

Follow the Leader?

The costs of solving uncertainty and ambiguity with the wrong cognitive referent"

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Abstract

Scholars have long sought to demonstrate the financial value of corporate social responsibility (CSR) and found that stakeholders tend to respond positively when CSR aligns with their values or interests. This work builds on the premise that stakeholders have stable preferences and are able to identify behaviors as contextually appropriate. However, firms' pro-social behavior often occurs under high uncertainty of the social need and the firm's capacity to respond. Hence, stakeholders are likely to interpret a firm's actions with other cues. We argue that stakeholders use a firm's preexisting reputation to predict the contextual appropriateness of its non-market behavior. Well-reputed firms will thus derive rents regardless of their response, while poorly-regarded firms will be punished, regardless of the relative social value of their donation amount. In turn, these assessments will become cognitive anchors that shape how subsequent responses are viewed. The reputation of the first mover overrides the reputation of an imitating follower, which obtains a spillover benefit or loss. Our analyses use a database covering every firm donation to every natural disaster worldwide from 2003 to 2015 and the preliminary results point to important boundary conditions for the relationship between CSR and rent accrual.

Keywords: non-market strategy, corporate social responsibility, organizational decision making under uncertainty, corporate disaster giving, reputation

INTRODUCTION

In addition to traditional forms of corporate social responsibility (CSR) that seek to strengthen stakeholder relationships and reduce externalities, (Barnett and Salomon, 2012; Flammer and Luo, 2015; Henisz, Dorobantu, and Nartey, 2013), firms are increasingly being asked to help communities recover from crises not of their own making. Nowhere is this more evident than in the wake of sudden natural disasters (Ballesteros, Useem, and Wry, 2017; Madsen and Rodgers, 2014; Tilcsik and Marquis, 2013). Each year, over 90% of the world's 3000 largest firms donate following disasters such as earthquakes, floods, and hurricanes; up from 30% two decades ago. The size of these contributions has also increased tenfold and, in some cases, disaster aid exceeds all of a firm's other CSR expenditures combined. In aggregate, international corporate giving sometimes surpasses all other sources of disaster relief, including aid from foreign governments, multilateral agencies, and charitable foundations (Ballesteros *et al.*, 2017; United Nations, 2016).

Some firms may make such donations hoping for pecuniary gains (Dorobantu, Kaul, and Zelner, 2017). However, the benefits a firm receives from disaster giving seem to be much more contingent and uncertain than for other types of CSR. This is well illustrated by comparing the results of corporate giving after major earthquakes in central Chile and Sichuan, China. In both cases, prominent firms stepped forward with large donations in the immediate aftermath. Mining company Anglo American swiftly pledged \$10 million in Chile, and Samsung pledged \$8.3 million in China. In both cases, other large firms quickly matched these first-mover gifts. Yet reactions to this aid were sharply divergent. In Chile, donating firms benefited from a bump in local revenue after the disaster, suggesting that stakeholders responded favorably to their donations. In China, however, early contributors were derided as providing "a drop in the bucket," and suffered a decline in post-disaster revenue (McGinnis et al., 2009; Xinhua News Agency, 2008), implying that stakeholders were unhappy with what had seemingly been generous and much needed donations.

Our data covering all natural disasters between 2003 and 2015 suggest that the underlying patterns are common, and our analysis reveals that, regardless of the amount donated, some first-movers and their followers are rewarded for their largesse, while others are punished. In fact, after pledging aid, over half of the firms in our data experienced a dip in local revenue that cannot be explained by the impact of the disaster alone. We also find that the magnitude of company gifts depends more on the amount given by the first-mover than the capacity of the focal firm or the level of local needs. It seems that firms look to other companies rather than either themselves or the victims for the most instructive guidance.

From this, two questions emerge that we address in this paper. First, why do firms that offer humanitarian aid sometimes see their revenue dip, rather than increase, in the disaster region? Second, why do firms imitate the gifts made by a first-mover after a disaster rather than basing their giving on their own capacities or local needs? Given the magnitude of corporate aid in the wake of natural disasters, these questions have important theoretical, managerial, and even societal implications (Ballesteros, 2017; Useem, Kunreuther, and Michel-Kerjan, 2015).

To frame these issues, it is useful to consider how disaster giving differs from other forms of CSR. Studies in the CSR literature commonly assume that stakeholders have stable preferences, reliably interpret certain behaviors as responsible, and react in predictable ways. Responsible behavior is thought to signal a firm's legitimacy (Zhang and Luo, 2013) and elicit positive reactions from stakeholders who view such acts as beneficial. The resulting goodwill and trust have, in turn, been linked to greater cooperation (Henisz et al., 2014) and customer loyalty (Fosfuri, Lanzolla, and Suarez, 2013), as well as reduced capital costs (Cheng, Ioannou, and Serafeim, 2014) and labor expenses (Flammer and Luo, 2015).

We suggest that a different dynamic prevails during periods of high uncertainty, however, such as in the wake of a natural disaster. More than 80% of corporate aid is rendered within a month of a disaster, when the impact on the firm, its market, and the needs of its stakeholders are poorly

defined and understood. Each disaster is also unique, and reliable information about the scale of destruction, and nature of the social need is often not available for months (Kousky, 2013). Thus, as compared to other forms of CSR, there is likely to be considerable uncertainty among both managers and stakeholders as to what constitutes an appropriate response to a natural disaster.

To understand how stakeholders react to corporate giving in moments of high uncertainty, we turn to the literature on corporate reputation (Fombrun and Shanley, 1990). This research has shown that, when faced with ambiguity, stakeholders rely on social cues like reputation to make inferences about a firm's behavior (Pfarrer, Pollock, and Rindova, 2010; Schnietz and Epstein, 2005). We extend this to argue that, in situations where it is unclear if a given action is desirable or satisfactory, stakeholders will anchor their judgments on the reputation of the first-moving firm, rather than on the nature of its donation. Public reactions to disaster aid may thus have little to do with amount of aid that a firm offers: well-regarded first-movers may benefit, while ill-reputed first-movers are punished—regardless of how much aid they pledge—because their gifts are evaluated through a reputational lens. Further, while the uncertainty surrounding disasters predicts that other firms will imitate the gifts of prominent first-movers (Haunschild and Miner, 1997), we expect that the outcomes of doing so will vary. If a first-mover's reputation leads to its donation being judged as positive or negative, followers who mimic this donation may be similarly viewed, regardless of their own reputations (Pontikes, Negro, and Rao, 2010).

