership are often better governed and better monitored, reducing the potential for agency-motivated giving. Consistent with the notion that family firms' donations are unlikely to be agency-motivated, we find in column (1) of Internet Appendix IA.H that returns increase by 1.1% (= 0.7% + 0.4%) for donating family firms.[29] In addition, we show in column (2) that in firms with high levels of institutional ownership (i.e., above the sample median), the negative effect of donating is almost completely offset. We find in column (3) that domestic institutional owners view corporate disaster relief giving more favorably, as they are more invested in the local community than foreign owners: donors with higher percentages of domestic institutional ownership earn 0.5% higher returns relative to nondonors. These results indicate that, in firms where agency problems are weaker, donating earns significantly positive returns, consistent with strategic philanthropy becoming more dominant.

3.1.4 The role of taxation. In Internet Appendix IA.I, we investigate tax exemption as another strategic benefit. Although Navarro (1988) argues that, for U.S. firms, corporate taxes should not affect the level of giving, there is evidence that higher corporate tax rates relate positively to giving by company-sponsored foundations (Petrovits, 2006). In addition, our sample includes both U.S. firms and non-U.S. firms, which are not subject to the same income tax system. Consistent with

to a climate-related disaster, relative to more environmentally friendly firms. This result is not significant in the nonclimate-disaster sample, suggesting that firms strategically choose which disasters to donate to.

[29] In unreported tests, we focus on a subsample of family firms only and find that donating is associated with 4.8% *higher* returns, in contrast with the on average lower returns for the full sample in Table 3. Moreover, returns increase further by 2.1% following larger disasters.

taxation benefits, we find that returns increase by 0.3% for every 10% increase in the effective tax rate (column (1)). Donations by firms with negative effective tax rates (i.e., zero tax rates or tax rebates) earn returns insignificantly different from zero (column (2)), while firms with high effective tax rates earn 1% higher returns when donating relative to not donating (column (3)).[30]

3.1.5 Non-disaster donations. Next, we test whether our results only hold in a disaster relief setting or whether they can be generalized to a non-disaster setting. Because we cannot determine announcement dates for firms' non-disaster related giving, we limit this analysis to the donation choice, rather than its value implications. In Internet Appendix IA.J, we show the results for a logit model where the dependent variable is an indicator for whether the firm donated in year *t* without restricting firms' philanthropy to disaster relief giving. We find evidence consistent with strategic philanthropy for firms with high SG&A expenses (column (1)), high R&D expenses (column (2)), firms in regulated industries (column (3)), and firms in more religious countries (column (4)). A horse-race estimation in column (5) shows that all proxies (except R&D expenses) are positively related to the likelihood of donating. In columns (6) to (10), we confirm previous studies and find that firms with entrenched managers (column (6)), low institutional ownership (column (8)), and CEOs with greater pay slices (column (9)) are more likely to donate.

3.2 Social welfare implications

Finally, we investigate the societal welfare effects of corporate giving. Although a full analysis of the direct and indirect societal effects of disaster relief giving is outside the scope of this paper, we can perform back-of-the-envelope calculations. The median natural disaster in our sample causes US$633 million in damages, and the median total amount donated is US$1.91 million per

[30] We use an effective tax rate threshold of 35%, the U.S. federal corporate tax rate during our sample period. The worldwide average income tax rate is 23%, with the U.S. having the 83rd highest corporate tax rate (Asen, 2019).

disaster.[31] This, however, ignores indirect compounding effects: studies suggest that the social return of donating can be valued between 30% to 40% for cash donations (MacAskill, 2019) and that, by using donations to invest in preventative measures (e.g., flood control), losses from disasters could be reduced by 7 to 30 times the investment costs (Dedeurwaerdere, 1998; World Disasters Report, 1999). The total societal effects of corporate giving can then range from US$17 million to US$73 million.[32] The effect of donating on firms' market values depends on contextual factors: the market value impact of donating for firms in affected areas is US$19 million, an unequivocal net positive effect. Donating in unaffected areas leads to a median shareholder loss of US$7.9 million, but our calculations indicate that this can be offset by an increase in social welfare to the community, and the net social welfare effect can be positive under certain circumstances.

4. Conclusion

In this paper, we study the motivations and value implications of corporate philanthropy by publicly listed companies around the world. We exploit natural disasters as large, salient events that increase the strategic benefits of donating and use an event study setting to capture the effects of corporate philanthropy on shareholder value. We argue that whether corporate philanthropy is value-enhancing or value-destroying depends on the trade-off between the agency costs and the strategic benefits of donating. Using disaster saliency as a proxy for the relative strength of strategic philanthropy benefits, we argue that the returns from donating increase with disaster saliency. Based on a large international sample we first find that, consistent with the agency-motivated view of corporate giving, disaster relief giving earns 1.40% lower returns for firms in

[31] There is, however, a caveat in that EM-DAT does not put a monetary value on human deaths or injuries; the total impact of the disaster is therefore likely underestimated.
[32] This assumes a social return of 30%, as firms primarily make cash donations, on the US$1.91 million donated, multiplied by 7 and 30, respectively, in estimated prevented losses.

unaffected areas. However, this negative effect is reversed for donations following more salient disasters, which increase investor and customer awareness and boost the reputation-building benefits of donating. We confirm these results in an instrumental-variable setting where we use disaster timing and location to account for firms' decisions to donate, and in a matched subsample of media releases where we estimate returns in a [-1,+1]-window around the donation announcement. We distinguish agency-motivated giving from strategic philanthropy, and we find that donating affects returns by increasing the firm's reputation, sales growth, and employee support.

Overall, our results suggest that disaster relief philanthropy adds value for shareholders when firms use corporate giving to build their reputations and social capital. We thereby offer a more holistic view of the nature and implications of corporate philanthropy, a fundamental issue in economics and corporate finance. As corporations around the world are increasingly engaging in CSR and in disaster relief giving in particular, it is important to have a comprehensive understanding of their motivations and the effects on shareholder value. Our findings suggest that whether and how corporate philanthropy should be applied depends on a wide range of contextual factors. At a deeper level, our findings provide a plausible answer to the long-lasting puzzle of why corporations give to charities, despite the criticism by many economists, including Milton Friedman. Friedman (1970) might still be right: charitable giving should only be done by corporations if doing so increases shareholder wealth.

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Figure 1: Number of Days between Disaster and Public Donation Announcement (*N*=619)
This figure shows the distribution for the number of days between the start of the disaster event and the disaster relief announcement in press releases and media articles.

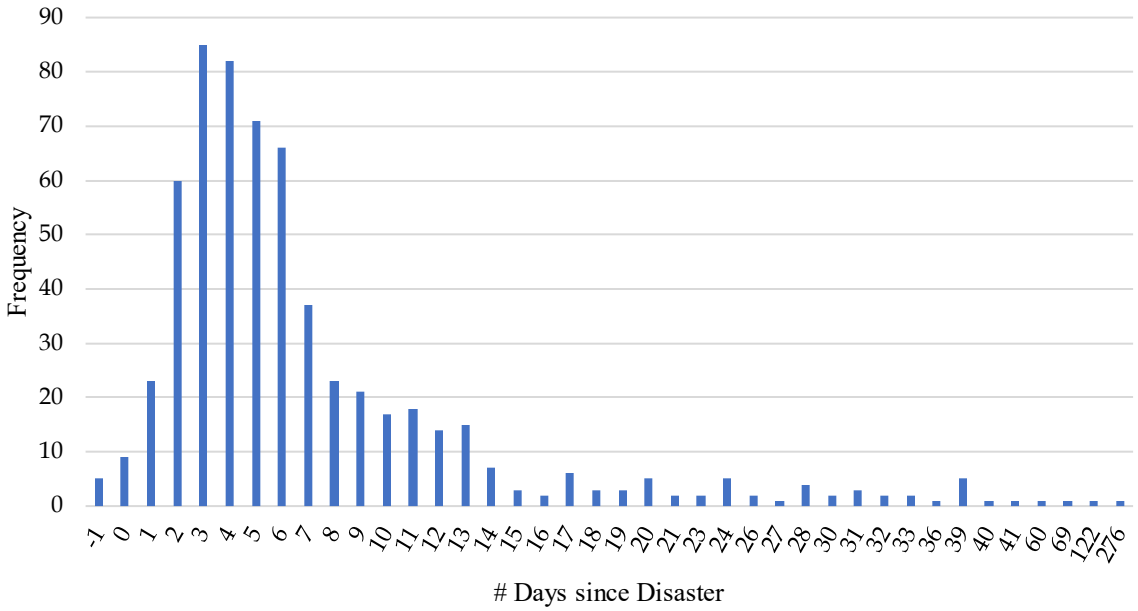

Figure 2: Geographic Sample Distribution (Disaster × Firm)
This figure shows the country distribution of the main sample consisting of 52,536 disaster-firm observations. Countries that are relatively more represented in our sample are indicated in darker shades.

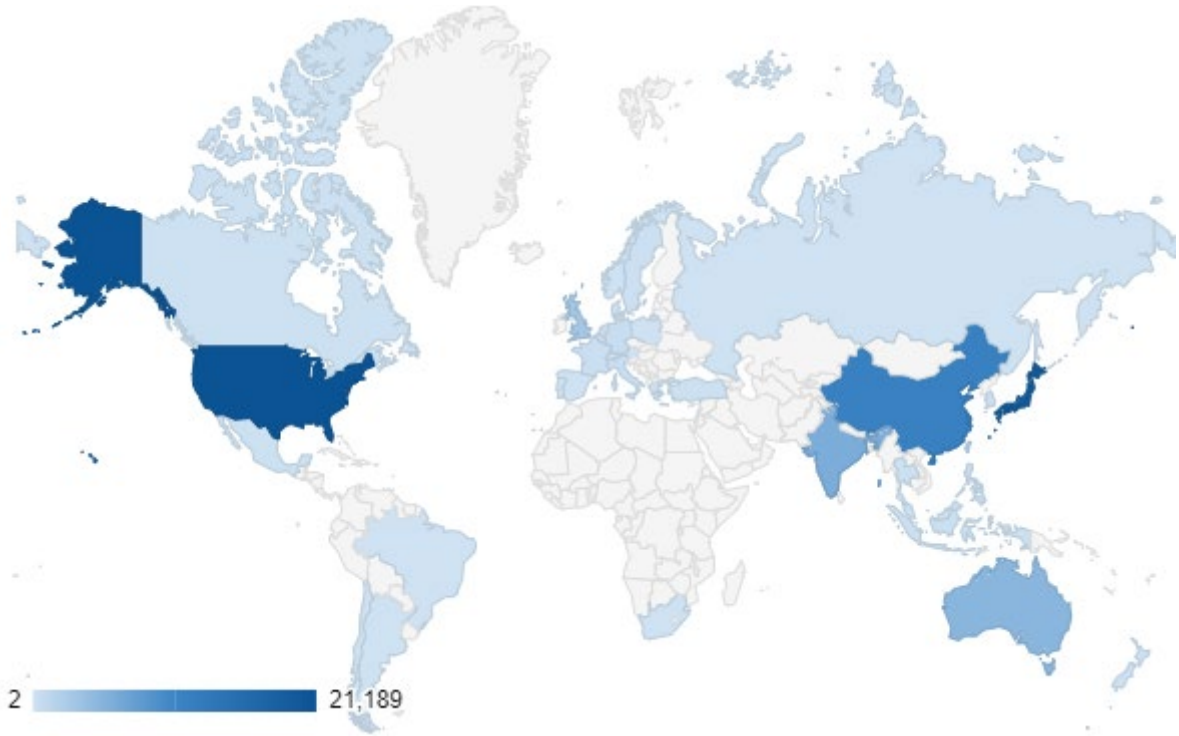

Table 1: Summary Statistics

This table shows summary statistics for the full sample of observations at the firm-disaster level. Variable definitions are in Appendix Table A. Continuous variables are winsorized at the 1% and 99% level, and accounting variables are measured in the year of the disaster.

Variable	*N*	Mean	Median	SD	25 pct	75 pct	Min	Max
CAR [-1,+21]	52,536	-0.001	0.000	0.194	-0.101	0.099	-0.352	0.362
CAR[-1,+3]	52,536	0.003	0.000	0.058	-0.031	0.033	-0.109	0.136
CAR[+3,+21]	52,536	-0.002	-0.001	0.177	-0.105	0.101	-0.368	0.366
Disaster Relief Donation	52,536	0.023	0	0.151	0	0	0	1
Disaster Size ($Mil)	52,536	4,042	633	7,614	177	2,700	56	30,000
Search Intensity	52,536	2.975	3.044	0.973	2.773	3.466	2.565	4.615
Small Disaster	52,536	0.272	0	0.445	0	1	0	1
Large Disaster	52,536	0.337	0	0.473	0	1	0	1
Total Assets ($Mil)	52,536	22,332	1,353	70,897	132.4	8,874	0.051	446,333
Market Value ($Mil)	52,536	1,638	232.3	10,332	82.05	683.2	0.001	790,050
Sales/Assets	52,536	0.931	0.741	0.832	0.380	1.229	0	4.642
Intangibles/Assets	52,536	0.058	0.021	0.111	0.005	0.056	0	0.727
CapEx/Assets	52,536	0.046	0.030	0.056	0.017	0.054	0	0.462
ROA	52,536	-0.033	0.039	0.261	-0.019	0.082	-1	0.346
PPE/Assets	52,536	0.262	0.196	0.241	0.064	0.392	0	0.982
Effective Tax Rate	52,536	0.136	0.051	0.229	0.001	0.251	-0.318	0.755
Foreign Activities	52,536	0.447	0	0.497	0	1	0	1
SG&A/Assets	52,536	0.282	0.151	0.372	0.068	0.333	0.005	0.941
R&D Expenses/Assets	52,536	0.015	0	0.042	0	0.006	0.000	0.211
Institutional Ownership	52,536	0.271	0.093	0.332	0.017	0.481	0	1
MSCI Governance Index	9,768	5.336	5.3	1.609	4.3	6.4	0	9.5
CEO Wage Ratio	52,536	2.024	1.718	4.483	0.996	2.417	0.074	9.002
E-Index	52,536	0.037	0	0.311	0	2	0	5

Table 2: Donating vs Non-Donating Firms

This table shows the summary statistics for subsamples of donors and nondonors in unaffected areas. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Continuous variables are winsorized at the 1% and 99% level, and accounting variables are measured in the year of the disaster. Variable definitions are provided in Appendix A.