We study these questions by analyzing the *off-trend revenue*¹ realized by 5,845 firms following their donations to sudden natural disasters. This represents every corporate donation to every recorded natural disaster worldwide in the studied 12-year period. Our reputation measure follows the literature and is based on a firm's media coverage in an affected nation for one year before and one year after a disaster (Deephouse, 2000). Preliminary analyses are based on a

¹Revenue is the income that a corporate subsidiary has from its market operation, usually the sale of products or services to external or internal customers. Off-trend revenue is income that it is not explained by the historic trajectory of market operation according to five predictors of expected income at the subsidiary level: performance (i.e., revenue, firm value, market capitalization, and return on assets), R&D expenditure, size (i.e., number of employees and total assets), and the four-digit SIC code.

quasi-experimental technique that lets us isolate the financial implications of disaster giving by creating a *synthetic* counterfactual (i.e., a composite of multiple firms that, together, closely resemble a focal company) to compare to each firm (Ballesteros *et al.*, 2017). The approach is useful in contexts like ours where suitable single comparisons are not available (Abadie, Diamond, and Hainmueller, 2015).

Results support our arguments and show that donations from both first- and later-movers have little to do with the humanitarian needs of a disaster or a firm's capacity to give. Firms may thus benefit from making socially and financially suboptimal gifts, so long as they have a good reputation or imitate a well-regarded first-mover, while ill-regarded companies and their followers are punished even when offering substantial, and much needed aid. Our results expose boundary conditions in the strategic value of CSR and suggest that a firm's ability to benefit under high uncertainty is related to reputation, gift timing, and others' behavior, more so than its actual giving or the societal needs of the moment.

THEORY AND HYPOTHESES

Scholars have long sought to understand the strategic value of CSR, defined as voluntary actions that benefit a company's stakeholders as well as society, more broadly. This work has, by and large, argued that CSR is not a misallocation of resources, but rather a source of competitive advantage (Dorobantu *et al.*, 2017). A common explanation is that companies benefit from CSR when it is valued by key stakeholders (Kaul and Luo, 2017). From an instrumental perspective, it is assumed that the members of a stakeholder group have common interests that reflect their "stake" in a firm (Donaldson and Preston, 1995). Proactive efforts to address their interests—such as providing high pay to employees, transparent reporting to investors, and high quality products to customers—are expected to yield support from these constituencies (McWilliams and Siegel, 2011). Extending this logic, others have argued that CSR signals behaviors that stakeholders value, but are difficult to observe directly (Muller, Pfarrer, and Little, 2014), and that people derive esteem from associating with responsible firms (Flammer, 2015). Empirical

results have been supportive, suggesting that firms benefit from acting in ways that stakeholders deem as desirable for themselves or for others that they care about (Barnett and Salomon, 2012; Flammer and Luo, 2015; Henisz, Dorobantu, and Nartey, 2013).

This work suggests that for CSR to have strategic value, stakeholders should have stable preferences, reliably interpret certain actions as responsible, and react in predictable ways (Marquis *et al.*, 2013). This is relatively unproblematic in contexts where stakeholders have clear expectations about what constitutes desirable behavior, as with most traditional types of CSR (Dorobantu *et al.*, 2017). In other instances, however, firms pursue CSR under conditions of high uncertainty, as notably when they help mitigate hardships caused by events like natural disasters (Ballesteros *et al.*, 2017; Muller and Kräussl, 2011). Such efforts are becoming increasingly prevalent, as firms adopt roles that were once largely the purview of governments and charities (Ballesteros and Gatignon, 2018; Matten and Crane, 2005). Between 1990 and 2015, for instance, the portion of the 10,000 largest multinational enterprises that provided disaster aid rose from 15% to over 70%, and the average donation increased by 1800% (Ballesteros, 2017).

To date, studies of corporate disaster giving have tended to follow the same assumptions that characterize the broader CSR literature. Stakeholders are thought to value disaster aid and react positively to corporate donations when they are aware of the business giving (Madsen and Rodgers, 2014). In turn, this is associated with more favorable operating conditions in the host nation (Oetzel and Oh, 2014; Oh and Oetzel, 2016) that can lead to positive returns (Ballesteros, 2017) or cushion against the losses associated with interrupted operations (Muller and Kräussl, 2011). Our data suggest that company benefits are unequally realized, however, and that disaster aid yields a wide range of performance outcomes.

Our argument follows the logic that neither firms nor their local stakeholders are likely to have well-formed expectations about what constitutes an appropriate response to sudden, salient, and stochastic events such as natural disasters. When a disaster hits, information about the nature and

scale of the devastation may be unavailable for months. So, despite the urgency for a response, there is substantial uncertainty about the type and level of aid required for effectively doing so. The infrequent and unpredictable nature of disasters also means that most firms have minimal prior experience with rescue and recovery (Holguín-Veras *et al.*, 2012; United Nations, 2016; White and Lang, 2012). For the same reasons, local stakeholders are unlikely to have (a) experience navigating disaster aftermaths, (b) expectations for how firms should respond, or (c) informed insight into what is needed to relieve suffering and initiate recovery. Is a corporate donation of \$10 million too much or too little to alleviate the emergency and rebuild (Cavallo *et al.*, 2013)? In situations with high uncertainty and complex causality, the link between company actions and desired outcomes is notoriously hard to discern, even well after the fact (Bingham and Eisenhardt, 2011; Kaplan, 2008)

In the face of such ambiguity, studies suggest that actors turn to social rather than technical considerations to make inferences about a firm's actions (Elfenbein, Fisman, and Mcmanus, 2012; Festinger, 1954). We argue this is important for understanding the impact of corporate disaster aid. Given that there are unlikely to be clear, a-priori criteria to assess the appropriateness of a company's response, stakeholders will turn to other indicators, such as the firm's previous standing to assess its present behavior (Fombrun and Shanley, 1990).

Indeed, studies suggest that a positive reputation can buffer a firm against setbacks (Elfenbein *et al.*, 2012), boost the benefits of positive earnings shocks (Pfarrer *et al.*, 2010), and foster perceptions of social legitimacy (Bitektine, 2011). Beliefs about a firm's standing, reinforced through recurring actions over time, provide a lens for making sense of otherwise ambiguous behavioral cues (Deephouse and Carter, 2005). As a result, some firms receive the benefit of the doubt even when they behave badly, while the positive actions of others are scarred by perceptions of impure intent (Barnett and Salomon, 2012). While these insights have been primarily applied to study how reputation moderates the outcomes that result when firms behave

in ways that stakeholders view as positive or negative, we extend this to situations where there is a vacuum of understanding about what constitutes appropriate behavior. We expect that this is especially pertinent for the first firm that responds to a disaster, as it is acting in a vacuum of understanding about what constitutes an appropriate corporate response.