	Donors						**Nondonors**						
Variable	*N*	Mean	Median	SD	Min	Max	*N*	Mean	Median	SD	Min	Max	*Difference*
CAR [-1,+21]	1,219	-0.003	0.000	0.103	-0.352	0.373	51,317	0.001	0.000	0.196	-0.352	0.362	*0.004*
CAR[-1,+3]	1,219	0.001	0.000	0.039	-0.109	0.136	51,317	0.003	0.000	0.059	-0.109	0.136	*-0.002*
CAR[+3,+21]	1,219	-0.002	0.001	0.109	-0.368	0.366	51,317	-0.002	-0.001	0.178	-0.368	0.366	*-0.000*
Disaster Size ($Mil)	1,219	3,508	650	7,609	56	30,000	51,317	4,054	633.5	7,613	56	30,000	*-0.564***
Search Intensity	1,219	3.064	2.891	0.5	0	4.615	51,317	2.973	3.044	0.982	0	4.615	*-0.091****
Small Disaster	1,219	0.295	0	0.456	0	1	51,317	0.272	0	0.445	0	1	*0.023**
Large Disaster	1,219	0.152	0	0.451	0	1	51,317	0.202	0	0.402	0	1	*-0.050****
Total Assets ($Mil)	1,219	88,767	19,014	143,642	34.13	446,333	51,317	20,755	1,260	67,445	0.051	446,333	*68,012****
Market Value ($Mil)	1,219	18,368	2,638	52,674	3.163	399,535	51,317	1,240	232.3	7,370	0.001	790,050	*17,128****
Sales/Assets	1,219	1.081	0.812	0.965	0	4.642	51,317	0.927	0.739	0.828	0	4.642	*0.154****
Intangibles/Assets	1,219	0.118	0.030	0.187	0	0.727	51,317	0.056	0.021	0.108	0	0.727	*0.062****
CapEx/Assets	1,219	0.064	0.044	0.083	0	0.462	51,317	0.045	0.030	0.056	0.001	0.462	*0.018*
ROA	1,219	0.096	0.080	0.080	-0.375	0.346	51,317	-0.036	0.037	0.263	-1	0.346	*0.133****
PPE/Assets	1,219	0.385	0.301	0.296	0.001	0.982	51,317	0.259	0.194	0.239	0	0.981	*0.126****
Effective Tax Rate	1,219	0.188	0.142	0.238	-0.318	0.755	51,317	0.135	0.049	0.228	-0.318	0.755	*0.053****
Foreign Activities	1,219	0.558	1	0.497	0	1	51,317	0.444	0	0.496	0	1	*0.114****
SG&A/Assets	1,219	0.215	0.122	0.293	0.005	1.870	51,317	0.283	0.151	0.374	0.005	0.950	*-0.069****
R&D Expenses/Assets	1,219	0.009	0	0.029	0	0.215	51,317	0.015	0	0.042	0	0.211	*-0.006****
Institutional Ownership	1,219	0.498	0.475	0.320	0.001	1	51,317	0.264	0.087	0.330	0	1	*0.226****
MSCI Governance Index	1,099	5.456	5.4	1.717	0.9	9.5	7,906	5.320	5.3	1.593	0	9.5	*0.136****
CEO Wage Ratio	1,219	1.975	2.139	0.941	0.277	3.349	51,317	2.026	1.709	4.573	0.074	9.002	*-0.052*
E-Index	1,219	0.872	2	1.221	0	5	51,317	0.018	0	0.216	0	5	*0.855****

Table 3: Main Results – Firm CARs around Disaster Relief Donations

This table shows OLS estimations where the dependent variable is the firm-level CAR around a disaster. The main explanatory variable is an indicator for whether an unaffected firm provides a disaster-specific donation (*Disaster Relief Donation*) in Panel A, interacted with measures of disaster size (l*n(Disaster Size),* Search Intensity *(ln (Web Search Intensity)), Small Disaster, Large Disaster*) in Panel B. In Panel A, the dependent variable is the firm's [-1,+21]-day CAR around the disaster in Columns (1) and (4), [-1,+3]-day CAR in Column (2), and [+3,+21]-day car in Column (3). In Panel B, the dependent variable is the [-1,+21]-day CAR. All specifications include a set of control variables (indicator for foreign activities, ROA, PPE/Assets, firm size, and the firm's effective tax rate) as well as country × year FE, industry × year FE, and firm district FE, plus firm FEs in Column (4) of Panel A. Definitions of all variables are in Appendix A. Standard errors are clustered by district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Market Reactions to Disaster Relief Donations

	(1)	(2)	(3)	(4)
Dep. Var.:	CAR[-1,+21]	CAR[-1,+3]	CAR[+3,+21]	CAR[-1,+21]
Disaster Relief Donation	-0.014**	-0.004***	-0.050**	-0.020***
	(0.006)	(0.001)	(0.020)	(0.005)
Foreign Activities	0.000	-0.001*	-0.003	0.005
	(0.002)	(0.000)	(0.002)	(0.003)
ROA	0.008	0.016***	-0.014**	-0.013
	(0.012)	(0.002)	(0.006)	(0.010)
PPE/Assets	-0.004	-0.004	-0.001	0.007
	(0.003)	(0.004)	(0.007)	(0.008)
Size	-0.001	-0.001***	0.001	0.004***
	(0.001)	(0.000)	(0.001)	(0.001)
Effective Tax Rate	-0.002	-0.000	-0.000	0.005
	(0.007)	(0.000)	(0.000)	(0.004)
Observations	52,536	52,536	52,536	45,046
R-squared	0.129	0.099	0.071	0.328
Country × Year FE	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Firm FE	No	No	No	Yes

Panel B: Disaster Salience

Dep. Var.: CAR [-1,+21]	(1)	(2)	(3)	(4)
Disaster Relief Donation	-0.091***	-0.067**	0.001	-0.018***
	(0.023)	(0.029)	(0.007)	(0.008)
ln(Disaster Size)	0.000			
	(0.000)			
Disaster Relief Donation × ln (Disaster Size)	0.006***			
	(0.001)			
ln(Web Search Intensity)		0.002		
		(0.001)		
Disaster Relief Donation × ln (Web Search Intensity)		0.017**		
		(0.007)		
Small Disaster			0.001	
			(0.002)	
Disaster Relief Donation × Small Disaster			-0.069***	
			(0.007)	
Large Disaster				0.0005
				(0.002)
Disaster Relief Donation × Large Disaster				0.018***
				(0.006)
Control Variables	Yes	Yes	Yes	Yes
Country × Year FE	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Observations	52,536	52,536	52,536	52,536
R-squared	0.129	0.129	0.129	0.129

Table 4: Two-Stage Least-Square Test with Disaster Timing as IV

This table shows results for a two-stage least-square test using an indicator for the disaster occurring in December or the first month of the firm's fiscal year (*Disaster Timing*) as an instrument for a firm's decision to donate (*Disaster Relief Donation*). Columns (1) and (2) show the first-stage results of probit models regressing *Disaster Relief Donation* on *Disaster Timing* (column (1)) and *Disaster Relief Donation* × *Large Disaster* on *Disaster Timing* × *Large Disaster* (column (2)). Column (3) shows the second-stage results where the dependent variable is the firm's [-1,+21]-day CARs, regressed on the predicted donation likelihoods (*P(Disaster Relief Donation)* and *P(Disaster Relief Donation)* × *Large Disaster*) from the first stage estimations in columns (1) and (2). All specifications control for foreign activities, ROA, PPE/Assets, firm size, and the firm's effective tax rate, as well as disaster type, industry × year, and firm district FE. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Var.:	(1) Disaster Relief Donation	(2) Disaster Relief Donation × Large Disaster	(3) CAR[-1,+21]
	1st Stage		*2nd Stage*
Disaster Timing	1.270*** (0.175)		
Disaster Timing × Large Disaster		1.012*** (0.035)	
P(Disaster Relief Donation)			-0.079* (0.047)
Large Disaster			0.001 (0.002)
P(Disaster Relief Donation) × Large Disaster			0.057* (0.034)
Observations	52,536	52,536	52,536
Control variables and FEs	Yes	Yes	Yes
F-Statistic (IV)	285.33	419.68	

Table 5: Abnormal Returns around Donation Announcement Dates

This table reports average CARs [-1,+1] around disaster relief donation announcements in media articles and press releases. The sample consists of a nearest-neighbourhood matched sample of donating and non-donating firms, matched on country, industry, size, foreign activities, ROA, PPE/Assets, and tax rate. The main independent variables are disaster size in terms of dollar damage caused (column (1)), the disaster's search intensity in column (2), and an indicator for large disasters in terms of damage caused (column (3)), interacted with an indicator for whether the firm donated (*Disaster Relief Donation*). All specifications include a set of control variables (foreign activities, size, ROA. PPE/Assets, and effective tax rate) as well as country × year fixed effects and industry × year fixed effects. Definitions of all variables are in Appendix A. Standard errors are clustered by firm district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Var.: CAR[-1,+1]	(1)	(2)	(3)
Disaster Relief Donation	-0.175***	-0.037**	-0.014**
	(0.042)	(0.016)	(0.006)
ln (Disaster Size)	-0.007***		
	(0.002)		
Disaster Relief Donation × ln (Disaster Size)	0.011***		
	(0.002)		
ln (Web Search Intensity)		-0.001	
		(0.004)	
Disaster Relief Donation × ln (Web Search Intensity)		0.011**	
		(0.005)	
Large Disaster			-0.013
			(0.008)
Disaster Relief Donation × Large Disaster			0.022***
			(0.007)
Control Variables	Yes	Yes	Yes
Country × Year FE	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes
Observations	1,282	1,282	1,282
R-squared	0.215	0.208	0.212

Table 6: Distinguishing Strategic and Agency-Motivated Philanthropy

Panel A reports the results of regressing unaffected firms' [-1,+21]-day CARs around sudden disasters on an indicator for disaster-specific donations (*Disaster Relief Donation*) interacted with indicators for a. domestic-focused firms in column (1), b. high SG&A expenses in column (2), c. high R&D expenses in column (3), and d. regulated industries in column (4). Panel B interacts with indicators for a. below-average MSCI governance index in column (1), bottom-quartile institutional ownership in column (2), proxies for CEO power (high CEO wage ratio) in column (3), and the E-Index in column (4). All specifications control for foreign activities, ROA, PPE/Assets, firm size, and the effective tax rate as well as country × year FE, industry × year FE, and firm district FE. The sample in column (1) is limited to firms with data availability in MSCI. Standard errors are clustered by district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Strategic Philanthropy Proxies				
Dep. Var.: CAR [-1,+21]	(1)	(2)	(3)	(4)
Disaster Relief Donation	-0.021**	-0.022***	-0.015**	-0.015***
	(0.009)	(0.004)	(0.006)	(0.006)
Domestic Focus	-0.001			
	(0.001)			
Disaster Relief Donation	0.012**			
× Domestic Focus	(0.006)			
High SG&A Expenses		0.002		
		(0.002)		
Disaster Relief Donation		0.021*		
× High SG&A Expenses		(0.011)		
High R&D Expenses			-0.004	
			(0.003)	
Disaster Relief Donation			0.045***	
× High R&D Expenses			(0.005)	
Disaster Relief Donation				0.010*
× Regulated Industry				(0.006)
Control variables and FEs	Yes	Yes	Yes	Yes
Observations	52,536	52,536	52,536	52,536
R-squared	0.129	0.129	0.129	0.123
Panel B: Agency Proxies				
Dep. Var.: CAR [-1,+21]	(1)	(2)	(3)	(4)
Disaster Relief Donation	0.017***	-0.011*	-0.051***	-0.009***
	(0.003)	(0.006)	(0.006)	(0.002)
Low Governance Index	-0.002			
	(0.002)			
Disaster Relief Donation	-0.023***			
× Low Governance Index	(0.008)			
Low Institutional Ownership		0.0005		
		(0.002)		
Disaster Relief Donation		-0.066**		
× Low Institutional Ownership		(0.027)		
High CEO Wage Ratio			-0.002	
			(0.001)	
Disaster Relief Donation			-0.044***	
× High CEO Wage Ratio			(0.012)	
E-Index				0.001
				(0.001)
Disaster Relief Donation ×				-0.004***
E-Index				(0.001)
Control variables and FEs	Yes	Yes	Yes	Yes
Observations	9,768	52,536	52,536	52,536
R-squared	0.104	0.129	0.129	0.026

Table 7: Institutions and Other Donors

This table reports the results of regressing unaffected firms' [-1,+21]-day CARs around sudden disasters on a binary indicator for disaster-specific donations (*Disaster Relief Donation*) interacted with a. an indicator for high ratio of other commercial and NGO grants/GDP in column (1), b. high country-level sustainability score (i.e., strong ESG regulation) in column (2), c. high government disaster relief grants in column (3), and d. high religiousness in column (4). All specifications include a set of control variables (indicator for foreign activities, ROA, PPE/Assets, firm size, and the effective tax rate) as well as country × year FE, industry × year FE, and firm district FE. Definitions of all variables are provided in Appendix A. Standard errors are clustered by district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Var.: CAR [-1,+21]	(1)	(2)	(3)	(4)
Disaster Relief Donation	-0.009*	0.008***	0.044	-0.012**
	(0.005)	(0.002)	(0.033)	(0.005)
Disaster Relief Donation	-0.033***			
× High Other Commercial & NGO Grants	(0.011)			
Disaster Relief Donation		-0.022***		
× Strong ESG Regulation		(0.005)		
Disaster Relief Donation			-0.063**	
× High Government Relief Grants			(0.027)	
Disaster Relief Donation				0.012**
× High Religiousness				(0.006)
Control Variables	Yes	Yes	Yes	Yes
Country × Year FE	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes
Observations	52,536	51,615	34,908	52,536
R-squared	0.129	0.106	0.129	0.129

Table 8: Strategic Philanthropy Channels: Firm Reputation, Sales Growth, and Employee Satisfaction

This table shows OLS results where the dependent variable is a. the % change in monthly Google searches for the firm's name from the month before the disaster to the disaster month (columns (1) and (2)), b. the firm's sales growth (in percentage terms), from the year before the disaster to the disaster year (columns (3) and (4)), or c. the change in the employee satisfaction score in Refinitiv ESG ratings (in %) from the year before the disaster to the disaster year (columns (5) and (6)). In all panels, the main independent variable is an indicator for whether the firm provided disaster relief donations, interacted with an indicator for large disasters (*Large Disaster)* in columns (2), (4), and (6)). All specifications include control variables (foreign activities, ROA, PPE/Assets, firm size, and the firm's effective tax rate) as well as country × year FE, industry × year FE, and firm district FE (country and industry FEs in columns (5) and (6)). Standard errors are clustered by district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var.:	% Change in Firm Web Searches$_{m-1,m}$		% Sales Growth$_{t-1,t}$		% Employee Satisfaction Change$_{t-1,t}$	
Disaster Relief Donation	0.156***	0.083**	-0.044***	-0.050***	0.002	0.009
	(0.025)	(0.032)	(0.002)	(0.003)	(0.007)	(0.011)
Large Disaster		-0.042***		-0.010***		-0.012**
		(0.010)		(0.001)		(0.005)
Disaster Relief Donation × Large Disaster		0.297***		0.028***		0.030**
		(0.042)		(0.011)		(0.011)
Observations	7,911	7,911	49,371	49,371	126	126
R-squared	0.134	0.134	0.150	0.150	0.503	0.453
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Country (× Year) FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry (× Year) FE	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	No	No

Table 9: Donation-Level Characteristics

This table shows OLS estimations where the dependent variable is the donating firm's [-1,+21]-day CAR following a sudden disaster, for a sample of firms in unaffected areas. The main explanatory variable(s) in column (1) is the ratio of disaster-specific donations/assets, as well as its squared term in column (2). The sample is limited to firms with data availability for exact donation amount in columns (1) and (2). The main explanatory variable in column (3) is a binary indicator for whether the firm provides disaster-specific donations, interacted with an indicator for in-kind donations (donated products or equipment). All specifications include a set of control variables (indicator for foreign activities, ROA, PPE/Assets, firm size, and the firm's effective tax rate) as well as country × year FE and industry × year FE. Column (3) additionally includes firm district FE. Definitions of all variables are provided in Appendix A. Standard errors are clustered by district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Donation Size		Donation Type
Dep. Var.: CAR [-1,+21]	(1)	(2)	(3)
Donations/Assets %	-0.006***	0.082***	
	(0.001)	(0.010)	
(Donations/Assets %)^2		-0.002***	
		(0.000)	
Disaster Relief Donation			-0.014*
			(0.007)
Disaster Relief Donation × Donated Products			0.025***
			(0.008)
Observations	325	325	52,536
R-squared	0.307	0.340	0.129
Control variables	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes
Country × Year FE	Yes	Yes	Yes
District FE	No	No	Yes