Incidental evidence supports our argument. Returning to the examples in our introduction, a few hours after an earthquake and tsunami devastated Chile in 2010, Anglo American was the first firm to offer disaster aid. The firm, which was well-regarded in Chile and had recently been lauded for its work with small farms, realized an upward bump in off-trend host-country revenue following the disaster. In comparison, Samsung made a large donation to lead the business response to the 2008 earthquake in Sichuan, China. Yet the firm, which had earlier been accused of unethical local labor practices in the country faced a public backlash, and even a consumer boycott, following its gift. In turn, this contributed to negative off-trend revenue in the Chinese market (McGinnis et al., 2009; Useem et al., 2015; Xinhua News Agency, 2008).

Considered in tandem with the academic literature, these examples suggest that a firm's pre-disaster reputation may shape stakeholder perceptions about the sufficiency and desirability of its response, whatever it might be. We speculate that a positive reputation will foster the belief that a firm is a reliable actor providing meaningful humanitarian aid. This *halo* effect may support the view that the firm's response is contextually appropriate, proportional to the destruction caused, and consistent with local norms and practices (Barnett, 2007; Deephouse and Carter, 2005). By contrast, stakeholders may ascertain that responses are less appropriate and potentially even harmful when initiated by a firm with a negative pre-disaster reputation, resulting in a *horns* effect where donations are viewed as insufficient, self-serving, or misdirected (Cuypers, Koh, and Wang, 2015). As such, the main determinant of rents from disaster giving, especially among firms that respond first, may not be the size of the firm's donation, but rather its reputation in the disaster afflicted nation. Formally, we predict:

Hypothesis 1 (H1). First donors with a positive pre-disaster reputation will realize greater post-disaster off-trend revenue than first donors with a negative pre-disaster reputation, regardless of the amount of disaster aid given.

The Imitation of First Movers

Regardless of the first-mover's host-country reputation, we expect that their gifts will be imitated by subsequent corporate donors. The same uncertainty that leads stakeholders to rely on social criteria to assess the sufficiency of a disaster response likely also applies to a firm's giving (Gaba and Terlaak, 2013). Deducing the size and target of a donation that will optimize firm benefits is a complex task (Kunreuther, Meyer, and Zeckhauser, 2002). Disaster giving is an infrequent and loosely structured activity for most firms, and the nature and scale of the suffering caused by each disaster is unique. Firms are rarely provided with anything like a detailed description of what aid is needed by whom and where (Fritz, 2004). Moreover, the idiosyncrasies of different nations and regions means that responses that are effective in one geography may be poorly suited to others (Becerra, Cavallo, and Noy, 2014). Thus, even if a firm has experience with disaster aid in one setting, it will likely encounter frictions in applying its learnings to future responses. In short, it is difficult for a firm to produce an analysis that meaningfully compares aid options and offers clarity on which to pursue (Ballesteros, 2017; White and Lang, 2012).

When faced with such uncertainty, firms often look to high-status peers for clues about how to behave, thus reducing the perceived ambiguity of their own strategic options (Guillén, 2002; Haunschild and Miner, 1997; Henisz and Delios, 2001). Studies have shown that the financial standing of industry peers is often a key consideration when making decisions about which firms and practices to emulate. For instance, firms imitate prominent rivals when considering market entry and expansion (Belderbos, Olfen, and Zou, 2011; Guillén, 2002; Haveman, 1993; Hsieh and Vermeulen, 2014), or adopting operational practices or technologies (Kogut and Zander, 1992; Ritchie and Melnyk, 2012; Yeung, Lo, and Cheng, 2011).

We expect that this also applies when companies formulate beliefs about how to respond in a crisis. Market standing connotes market success and goodwill (Douty, 1972), and may be

interpreted as a signal that a firm has insight into what types of strategic actions—including non-market strategies—are likely to work well in a given context (Haunschild and Miner, 1997). This kind of trait-based imitation provides information on stakeholder dynamics (Howard-Grenville, 2008; Nikolaeva, 2014), spurs legitimization (Deephouse, 1996; Salomon, 2013; Tilcsik and Marquis, 2013; Volberda et al., 2012), and occurs frequently in corporate provision of public goods (Barnett and Salomon, 2012). To the extent that disaster giving from prominent first-movers creates a referent that subsequent firms conform to, this may contribute to a bandwagon effect that creates further mimetic pressure (Anderson, 2010).

That said, one might contend that companies should hold-off on donating until the outcomes of doing so become apparent, and the firm can thus imitate successful practices. However, there is a decisive tradeoff when engaging in disaster aid. Waiting can bring more data forward to mitigate causal ambiguity, resulting in a better understanding about how stakeholders are likely to react to different levels of aid. Yet, because of the urgency that accompanies a disaster, firms face pressure to respond in a timely manner, and there is evidence that stakeholders discount the value of donations that come after the most acute hardship has passed (Crampton and Patten, 2008; Madsen and Rodgers, 2014). The implication is that the window for capturing rents from disaster giving is shorter than for other types of CSR. Indeed, the vast majority of corporate pledges come in the first month after a disaster; well before enough time has passed to determine the outcomes that accrue to different levels of giving (Ballesteros *et al.*, 2017). Reflecting this, our data show that, in 89% of all disasters worldwide between 2003 and 2015, the donation amount of the first-mover was almost exactly copied by most other industry players, despite significant variance in their market capitalization, market share, and financial performance.²

The Variable Outcomes to Imitation

² Models that predict donation sizes are available upon request from the authors. Results show that neither the scale of a disaster, nor the hardship that it has caused significantly predict corporate donation amounts. However, the gift of the first-responding organization has a strong and significant influence.

While we expect that followers will tend to imitate the disaster giving of prominent first-movers, the results of doing so may vary widely. For first-movers, there is little precedent to determine whether or not a particular level of giving is desirable. Yet evaluative benchmarks, or cognitive referents, may begin to emerge as stakeholders interpret and react to these early gifts (Powell and Colyvas, 2008). As we have argued, we expect that evaluations are shaped by the first mover's pre-disaster reputation, creating positive or negative associations with a particular donation level. Imitating a well-regarded first-mover may thus yield positive reputational spillovers to the extent that followers are conforming to what is perceived as a desirable level of giving. Yet the opposite condition likely holds as well. Just as Pontikes and colleagues (2010) showed that artists in the U.S. film industry suffered from their mere association with blacklisted co-workers, we reason that firms will be viewed negatively for imitating the donations of ill-reputed first-movers. Notably, this does not appear to be an uncommon occurrence. In line with previous studies, our data show that firms with poor reputations often donate first following a disaster, ostensibly in the hope of rehabilitating their public image (Muller and Kräussl, 2011).