Table 10: Testing the Determinants of Donating Propensity

This table shows marginal effects for logit estimations where the dependent variable is an indicator for whether the firm made disaster-specific donations, for a sample of unaffected firms around sudden disasters. The explanatory variables in columns (1) to (5) are proxies for disaster size and marketing-oriented firms (indicators for high SG&A expenses and R&D expenses, regulated industries, and all of them, respectively). The explanatory variables in columns (6) to (10) are proxies for potential agency-problem indicators (the firm's E-Index, indicators for a low firm-level governance index, bottom-quartile institutional ownership, a high CEO wage ratio relative to the second-highest paid executive, and all of them, respectively). Control variables consist of indicators for foreign activities, ROA, PPE/Assets, firm size, and the firm's effective tax rate, and year fixed effects. The sample is limited to firms with data availability for the MSCI governance index in Columns (7) and (10). Definitions of all variables are provided in Appendix A. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Var.: Disaster Relief Donation	(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)	(9)	(10)
ln(Disaster Size)	0.002***				0.001***	E-Index	0.005***				0.011***
	(0.000)				(0.000)		(0.001)				(0.002)
High SG&A Expenses		0.006***			0.005***	Low Governance Index		0.009**			0.010**
		(0.001)			(0.001)			(0.004)			(0.004)
High R&D Expenses			-0.013***		-0.012***	Low Institutional Ownership			0.005***		-0.005
			(0.002)		(0.001)				(0.001)		(0.020)
Regulated Industry				0.009***	0.007***	High CEO Wage Ratio				0.008**	0.011
				(0.001)	(0.001)					(0.002)	(0.007)
Observations	52,536	52,536	52,536	52,536	52,536	Observations	52,536	8,670	52,536	52,536	8,670
Pseudo R2	0.154	0.144	0.147	0.144	0.177	Pseudo R2	0.147	0.137	0.136	0.277	0.279
Control variables	Yes	Yes	Yes	Yes	Yes	Control variables	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Year FE	Yes	Yes	Yes	Yes	Yes

Table 11: Other Robustness Tests

This table shows OLS estimations where the dependent variable is the firm's [-1,+21]-day CAR following a disaster. The main explanatory variable is the binary indicator *Disaster Relief Donation*, interacted with an indicator for large disasters (*Large Disaster*) in columns (1)-(4). The sample consists of US firms in column (1), non-US firms in column (2), long-term (LT) disasters only in column (3), and firms with a domestic main exchange listing in column (4). The other columns consist of the main sample of sudden disasters. In column (5), we interact with the firm's non-disaster specific donations, and in column (6), we interact with an indicator for unanticipated donations. In column (7), we interact with an indicator for having a customer or supplier in an affected area, and in column (8), we interact with the firm's environmental score (ranging from -50 to +50). All specifications include controls for foreign activities, ROA, PPE/Assets, firm size, and the firm's effective tax rate, as well as country × year FE, industry × year FE, and firm district FE. Definitions of all variables are provided in Appendix A. Standard errors are clustered by district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Var.: CAR[-1,+21]	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	*US Firms*	*Non-US Firms*	*LT Dis. Only*	*Domestic Listing*	*Sudden Dis.*	*Sudden Dis.*	*FactSet Coverage*	*Refinitiv ESG Coverage*
Disaster Relief Donation	-0.018***	-0.010**	-0.003	-0.017**	-0.014*	-0.005	-0.015***	-0.039***
	(0.006)	(0.005)	(0.013)	(0.008)	(0.008)	(0.007)	(0.006)	(0.003)
Large Disaster	-0.002	0.001	0.012	0.000				
	(0.001)	(0.002)	(0.018)	(0.002)				
Disaster Relief Donation × Large Disaster	0.017***	0.051***	0.020	0.018***				
	(0.005)	(0.005)	(0.019)	(0.006)				
Annual Donations					-0.001			
					(0.003)			
Disaster Relief Donation × Annual Donations					0.002			
					(0.005)			
Unanticipated Donor						-0.014***		
						(0.004)		
Affected Supply Chain							0.002	
							(0.002)	
Disaster Relief Donation × Affected Supply Chain							0.011**	
							(0.005)	
Environmental Score								-0.0002
								(0.0002)
Disaster Relief Donation × Environmental Score								0.0003*
								(0.0001)
Observations	21,189	31,317	158,028	50,175	52,536	52,536	21,189	785
R-squared	0.105	0.220	0.047	0.122	0.129	0.129	0.105	0.324
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country × Year	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix A: Variable Definitions

Variable	Definition
CAR[-1,+21]	Cumulative abnormal returns in days -1 to +21 around the disaster event, where day 0 is the first day the disaster struck, benchmarked relative to the CAPM-based market returns of the country's major equity index. *Source: CRSP, Compustat, Datastream.*
CAR[-1,+3]	Cumulative abnormal returns in days -1 to +3 around the disaster event, benchmarked relative to the CAPM-based market returns of the country's major equity index. *Source: CRSP, Compustat, Datastream.*
CAR[+3,+21]	Cumulative abnormal returns in days +3 to +21 around the disaster event, benchmarked relative to the CAPM-based market returns of the country's major equity index. *Source: CRSP, Compustat, Datastream.*
CAR[-1,+1]	Cumulative abnormal returns in days -1 to +1 around the disaster relief grant announcement, benchmarked relative to the CAPM-based market returns of the country's major equity index. *Source: CRSP, Compustat, Datastream.*
Disaster Relief Donation	A dummy equal to one if the firm made donations to recipients in the disaster-affected area around the disaster event, and zero otherwise. *Source: Foundation Maps.*
Donations/Assets	The ratio of disaster-specific donations to total assets if the firm donated, left missing otherwise. *Source: Foundation Maps.*
Donated Products	A dummy equal to one if the firm only made in-kind donations consisting of donated products or donated equipment, and zero otherwise. *Source: Foundation Maps.*
Size [ln(Total Assets)]	Firm size calculated as the logarithm of total assets in USD. *Source: Datastream and Compustat Global.*
Affected	A dummy equal to one if the firm is headquartered in a ZIP or Postal Code affected by the disaster. *Source: EM-DAT.*
Total Assets ($Mil)	The firm's total assets in the year of the disaster, in millions of U.S. dollars. *Source: Datastream and Compustat Global.*
Market Value ($Mil)	The market value of the firm, in millions of U.S. dollars. *Source: Datastream, CRSP, and Compustat Global.*
Sales/Assets	The ratio of total sales to total assets in the year of the disaster. *Source: Datastream and Compustat Global.*
Intangibles/Assets	The ratio of intangible assets to total assets in the year of the disaster. *Source: Datastream and Compustat Global.*
CapEx/Assets	The ratio of capital expenditures to total assets in the year of the disaster. *Source: Datastream and Compustat Global.*
ROA	The ratio of EBIT to total assets in the year of the disaster. *Source: Datastream and Compustat Global.*
PPE/Assets	The ratio of property, plants, and equipment to total assets in the year of the disaster. *Source: Datastream and Compustat Global.*
SG&A Expenses/Assets	The ratio of selling, general, and administrative (SG&A) expenses to total assets in the year of the disaster. *Source: Datastream and Compustat Global.*
R&D Expenses/Assets	The ratio of research and development (R&D) expenses to total assets in the year of the disaster. *Source: Datastream and Compustat Global.*
Effective Tax Rate	The firm's total income taxes as a percentage of EBIT. *Source: Datastream and Compustat Global.*
Foreign Activities	A dummy equal to one if the firm has foreign activities outside of its headquarter country, proxied by the presence of foreign currencies on the firm's annual statements. *Source: Datastream and Compustat Global.*
Domestic Focus	A dummy equal to one if the firm has no activities outside of its headquarter country. *Source: Datastream and Compustat Global.*
District FE	A set of dummies equal to one if the firm's headquarters is located in a particular district, county, province, or state. *Source: Datastream and Compustat Global.*