We also argue that such reputational spillovers will supersede a firm's own reputation when stakeholders evaluate a giver's behavior. Studies have found that the negative perceptions caused by corporate misconduct diffuse throughout an affected industry, staining the reputations of all firms in the industry (Jonsson, Greve, and Fujiwara-Greve, 2009; Zavyalova *et al.*, 2012), and that otherwise well-regarded actors can be punished for their mere association with stigmatized entities (Pontikes *et al.*, 2010). Firms in an industry thus share a "reputational commons" that is only as good as that of its leaders (Barnett and King, 2008; Ferguson, Deephouse, and Ferguson, 2000). If stakeholders favorably judge a first-mover's donation after a disaster, it may be strategically advantageous for followers to mimic this in their own donations. If an initial gift is considered inappropriate or insufficient because of the first giver's tarnished reputation, however, followers may have an opportunity to capture rents by coming forward with a different amount that stakeholders don't associate with the ill-regarded first-mover.

Incidental evidence supports this causal intuition. In the case of the 2010 earthquake in Chile, BHP imitated the \$10 million pledge made by its much more well-regarded competitor, Anglo American, and subsequently benefited from a similar upward bump in off-trend revenue. By comparison, Nokia and Panasonic imitated Samsung following the 2008 Sichuan earthquake, but were stung by their association with the latter's "drop in the bucket" donation, suffering negative off-trend revenue. Notably, though, Sony gave less and later than Samsung after the Sichuan earthquake, but its local reputation had been favorable, and it accrued positive post-donation off-trend revenue. By not imitating Samsung, it appears that Sony's own more reputable brand came into play (McGinnis et al., 2009; Xinhua News Agency, 2008). To summarize, we predict:

Hypothesis 2 (H2). Imitating the donation of a first-mover with a positive pre-disaster reputation yields greater post-disaster off-trend revenue than deviating from this donation.

Hypothesis 3 (H3). Deviating from the donation of a first-mover with a negative pre-disaster reputation yields greater post-disaster off-trend revenue than imitating this donation.

PRELIMINARY EMPIRICAL ANALYSIS

Data

We tested our predictions with a dataset covering all major natural disasters worldwide from 2003 to 2015, as reported in the International Disaster Database (EM-DAT).³ We complemented this with data on the human and economic losses associated with each disaster from reinsurance company Swiss Re and the United Nations Office for Coordination of Humanitarian Affairs. We focused on sudden disasters (e.g., earthquakes, floods, and hurricanes) that have a clear starting point and bring immediate disruption, with peak impact felt within 30 days. We omitted slowly-emerging disasters such as food famines and heatwaves where it is challenging to identify the disaster's onset and hardship, as well as the provision of aid (Ballesteros *et al.*, 2017). We also excluded person-made disasters, such as terrorist attacks and industrial accidents, as they are often associated with social and political factors that may introduce unobserved heterogeneity

³ To qualify as an event in the International Disaster Database, at least one of the following criteria must be fulfilled: 10 or more people killed, 100 or more people affected, a state of emergency declared, or a call for international assistance. Further information can be accessed at <http://www.emdat.be/>.

into our analysis (Cohen and Werker, 2008; Hannigan, 2013; Platt, 2012). In sum, our sample comprises 4,396 disaster-country pairs, affecting more than 1.3 billion people in 179 nations.

For corporate disaster giving, we built a propriety dataset with information on all media-reported donations after each disaster. To do this, we searched Factiva and Lexis Nexis for media reports published within 12 months of each official disaster that featured a Boolean combination of the affected country; type of disaster; name of the disaster (where applicable), and; derivations and synonyms referring to the act of donating.⁴ This yielded 2,310,000 news items that form the core of our analysis. We applied differential language analysis to make these reports computationally tractable and used *JavaScript Object Notation* (i.e., *JSON* and *AJAX*) to parse the data. Within each report, the algorithm searched for the firm making the donation, the donation's timing and cash value, the type of donation made, and the mechanism used for aid allocation. The Appendix describes the procedure we used to determine the value of in-kind giving, convert gifts to U.S. dollars, and assess data quality and potential measurement errors. We merged the resulting data with information from several other sources. Firm-specific data are from Lexis-Nexis Corporate Affiliates, Capital IQ; reputation data are from Factiva (see below); and country-specific data are from the World Bank and the United Nations. The final dataset includes 5,845 multinational companies that made 19,958 post-disaster donations.

Estimation strategy

Our arguments focus on the off-trend revenue that accrues to firms in response to disaster giving, based on their reputation and the timing of their gifts. Testing these associations is complicated, as reputation, fiscal standing, and donation choices are likely endogenous to firm performance. It is impossible to use an experimental design to identify causality, as this would entail random assignment of firms with distinct giving choices based on their reputation and donation timing.

⁴ Our analysis covered newspapers, trade publications, magazines, newswires, press releases, television and radio transcripts, digital video and audio clips, corporate websites and reports, institutional websites and reports, and government websites and reports. For robustness, we also used observation windows of three and six months.

Further, even if randomization was feasible, it would be problematic because donation choices and stakeholder responses may be endogenous to context-specific factors (Dahan *et al.*, 2010; Muller and Whiteman, 2008; Platt, 2012; Rangan, Samii, and Van Wassenhove, 2006). The choice to donate and how much to give varies across nations, time, and firms based on factors that are independent of a firm's reputation and donation characteristics. Failing to account for this would produce biased, inefficient estimates. The assumption of variance in reputation or donation timing, but homogeneity in everything else is thus difficult to meet and poses an estimation challenge for conventional panel-data techniques. Moreover, the risk of documenting a spurious relationship is high, as financial performance and corporate giving likely move in the same direction due to unobserved factors, such as managerial capabilities and risk aversion.

Panel methods such as fixed effects and control variables impose the unrealistic assumption that *ex ante* firm- and context-specific trends that affect donation choices and stakeholder behavior apply to *post-disaster* conditions. Quasi-experimental designs such as difference-in-differences help with unobserved heterogeneity, but require that confounding influences are time-invariant (Abadie *et al.*, 2010; Bertrand, Duflo, and Mullainathan, 2004). Techniques like coarsened-exact matching are also inefficient in contexts like ours where efficient single comparisons are not available (i.e., first-movers with different reputations, but similar financial performance and similar aid pledges to disasters that caused similar hardship in similar nations).