Disaster Damage ($Mil)	The total value in damages attributed to the disaster, measured in millions of U.S. dollars. *Source: EM-DAT.*
ln (Disaster Size)	The natural logarithm of *Disaster Damage*. *Source: EM-DAT.*
Small Disaster	A dummy equal to one if the total value in damages attributed to the disaster is smaller than US$2 million (25th percentile). *Source: EM-DAT.*
Large Disaster	A dummy equal to one if the total value in damages attributed to the disaster is larger than US$1.8 billion (75th percentile). *Source: EM-DAT.*
Sudden Disaster	A dummy equal to one if the disaster was a flash flood, earthquake, tropical cyclone, landslide, volcanic activity, or tsunami. *Source: EM-DAT.*
Long-Term Disaster	A dummy equal to one if the disaster was a drought, extreme winter conditions, extreme temperatures, heat wave, or a cold wave. *Source: EM-DAT.*
ln (Web Search Intensity)	The natural logarithm of the number of monthly Google searches for disaster-related terms, including "hurricane," "earthquake," "tsunami," "landslide," "cyclone," etc. in the month of the disaster. *Source: Google Trends.*
Disaster Timing	A dummy equal to one if the disaster occurred in the first month of the firm's financial year, or if the disaster occurred in December. *Source: WRDS and EM-DAT.*
Geographic Proximity	The distance between the firm's headquarters and the disaster zone, divided in deciles, where a higher decile indicates a smaller distance. *Source: EM-DAT and Compustat Global.*
Regulated Industry	A dummy equal to one if the firm is in a regulated industry, where regulated industries are Utilities and Communications following Masulis and Reza (2015).
E-Index	Entrenchment index ranging from 0-5, adding one for the presence of a poison pill, supermajority requirement, golden parachute, staggered board, classified board, or limited director liability, respectively. *Source: Refinitiv ESG.*
Low Institutional Ownership	A dummy equal to one if the firm has below-average institutional ownership. *Source: FactSet.*
% Domestic > % Foreign Inst. Own.	A dummy equal to one if the percentage of domestic institutional owners is larger than the percentage of foreign institutional owners. *Source: FactSet.*
High CEO Wage Ratio	A dummy equal to one if the ratio of the CEO's total wage to the second highest-paid executive is above the sample average. *Source: ExecuComp.*
Low Governance Index	A dummy equal to one if the firm has a below-average governance index. *Source: MSCI Governance.*
High Other Commercial and NGO Grants	A dummy equal to one if a country has an above-average share of disaster relief giving by non-corporate and non-governmental charities as a fraction of GDP. *Source: Foundation Maps.*
Strong ESG Regulation	A dummy equal to one if a country has an above-average sustainability score, capturing rules and regulations with regards to a country's environmental and social policies. *Source: Vigeo.*
High Government Relief Grants	A dummy equal to one if a country's government provided an above-average amount of disaster relief funding as a fraction of GDP. *Source: OECD.*
High Religiousness	A dummy equal to one if the country has an above-average percentage of people that visit religious institutions more than once a week. *Source: World Value Surveys.*
% Sales Growth	The percentage change in total sales from year *t*-1 before the disaster to year *t* (the year the disaster occurred). Source: *Datastream and Compustat Global.*
% Change in Firm Web Searches	The logarithm of the number of monthly web searches via the Google search engine for the firm's official name in the month of the disaster. *Source: Google Trends.*
% Employee Satisfaction Change	Continuous variable capturing the change in the % employee satisfaction score as reported by the firm, in the year of the disaster relative to the year before. *Source: Refinitiv ESG.*
Family Firm	A dummy equal to one if the firm is a family firm. A firm is defined as a family firm if its largest shareholder or ultimate shareholder is a family, or its CEO or Chairman is the founder or a descendant of the founding family. *Source: NRG Metrics.*

R&D/Sales	Ratio of the firm's R&D expenses to sales ratio. Source: *Datastream and Compustat Global.*
Annual Donations	A dummy equal to one if the firm has made donations in the year of the disaster, where donations are not necessarily specific to the disaster, and zero otherwise. *Source: Refinitiv ESG.*
Total Deaths	The number of human deaths caused by the disaster. *Source: EM-DAT.*
Unanticipated Donor	A dummy equal to one if the firm did not donate for the previous large disaster in the country but does donate for the current disaster. *Source: Foundation Maps.*
High Donated Amount	A dummy equal to one if the donated amount (in USD) is higher than the sample median. *Source: Foundation Maps and press releases.*
CEO Name	A dummy equal to one if the CEO is referred to by name in a firm's disaster relief press release or media announcement. *Source: press releases.*
Reputable NGO	A dummy equal to one if the donation was made to a large NGO, including the Red Cross, UNICEF, Doctors Without Borders, AmeriCares, and the Salvation Army. *Source: press releases.*
Affected Supply Chain	Dummy equal to one if a firm in an unaffected zip code has a customer or supplier in an affected zip code. *Source: FactSet Revere and Dai, Hao, and Ng (2020).*
Affected Subsidiary	A dummy equal to one if a firm has a subsidiary in an affected state. *Source: WRDS Subsidiary Data.*
Affected Customer	A dummy equal to one if a firm reports having customers in an affected state. *Source: WRDS Segments.*
Environmental Score	A firm's environmental score, capturing the firm's performance in terms of emissions reductions, resource reduction, and environmental R&D, relative to its industry peers. The score ranges from -50 to +50, with 0 being the industry average. *Source: Refinitiv ESG.*
Emissions Reductions Score	A firm's emissions reductions score, relative to its industry peers. The score ranges from -50 to +50, with 0 being the industry average. *Source: Refinitiv ESG.*
Resource Reductions Score	A firm's resource reductions score, relative to its industry peers. The score ranges from -50 to +50, with 0 being the industry average. *Source: Refinitiv ESG.*

INTERNET APPENDIX

Disaster Relief, Inc.

Appendix IA.A: Disaster Sample Distribution

This table shows the frequency of disasters in our sample by country.

Country	# Disasters	Country	# Disasters
Argentina	1	Italy	13
Australia	11	Japan	41
Austria	1	South Korea	6
Belgium	2	Luxembourg	1
Brazil	3	Mexico	19
Canada	3	Malaysia	1
Switzerland	1	Netherlands	2
Chile	3	Norway	1
China	82	New Zealand	6
Cayman Islands	1	Philippines	25
Czech Republic	1	Poland	1
Germany	6	Portugal	2
Denmark	2	Russia	3
Spain	3	Sweden	1
France	9	Thailand	4
United Kingdom	6	Turkey	5
Greece	2	Taiwan	9
Indonesia	16	United States	58
India	17	South Africa	1
		Total	**330**

Appendix IA.B: Disaster-Related Deaths

This table shows OLS estimations of regressing [-1,+21]-day CARs around a sudden disaster on disaster relief donations and disaster related deaths. The main explanatory variables are indicators for whether unaffected firms provide disaster-specific donations (*Disaster Relief Donation*), interacted with measures of disaster size in terms of deaths caused: total disaster-related deaths in column (1), bottom quartile (Q1) of total deaths in column (2), and top quartile (Q4) of total deaths in column (3). All specifications include a set of control variables (indicator for foreign activities, ROA, PPE/Assets, firm size, and the firm's effective tax rate) as well as country × year FE, industry × year FE, and firm district FE. Definitions of all variables are provided in Appendix A. Standard errors are clustered by firm district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Var.: CAR [-1,+21]	(1)	(2)	(3)
Disaster Relief Donation	-0.036***	-0.001	-0.019**
	(0.007)	(0.008)	(0.008)
ln (Disaster-Related Deaths)	0.000		
	(0.000)		
Disaster Relief Donation × ln (Disaster-Related Deaths)	0.009***		
	(0.001)		
Total Deaths Q1		-0.002	
		(0.002)	
Disaster Relief Donation × Total Deaths Q1		-0.043***	
		(0.007)	
Total Deaths Q4			0.001
			(0.001)
Disaster Relief Donation × Total Deaths Q4			0.015**
			(0.006)
Observations	52,536	52,536	52,536
R-squared	0.129	0.129	0.129
Control Variables	Yes	Yes	Yes
Country × Year FE	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes
District FE	Yes	Yes	Yes

Appendix IA.C: US Firms with and without Indirectly Affected Subsidiaries, Suppliers, Customers

Panel A shows OLS estimations where unaffected firms' [-1,+21]-day CARs around sudden disasters are regressed on an indicator for disaster-specific donations, interacted with proxies for disaster saliency. The table focuses on a subsample of U.S. firms. Proxies for disaster saliency are disaster size and web search intensity in columns (1) and (2), and dummies for small and large disasters in columns (3) and (4). Panel A includes all US firms, Panel B excludes firms with subsidiaries, suppliers, or customers in affected states. All specifications control for foreign activities, ROA, PPE/Assets, firm size, and the effective tax rate as well as year FE, industry × year FE, and state FE. Definitions of all variables are provided in Appendix A. Standard errors are clustered by state. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: US Subsample				
Dep. Var.: CAR [-1,+21]	(1)	(2)	(3)	(4)
Disaster Relief Donation	-0.082***	-0.042**	0.001	-0.018***
	(0.018)	(0.017)	(0.006)	(0.006)
ln (Disaster Size)	0.000			
	(0.000)			
Disaster Relief Donation × ln (Disaster Size)	0.005***			
	(0.001)			
ln(Web Search Intensity)		0.004		
		(0.003)		
Disaster Relief Donation × ln (Web Search Intensity)		0.009*		
		(0.005)		
Small Disaster			0.001	
			(0.004)	
Small Disaster × Disaster Relief Donation			-0.105***	
			(0.010)	
Large Disaster				-0.002
				(0.001)
Large Disaster × Disaster Relief Donation				0.017***
				(0.005)
Control Variables and FEs	Yes	Yes	Yes	Yes
Observations	21,189	21,189	21,189	21,189
R-squared	0.105	0.105	0.105	0.105
Panel B: Excluding Indirectly Affected US Firms				
Dep. Var.: CAR [-1,+21]	(1)	(2)	(3)	(4)
Disaster Relief Donation	-0.129***	-0.092***	0.019***	-0.018***
	(0.018)	(0.011)	(0.006)	(0.006)
ln(Disaster Size)	0.001			
	(0.001)			
Disaster Relief Donation × ln (Disaster Size)	0.008***			
	(0.001)			
ln(Web Search Intensity)		0.007**		
		(0.003)		
Disaster Relief Donation × ln (Web Search Intensity)		0.024***		
		(0.004)		
Small Disaster			-0.002	
			(0.004)	
Disaster Relief Donation × Small Disaster			-0.198***	
			(0.014)	
Large Disaster				0.002
				(0.002)
Disaster Relief Donation × Large Disaster				0.013***
				(0.004)
Control Variables and FEs	Yes	Yes	Yes	Yes
Observations	15,456	15,456	15,456	15,456
R-squared	0.109	0.109	0.109	0.109

Appendix IA.D: Donation Announcements: CEO Reputation and Donation Recipient

This table reports the results of regressing CARs [-1,+1] around disaster relief donation announcements in media articles and press releases on indicators for CEO reputation and donation recipients. The main independent variables are indicators for CEO name references interacted with an indicator for an above-median donated amount and a high CEO wage ratio in columns (1) and (2), respectively. Column (3) interacts with an indicator for whether the donation was made to a well-known NGO. All specifications include a set of control variables (foreign activities, ROA, PPE/assets, firm size, and effective tax rate) as well as country × year fixed effects and industry × year fixed effects. Definitions of all variables are provided in Appendix A. Standard errors are clustered by district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Var.: CAR[-1,+1]	(1)	(2)	(3)
CEO Name	0.028***	0.043***	-0.025***
	(0.010)	(0.001)	(0.008)
High Donated Amount	-0.003		
	(0.004)		
CEO Name ×	-0.030*		
High Donated Amount	(0.016)		
High CEO Wage Ratio		-0.002	
		(0.002)	
CEO Name ×		-0.049***	
High CEO Wage Ratio		(0.003)	
Reputable NGO			0.022***
			(0.008)
CEO Name × Reputable NGO			0.035***
			(0.009)
Control Variables	Yes	Yes	Yes
Country × Year FE	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes
Observations	559	482	559
R-squared	0.210	0.239	0.211

Appendix IA.E: Univariate Statistics – Disaster Timing

This table shows summary statistics for subsamples of disaster-firm observations where the disaster occurred in December of in the first month of the firm's financial year (*Disaster Timing*) and for those where the disaster occurred at other times in the year (*Other Timing*). *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Continuous variables are winsorized at the 1% and 99% level, and accounting variables are measured in the year of the disaster. Variable definitions are provided in Appendix Table A.

Variable	Mean	Mean	Difference
Sample	*Disaster Timing (N = 5,290)*	*Other Timing (N = 47,264)*	
Market Value ($Mil)	1,609.64	1,641.35	31.710
Sales Growth	0.115	0.109	-0.010
SGA/Assets	0.284	0.282	-0.002
Affected Customer	0.012	0.017	0.005
Affected Supply Chain	0.050	0.050	0.000

Appendix IA.F: Instrumental Variable Approach – Robustness Tests

Panel A shows robustness tests for the two-stage test in Table 4, where in the first stage, the *Disaster Relief Donation* dummy is instrumented with *Disaster Timing*, and the interaction *Disaster Relief Donation* × *Large Disaster* is instrumented with the interaction *Disaster Timing* × *Large Disaster*. Additional second-stage estimations are reported in column (1), where the dependent variable is the [-1,+21]-day CARs and where the sample excludes tropical storms and tropical cyclones, and column (2), where the outcome variable is the firm's CARs over a [-30,-1] window before the disaster as a placebo test. Panel B shows first-stage (columns (1) and (2)) and second-stage (column (3)) results using a firm's geographic proximity to the disaster zone (in deciles, where a higher decile indicates a smaller distance) as the instrument for donating. In column (4), the sample is limited to US firms, excluding those with subsidiaries, suppliers, or customers in affected states. All specifications control for foreign activities, ROA, PPE/Assets, firm size, and the firm's effective tax rate, as well as country × year FE (excluded in Panel A and in column (4) of Panel B), industry × year FE, and firm district FEs. Panel A additionally controls for disaster type. Standard errors are clustered by firm district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Disaster Timing Robustness Tests

	(1)	(2)
Dep. Var.:	CAR[-1,+21]	CAR[-30,-1]
	2nd Stage: Excl. Tropical Storms	*2nd Stage: Placebo*
P(Disaster Relief Donation)	-0.055*	0.069
	(0.029)	(0.147)
Large Disaster	0.001	-0.013
	(0.002)	(0.010)
P(Disaster Relief Donation) ×	0.045*	-0.098
Large Disaster	(0.026)	(0.166)
Observations	52,536	52,536
F-Stat (IV)	219.16	250.62
Control Variables and FEs	Yes	Yes

Panel B: Geographic Proximity Instrument

	(1)	(2)	(3)	(4)
Dep. Var.:	Disaster Relief Donation	Disaster Relief Donation × Large Disaster	CAR[-1,+21]	CAR[-1,+21]
	1st Stage		*2nd Stage*	*Excl. Indir. Aff.*
Geographic Proximity	0.0002***			
	(0.000)			
Geographic Proximity × Large Disaster		0.0003**		
		(0.0001)		
P(Disaster Relief Donation)			-3.944***	-14.333**
			(0.304)	(5.706)
Large Disaster			-0.016***	-0.086**
			(0.003)	(0.039)
P(Disaster Relief Donation) ×			0.748***	12.801*
Large Disaster			(0.224)	(7.367)
Observations	25,197	25,197	25,197	13,745
F-Stat (IV)	521.14	521.14	521.14	242.88
Control Variables and FEs	Yes	Yes	Yes	Yes