Based on these considerations, we chose the synthetic control method (SCM) as the best econometric alternative to a true experiment, as it has the ability to mitigate the issues described above and account for time-variant unobserved heterogeneity (Abadie *et al.*, 2010, 2015). The key difference between the SCM and traditional matching techniques is that *control* entities are created from combinations of potential counterfactuals as opposed to a single firm.

To do this, the SCM uses an algorithm that evaluates the similarity of every entity in a sample (in our case firms responding to sudden natural disasters) on a range of relevant control variables (i.e., predictors). The algorithm uses these similarities to construct a comparison unit that very

closely matches a focal firm on the specified predictors but comprises differently weighted elements of multiple other entities (i.e., a synthetic counterfactual). The validity of the matching is established by showing that the firm and its synthetic counterpart have similar trajectories on the outcome variable over an extended time period.⁵ The relationship between a hypothesized variable (i.e., the treatment) and the outcome of interest is isolated by examining how trajectories diverge after a focal event (in our case, post-disaster aid donations; see Abadie *et al.*, 2010, 2015 for detailed explanations). Using this technique allows us to account for the firm- and context-specific factors that might affect the relationships we are interested in isolating in a way that is not possible with other methods.

The statistical efficiency of the SCM relies on minimizing the difference between the predictor variables for each firm and its synthetic control. This means that statistical inference with SCM differs from traditional panel-data methods. Rather than using standard errors to test statistical significance, the difference between treatment and control groups is assessed directly based on the observed coefficients for a firm and its control (Abadie *et al.*, 2010, 2015; Xu, 2015). The Appendix provides a mathematical description of the SCM.

Variable definitions

Outcome variable. We used annual revenue at the national subsidiary level to calculate the performance outcomes associated with a firm's responses to a country-specific disaster. Revenue is the income that a corporate subsidiary generates from its market activities in a host nation, including the exporting or sale of products or services.⁶ Our outcome variable is *off-trend*

⁵As Abadie *et al.* (2015: 498) note, the SCM effectively controls for unobserved variance, as "only units that are alike in observed and unobserved [factors]...should produce similar trajectories on the outcome variable over extended periods of time."

⁶ Local revenue facilitates the evaluation of the main relationship of interest in a way that other variables of financial performance commonly used in the literature cannot (Lev, Petrovits, and Radhakrishnan, 2010; Lieberman and Montgomery, 2013). For instance, cumulative measures using stock prices in international markets may be affected by factors that are beyond the subsidiary's control (Lamin and Zaheer, 2012). Further, the impact of giving on consumer behavior may be observed faster via revenue than other economic consequences of strategic giving, such as increases in employee productivity (Lev *et al.*, 2010). Previous studies have used proxies of this variable to analyze performance of multinational companies (Rangan and Sengul, 2009).

revenue: the dollar amount of post-disaster income not explained by the historic trajectory of the determinants of revenue at the subsidiary level. To calculate this, we used the exact inferential technique, as suggested by Abadie et al., (2010), with the vector of predictors described below. For each treated firm, we constructed a synthetic control based on five years of pre-disaster data at the subsidiary level. We ensured that both entities (i.e., the firm and its control) had similar revenue trajectories over this period, and then observed differences in revenue one year after the disaster. Data is from Lexis Nexis Corporate Affiliations and Capital IQ.

Predictor variables. We followed a data-driven procedure to construct efficient comparison groups with statistically similar characteristics to each treatment unit. Our analysis focused on characteristics that are strongly associated with financial performance, as reflected in the literature on firm resources and capabilities (e.g., Amit and Schoemaker, 1993; Barney, 1991; Du, Bhattacharya, and Sen, 2011; Lieberman and Montgomery, 2013). Specifically, we used: 1) performance proxied by annual revenue, market capitalization, and return on assets; 2) industry represented by the four-digit SIC code; 3) size measured by number of employees and total assets; and 4) innovation proxied by the dollar amount of research and development. Given that contextual and event-specific factors may affect donation behavior (Eisensee and Strömberg, 2007; Stromberg, 2007) as well as firms' ability to realize performance benefits from their CSR (Dorobantu *et al.*, 2017), we also integrated country variables (i.e., GDP, life expectancy, inflation rate, trade openness, and government effectiveness) and disaster impacts (i.e., human hardship and media coverage) into the matching logarithm.

We also matched first-moving firms based on the nature and amount of their gifts (see below). For hypothesis 1, this allowed us to isolate the influence of these firms' reputations on their subsequent off-trend revenue. For hypothesis 2 and 3, this allowed us to analyze how imitation of, or deviation from, first-movers' gifts affected off-trend revenue for follower firms.

Treatment. The treatment for hypothesis 1 is a firm's reputation. Our specific variable is the net pre-disaster media coverage sentiment score for each firm. Taking into account potential biases and measurement errors, the argument that media coverage captures corporate reputation has been well-established in previous studies. The tone or sentiment of media coverage has been used to proxy for responses to a firm's stakeholder engagement (Henisz *et al.*, 2013), propensity to engage in risky market behavior (Sitkin and Weingart, 1995), and conformity to regulations (Marquis and Qian, 2013) and social norms (Miller, Le Breton-Miller, and Lester, 2012). Media reports are an imperfect substitute for primary survey data, but there is evidence that they serve as a reasonable proxy for public opinion (Kuhnen and Niessen-Ruenzi, 2011).

Our variable is calculated based on media reports featuring each firm in our sample for one year before and one year after the date of a disaster. The measure uses computer linguistic software as implemented by Factiva, which quantifies the tone (i.e., sentiment) of each report. We followed work that calculates and ranks organizations based on their media reputation (Bansal and Clelland, 2004; Carroll and Hannan, 1989; Deephouse, 1996) and used the Janis-Fadner coefficient of imbalance (JFC) for our variable.⁷ The JFC coefficient is calculated as follows:

$$JFC = \begin{cases} \frac{e^2 - ec}{t^2} & \text{if } e > c \\ \frac{ec - c^2}{t^2} & \text{if } c > e \\ 0 & \text{otherwise} \end{cases}$$

where, e = annual number of positive media reports pertaining to the firm; c = annual number of negative media reports, and $t = e + c$. Our analyses thus consider firms with a JFC greater than zero as having positive reputations, and those with a JFC less than zero as having a negative reputation. Our treatment compares first donors with a positive JFC to those with a negative JFC.

To identify donation *timing*—and thus to pinpoint the first firm to donate following a disaster—we calculated the log of the number of minutes between the official disaster time, as reported in EM-DAT, and the announcement of the donor pledge based on the earliest media report in the

⁷ For an analysis of the reliability of this measure to capture the comparative media reputation of a firm, see Bansal and Clelland (2004).

industry (i.e., four-digit Standard Industrial Classification).⁸ That is, we build on recent literature that has shown how industry-specific forces determine mimesis in philanthropic behavior (Marquis and Tilcsik, 2016). This is also in line with the strategy literature that has recurrently identified industry as a primary source of mimetic pressure for managerial decision-making under uncertainty (Ethiraj and Zhu, 2008).

The treatment for hypotheses 2 and 3 is the extent to which a follower firm imitates or deviates from the gift made by the first-mover. For this, we coded four categories: 0) *abstention*, there was no reported donation, p , for organization i , $p^i=0$; 1) *first-mover*, organization i is the first reported donor in industry A; 2) *imitation*, organization j , which is not a the first donor in industry A, reported the same cash or in-kind dollar amount of donation as organization i , which was the first donor in industry A; 3) *deviation*, organization j reported a dollar amount different than the donation of organization i , the first donor in industry A. To define a difference between amounts, we calculated the statistical significance of the gap at the 0.05 level.

Our data reflect donations that target disaster relief and recovery. For in-kind donations, the characteristics of the product or service were recorded (e.g., 1000 bottles of water, a team of nine technicians) and monetized using one of the following sources: the monetary value reported by the donor or other entity, the current prices applicable in the affected country (e.g., the average price of one litter of bottled water, the daily wage for a specific professional or technician), or an equivalent pecuniary value based on similar donations made by other firms to the same disaster. We converted values into U.S. dollars using the exchange rate on the donation date.

RESULTS

Table 1 and 2 show descriptive statistics and correlations. Consistent with previous studies, a measure of firm performance, revenue, correlates positively with a firm's disaster giving. Of note, however, the mean value of off-trend revenue across the full array of disasters is negative (-

⁸ The industry has been deemed as a primary source of mimetic pressure and institutional forces for organizational choices under uncertainty (Ethiraj and Zhu, 2008; Marquis and Tilcsik, 2016). For robustness, we used the country of headquarters (i.e., country where the organization was founded) (Marquis and Battilana, 2009).

\$2.08 million). This suggests that corporate disaster giving often results in a loss greater than the value of the average donation (\$1.69 million) that is not explained by the disaster itself.

INSERT Tables 1 and 2 ABOUT HERE

Media Reputation and First-Mover Rents

Our first argument suggests that a positive pre-disaster reputation is a necessary condition for the generation of performance benefits when donating first in the aftermath of a disaster. Consistent with this expectation, results presented in Table 3 show that the difference in off-trend revenue between a first mover with a positive pre-disaster reputation (as reflected in media-coverage sentiment) and a similar first mover with negative reputation is over \$50 million. In other words, a reputable first mover accrued 2.5 times more positive off-trend revenue than a counterfactual with a negative reputation would. Note that the gain or loss not explained by market operation is several times larger than the average corporate donation (18 times for the reputable first mover, and, 12 times for the first mover with negative reputation).

INSERT Table 3 ABOUT HERE

The Outcomes of Imitation

Our second prediction was that imitating the donation amount of the first-mover would benefit followers if the first mover had a positive reputation, but harm followers if the first-mover had a negative reputation. The results in Table 4 show that an imitator of a reputable first mover realized an average off-trend revenue of \$19 million, while an imitator of a first-mover with negative reputation would have faced an average off-trend loss of almost \$38 million. In fact, the latter experienced a loss in host-country revenue not explained by market operations that is 1.81 times larger than the loss of the first-mover with a bad reputation. On the other hand, the accrued rent of the reputable first-mover was 1.6 times larger than that of followers who matched their donation amount. This suggests that, on average, external stakeholders punished imitation in

greater magnitude when the first mover has a negative reputation, and rewarded imitation when the first mover has positive reputation but in lesser magnitude than for the first giver.

INSERT Table 4 ABOUT HERE

The Outcomes of Deviation

Consistent with our third hypothesis, Table 5 shows greater average off-trend revenue for firms that deviate from first-movers with a bad reputation than among firms that deviate from first-movers with a good reputation. The size of this difference is not as economically meaningful as our other results, though. Still, it suggests that it is valuable for firms to distance themselves from negatively viewed first-movers, and advantageous to associate with a well-regarded first-mover.

INSERT Table 5 ABOUT HERE

Robustness Checks

In this subsection, we discuss the results of four tests that we used to assess the robustness and boundary conditions of our results. All results are reported in the Appendix.

Is pre-disaster media reputation, alone, sufficient to drive rents? The research literature offers an alternative prediction regarding the role of reputation as a strategic resource that sufficiently predicts the generation of rents (Weigelt and Camerer, 1988). The pre-disaster firm-specific actions associated with accumulating reputation *per se* may drive off-trend revenue. Reputable firms thus gain rents regardless of their philanthropic engagement. For instance, government stakeholders may ally with or support high reputation firms and this may enhance post-disaster revenue growth regardless of a firm's donations (Ahuja and Yayavaram, 2011).

To test this, we restricted the SCM algorithm to firms with positive media reputation ($JFC > 0$) and used the binary variable *donating* taking value “1” when the firm gave to the disaster as treatment. In this case, the algorithm also matches on the categorical variable of timing. We

found that reputable firms were 31% more likely to obtain revenue not explained by market operation when they donated as opposed to not donating (Table 6 in the Appendix).

Institutional contexts and the effect of cognitive referents. It may be possible that the social constructivism influencing corporate disaster giving and its consequences is only relevant in contexts of relatively underdeveloped institutions. Countries with high institutional development may have policy instruments in place, such as tax benefits, that enhance the self-interested value of disaster aid, which could affect the frequency of imitation of high-performance firms and the use of reputation as cognitive referent (Becerra *et al.*, 2014).

Although the SCM algorithm matched on several institutional variables, we took an additional step to evaluate the potential influence of local institutions. We stratified the application of the algorithm by *government effectiveness*—a measure from the World Bank Worldwide Governance Indicators that reflects perceptions about the quality of public services, the independence of the civil service from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies—using the 50th, 75th, and 90th percentiles as cutoff values. As shown in Table 7 in the Appendix, we did not find meaningful differences in the effect of pre-disaster reputation on the off-trend revenue associated with disaster giving in these different institutional contexts.

Is the type of donation what matters? Recent research suggests that performance benefits are more likely when a firm's giving reflects its core competencies, as compared to making cash donations (Cuypers *et al.*, 2015; Madsen and Rodgers, 2014; Marquis and Qian, 2013).