Appendix IA.G: The Effects of Donations by Affected Firms

This table reports OLS estimations where the dependent variable is the firm's [-1,+21]-day CARs in columns (1) and (4), the [-1,+3]-day CARs in columns (2) and (5), and the [+3,+21]-day CARs in columns (3) and (6) following a sudden disaster. The sample consists of both unaffected firms and firms located in affected ZIP- or Postal Codes. The main explanatory variables are binary indicators for disaster-specific donations (*Disaster Relief Donation*), for firms located in affected zip codes (*Affected*), and their interaction. All specifications include a set of control variables (indicator for foreign activities, ROA, PPE/Assets, firm size, and the firm's effective tax rate) as well as country × year FE, industry × year FE, and firm district FEs. In column 3, district FEs are included. Definitions of all variables are provided in Appendix A. Standard errors are clustered by district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var.:	CAR[-1,+21]	CAR[-1,+3]	CAR[+3,+21]	CAR[-1,+21]	CAR[-1,+3]	CAR[+3,+21]
Disaster Relief Donation				-0.014**	-0.004***	-0.050**
				(0.007)	(0.001)	(0.020)
Affected	-0.012***	-0.004***	-0.006	-0.014***	-0.004***	-0.007
	(0.004)	(0.001)	(0.007)	(0.004)	(0.001)	(0.007)
Disaster Relief Donation				0.115***	0.036***	0.155***
× Affected				(0.017)	(0.006)	(0.042)
Observations	53,388	49,026	49,026	53,388	49,026	49,026
R-squared	0.128	0.099	0.071	0.128	0.099	0.071
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Country × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes

Appendix IA.H: Testing the Effect of Family and Institutional Ownership

This table reports the results of regressing unaffected donating firms' [-1,+21]-day CARs around sudden disasters on a binary indicator for disaster-specific donations (*Disaster Relief Donation*), interacted with an indicator for family firms (column (1)), an indicator for high total institutional ownership (column (2)), and an indicator for higher domestic institutional ownership than foreign institutional ownership (column (3)). The sample in all columns is limited to firms with FactSet ownership coverage. All specifications include control variables (indicator for foreign activities, ROA, PPE/Assets, firm size, and the effective tax rate) as well as country × year FE (country FE in column (1)), industry × year FE (industry FE in column (1)), and firm district FE (plus year FE in column (1)). Definitions of all variables are provided in Appendix A. Standard errors are clustered by district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Var.: CAR [-1,+21]	(1)	(2)	(3)
Disaster Relief Donation	0.007*	-0.063**	-0.044**
	(0.004)	(0.027)	(0.021)
Family Firm	0.001		
	(0.002)		
Disaster Relief Donation ×	0.004**		
Family Firm	(0.002)		
High Institutional Ownership		-0.006*	
		(0.003)	
Disaster Relief Donation ×		0.065***	
High Institutional Ownership		(0.025)	
% Domestic > % Foreign Inst. Ownership			-0.003
			(0.003)
Disaster Relief Donation ×			0.049**
% Domestic > % Foreign Inst. Ownership			(0.020)
Control Variables	Yes	Yes	Yes
Country (× Year) Fixed Effects	Yes	Yes	Yes
Industry (× Year) Fixed Effects	Yes	Yes	Yes
District Fixed Effects	Yes	Yes	Yes
Observations	3,377	21,112	21,112
R-squared	0.101	0.223	0.222

Appendix IA.I: Robustness Tests: Tax Motive

This table shows OLS estimations where the dependent variable is the firm's [-1,+21]-day CAR following a sudden disaster, for a sample of firms in unaffected areas. The main explanatory variable is an indicator for whether the firm provides disaster-specific donations (*Disaster Relief Donation*), as well as the firm's effective tax rate (interacted in column (1)). The sample consists of unaffected firms in column (1), firms with negative effective tax rates only in column (2), and firms with effective tax rates > 35% in column (3). All specifications include a set of control variables (indicator for foreign activities, ROA, PPE/Assets, firm size, and the firm's effective tax rate) as well as country × year FE, industry × year FE, and firm district FE. Definitions of all variables are provided in Appendix A. Standard errors are clustered by district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Var.: CAR [-1,+21]	(1)	(2)	(3)
Sample	*All*	*Eff. Tax ≤ 0*	*Eff. Tax > 35%*
Disaster Relief Donation	-0.017***	-0.0004	0.010*
	(0.006)	(0.005)	(0.006)
Effective Tax Rate	-0.002		
	(0.007)		
Disaster Relief Donation × Effective Tax Rate	0.031**		
	(0.015)		
Observations	52,536	21,132	7,836
R-squared	0.129	0.081	0.232
Control variables	Yes	Yes	Yes
Country × Year FE	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes
District FE	Yes	Yes	Yes

Appendix IA.J: Probability of Donating, Non-Disaster Donations (Refinitiv ESG)

This table shows marginal effects for logit estimations where the dependent variable is an indicator for whether the firm donated in year *t*. The explanatory variables are proxies for marketing-oriented firms in columns (1) to (5) (indicators for above-average SG&A expenses and R&D expenses, a regulated industry, and above-average religiousness, respectively), and proxies for potential agency issues in columns (6) to (10) (the firm's E-Index, indicators for a low firm-level governance index, bottom-quartile institutional ownership, and a high CEO wage ratio relative to the second-highest paid executive, respectively). Control variables are indicators for foreign activities, ROA, leverage, firm size, and the firm's effective tax rate, as well as year fixed effects. The sample is limited to firms with data availability for the MSCI governance index in columns (7) and (10). Definitions of all variables are provided in Appendix A. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dep. Var.: P(Disaster Relief Donation)	(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)	(9)	(10)
High SG&A Expenses	0.008***				0.009***	E-Index	0.017***				0.045***
	(0.001)				(0.001)		(0.0003)				(0.001)
High R&D Expenses		0.004***			0.001	Low Governance Index		-0.008***			-0.010***
		(0.001)			(0.001)			(0.003)			(0.003)
Regulated Industry			0.004***		0.004**	Low Institutional Ownership			0.023***		0.035***
			(0.001)		(0.002)				(0.001)		(0.009)
High Religiousness				0.037***	0.009***	High CEO Wage Ratio				0.004***	0.011***
				(0.004)	(0.002)					(0.001)	(0.003)
Observations	106,417	106,417	106,417	106,417	106,417	Observations	106,417	27,254	106,417	106,417	27,254
Control variables	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Year FE	Yes	Yes	Yes	Yes	Yes

Appendix IA.K: Likelihood of Donating and Environmental Performance

This table estimates the likelihood of donating in an OLS setting for subsamples of climate-related (e.g. flash floods, storms, fires, and tornadoes, columns (1)-(3)) and non-climate related (e.g. earthquakes, hurricanes, volcanic activity, columns (4)-(6)) sudden disasters. The independent variables are indicators for below-average firm-level environmental score (columns (1) and (4)), emissions reduction score (columns (2) and (5)), and resource reduction score (columns (3) and (6)), interacted with indicators for post-disaster periods. The post-disaster indicator is based on the first large disaster that occurred in the sample period. All specifications control variables (indicator for foreign activities, ROA, PPE/Assets, firm size, and the effective tax rate) as well as country × year FE, industry × year FE, and firm district FE. Definitions of all variables are provided in Appendix A. Standard errors are clustered by district. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Sample	*Climate-Related Disaster*			*Non-Climate-Related Disaster*		
Dep. Var.: P(Disaster Relief Donation)	(1)	(2)	(3)	(4)	(5)	(6)
Post-Disaster	0.108***	0.095***	0.106***	0.067***	0.057**	0.069***
	(0.014)	(0.014)	(0.012)	(0.026)	(0.027)	(0.026)
Low Environmental Score	-0.017**			-0.034**		
	(0.006)			(0.015)		
Low Environmental Score × Post-Disaster	-0.051***			-0.032		
	(0.006)			(0.025)		
Low Emissions Reductions Score		-0.036***			-0.049***	
		(0.003)			(0.018)	
Low Emissions Reductions Score × Post-Disaster		-0.028**			-0.032	
		(0.010)			(0.025)	
Low Resource Reductions Score			-0.015*		-0.013	-0.025
			(0.007)		(0.027)	(0.019)
Low Resource Reductions Score × Post-Disaster			-0.046***			-0.032
			(0.014)			(0.028)
Observations	5,857	5,857	5,857	5,685	5,685	5,685
R-squared	0.217	0.217	0.216	0.217	0.217	0.216
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Country × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year FE	Yes	Yes	Yes	Yes	Yes	Yes
District FE	Yes	Yes	Yes	Yes	Yes	Yes