Stakeholders may perceive in-kind giving as more altruistic, sincere, and generous than cash gifts, regardless of a company's reputation. To test this argument, in Table 8 in the Appendix we split firms between in-kind and cash donors and integrated company reputation, financial standing, and donation timing into the SCM algorithm. There is no difference in off-trend revenue between the two groups.

Is the size of the donation what matters? Studies have found that companies are most likely to benefit from their CSR when they giving in large amounts (Barnett and Salomon, 2012; Madsen and Rodgers, 2014). For instance, stakeholders may reward large donors because they believe that the firm will give more attention to their claims in the future. To test this explanation, Table 9 compares firms that gave at least one standard deviation more than the average donation amount in a country with firms that gave at least one standard deviation below the mean. As in the previous test, company reputation, financial standing, and the categorical donation timing variable are integrated into the SCM algorithm. The probability of gaining off-trend revenue was not meaningfully different for firms that gave in comparatively large versus small amounts.

DISCUSSION

We began this paper by puzzling over several empirical observations: 1) companies increasingly donate to disaster relief and recovery, but the result of doing so ranges from praise and increased financial performance, to derision and slumping revenues; 2) the level of disaster giving that a firm engages in seems to be driven by mimetic forces more than the scale of local need; and 3) firms oftentimes “get it wrong” by imitating first-movers that have poor reputations, with the result that their own giving elicits negative reactions. Indeed, our data shows that some firms benefit from providing the first donation following a disaster, while others suffer for making similar donations. Likewise, some followers benefit from imitating the gifts made by the first-mover, while others do not. Existing research offers little to explain these patterns.

Rather than assuming that stakeholders have stable preferences, recognize certain behaviors as desirable (or not), and react in consistent ways, we argued that the uncertainty accompanying natural disasters leads to novel predictions about the outcomes of corporate giving. Drawing on insights about how uncertainty unsettles the link between previously understood cause-and-effect relationships, and shifts evaluative criteria toward social rather than technical considerations (Helfat and Peteraf, 2015), we ventured that reactions to disaster giving may reflect a firm’s pre-existing reputation (Fombrun and Shanley, 1990) more than the size or nature of its gift. Given

that most company donations following a disaster come at a moment with little corporate fix on what constitutes an appropriate response, we argued that the effect of a firm's reputation on the impact of its disaster giving should be particularly germane to first-movers. In turn, we reasoned that by creating a positive or negative association with a particular level of giving, the reputation of the first-mover spills over to affect how followers that make similar gifts are perceived.

Our results supported these arguments, showing that: 1) for first-movers, the impact of disaster giving reflects the firm's pre-disaster reputation, regardless of the size of its donation; 2) subsequent donations are much more likely to imitate the first-mover, rather than being guided by the scale of the hardship caused by a disaster; and 3) followers benefit from imitating the gifts of well-regarded first-movers, but do not benefit from following poorly-viewed first-movers, regardless of their own reputations.

Our findings build upon and extend research that has suggested that a firm's ability to profit from CSR depends on its ability to influence its stakeholders (Barnett and Salomon, 2012), and our findings have practical and theoretical implications for research on the relationship between non-market behavior and financial performance—particularly as they relate to issues of timing strategy and company imitation—and for understanding private-sector disaster aid.

We show that reactions to disaster giving are related to a firm's past behavior as reflected in its media coverage. Yet we go beyond the “U-shaped” CSR-financial performance relationship demonstrated by Barnett and Salomon (2012). For one, our results suggest that adverse financial performance following a donation is not simply a function of the cost of making a donation, but rather a function of decreased stakeholder support owing to perceptions of the contextual appropriateness of a firm's response. We also found that positive reactions to disaster giving are more than a function of historical investments into specific stakeholder relationships (Barnett, 2007; Henisz *et al.*, 2013). Rather, it appears that general impressions of a firm serve as a lens for assessing corporate pro-social behavior under conditions of high uncertainty and urgency.

Perhaps more importantly, though, our results suggest that a follower's reputation has little bearing on how it is perceived when it imitates the gift of a prominent first-mover. Followers do not appear to gain any significant benefit if they have a positive reputation, nor do they suffer if they have a negative reputation. Rather, the reputations of the first-mover appears to create a referent that benefits or stains imitators in a fairly consistent fashion. There thus appear to be important boundary conditions on a firm's ability to leverage its reputation (or stakeholder influence capacity) to realize value from non-market behavior.

Elaborating this point, our results suggest that timing and imitation are crucial for creating strategic value from non-market action under uncertainty. Yet this applies in different ways for different firms. For companies with good reputations, it is advantageous to move first following a disaster, as this increases the likelihood that gifts will be well-received and viewed as sufficient and appropriate. Further, given that our results suggest that this relationship holds regardless of the size of a firm's donation, well-regarded first-movers are in a position to derive benefits without having to make a large gift. If the same firm waits, though, and imitates a first mover with a poorly-regarded reputation, it may end up making a larger donation than it otherwise would have, while deriving little or no benefit.

By contrast, it appears to be advantageous for firms with a poor reputation to imitate the behavior of more well-regarded contemporaries, as doing so results in positive reputational spillovers. Our results thus challenge the idea that firms reliably benefit from responding quickly and substantively to stakeholder needs (e.g., Henisz *et al.*, 2013; Madsen and Rogers, 2014). Indeed, we observe many firms with bad reputations making the strategic error of moving first with a large donation following a disaster. Rather than helping to rehabilitate the firm's public image, this approach is much more likely to yield performance declines. By moving later, though, the same firms might reasonably expect to accrue rents. More generally, our results suggest that staking-out a leadership position in response to sudden and acute hardship is not a shortcut to repairing a bad reputation: even well-considered and adeptly implemented responses

are unlikely to elicit positive reactions. Instead, firms should undertake sustained behaviors that are clearly recognized as desirable and beneficial to stakeholders.

In this regard, our results also suggest that firms often “get it wrong” when imitating the gifts of first-movers. Per existing research, firms in our sample appear to look to prominent alters for cues about how to behave in uncertain conditions (Haunschild and Miner, 1997). Yet our results suggest that stakeholders look to the first-mover’s reputation—not its market standing—to infer the appropriateness of its behavior. In short, firms and stakeholders rely on different referents to make determinations about what constitutes desirable behavior. In many cases, this results in strategic missteps by companies. This is consequential, as our data show that the majority of first-movers in the aftermath of a disaster are firms with strong performance, but bad reputations. These firms have resources and capabilities that are conducive to quick responses (Ballesteros *et al.*, 2017), and anticipate benefits from responding to local needs (Madsen and Rogers, 2014). Yet while followers may perceive it as rational and safe to imitate these firms—and, indeed, we observe a high level of convergence around the gifts made by first-movers—our results suggest that a better approach would be to imitate or not depending on the first-mover’s reputation.

Moreover, this copying has implications for the sufficiency of the collective corporate response to a given disaster. According to our analysis, neither the initial donation nor those that follow are meaningfully correlated with the devastation caused by a disaster. As a result, the overall response may be socially sub-optimal. This is problematic when it results in the insufficient provision of disaster aid, such as in the case of many Caribbean islands devastated in 2017 by hurricane Maria. However, this can also be an issue in the case of over-abundant aid. While more aid is typically better than less, there are often logistical or bureaucratic difficulties in delivering aid to those most in need. This challenge can become especially acute when a sudden massive flow of aid exceeds delivery or management capacities, or when donations are misaligned with local needs in the wake of a disaster (Ballesteros *et al.*, 2017).

FUTURE WORK

Our findings call for further studies on the strategic consequences of non-market strategy in uncertain environments. The diminished capacity of governments to meet increasingly complex and fast-changing demands associated with natural disasters and other complex social issues has fueled doubts about whether the state can meet rising humanitarian needs (Besley and Ghatak, 2007; Lepoutre, Dentchev, and Heene, 2007). Corporations and social enterprises have thus received growing calls to intervene in areas that have historically been the province of public agencies, multilateral organizations, and charities (Ballesteros *et al.*, 2017). Manufacturing firms are running elementary schools in India, banks are setting up telemedicine facilities in Nigeria, and investment funds are supporting social causes around the world. Consumer-products firms rebuilt Japan's roads following the 2011 earthquake, and technology firms are constructing community centers in Mexico (Ballesteros and Gatignon, 2018; Cobb, Wry, and Zhao, 2016; Matten and Crane, 2005; Palazzo and Scherer, 2008). In many instance, this activity comes as a new phenomenon for both the engaged firms and their stakeholders.

Given this increasing societal role of business, we hope that future research will expand the study of the relationship between corporate pro-social behavior and financial performance under conditions of high uncertainty and urgency, and that it will develop context-specific predictions since we have seen that the drivers and results of non-market behavior vary across contexts. Such efforts will also be critical for a more theoretically nuanced understanding of the role that social and technical considerations play in the generation and sustainability of off-trend revenue.

Recent studies have started to evaluate the social value of corporate disaster giving, focusing on the resources that can make some firms more efficient suppliers of disaster aid than foreign governments and multilateral agencies like the United Nations and World Bank (Ballesteros *et al.*, 2017; Madsen and Rogers, 2014). Our study suggests that the integration of insights from ancillary, socio-cognitive literatures—such as the work on corporate reputation, image, and identity—may serve as a fruitful approach for advancing insights about the outcomes of this

giving behavior. Our findings also suggest that isomorphic forces are likely to foster greater accumulation and concentration of aid resources. Should organizational learning and more calculated choices replace cognitive referents, it will become important to question whether or not diminished imitation has positive or negative implications for rescue and relief efforts.

CONCLUSION

Our analysis provides fresh insights into the performance implications of corporate disaster giving. In so doing, we highlight a context where urgency and uncertainty abound, and where the assumptions that inform previous research are unlikely to hold. In such situations, social considerations, gift timing, and company imitation appear to be the primary drivers of the strategic value that a firm realizes through its donations.

Going beyond studies that have shown past actions moderate the financial returns of corporate social responsibility, our approach shows that, under uncertainty, reputation becomes the primary lens through which such actions are judged; the objective features of a firm's behavior mean very little. Further, in an information-poor environment, the reputation of prominent first-movers appears to create a referent against which all subsequent giving is judged. The practical effect is that firms make strategic errors in their disaster giving when they imitate first-movers with poor reputations. The overall empirical pattern is that most firms do not realize any tangible value from their disaster giving, and indeed many suffer for doing so. Yet benefits could be achieved if they altered the timing of their donations and were more judicious in choosing who to imitate.

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Table 1. Descriptive Statistics

VARIABLES	Mean	SD	Min	Max
<i>Outcome variable</i>				
Off-Trend Revenue	-2,084,994.11	14,276,140.96	-98,307,157.83	278,713,403.72
<i>Covariates (treatments)</i>				
Donation Timing (lag minutes)	4,326.98	3,893.47	128.64	42,158.43
Media Reputation	0.03	.37	-1	1
USD Donated	1,697,227.00	11,900,000.00	1000.00	500,000,000.00
Financial Standing (rank based on firm value)	45.85	278.99	1.00	6,000.00
Total Corporate Revenue (\$USDmm)	16,802.84	30,751.42	3,577.49	470,171.00
<i>Predictors</i>				
<i>Firm</i>				
Total Employees	24,743.85	120,956.29	19.00	2,200,000.00
Total Assets (\$USDmm)	72,718.05	21,146.00	0.00	4,143,842.00
Market Capitalization (\$USDmm)	13,895.86	34,053.16	19.50	489,552.00
Return on Assets (%)	5.02	4.49	(7.82)	38.21
R&D Expenses (\$USDmm)	18.17	5.61	0.00	13,705.00
Net PP&E (\$USDmm)	898.00	5,439.00	0.00	124,000.00
SG&A Expenses (\$USDmm)	265.10	1,034.00	0.00	34,125.00
<i>Country</i>				
GDP (\$USDmm)	2,751,000.00	4,559,000.00	296.00	16,770,000.00
Land Area (SqKm)	2,605,036.15	3,733,879.02	200.00	16,381,390.00
Population (Millions)	244.40	418.00	0.03	1,357.00
Government Effectiveness	53.31	27.27	0.00	99.51
Regulatory Quality	51.65	28.02	0.00	100.00
<i>Event</i>				
Storm	0.33	0.47	0.00	1.00
Flood	0.49	0.50	0.00	1.00
Earthquake	0.10	0.30	0.00	1.00
Mass Movement Dry	0.00	0.05	0.00	1.00
Mass Movement Wet	0.06	0.24	0.00	1.00
Volcano	0.16	0.13	0.00	1.00
People Affected	364,080.72	2,459,571.30	1.00	67,900,000.00
People Killed	392.61	6,902.89	1.00	222,570.00
Estimated Damage	1,163.80	8,171.50	0.01	210,000.00
Annual Number of disasters (Country)	7.58	8.07	0.00	35.00
Annual Number of disasters (World)	237.78	16.71	213.00	260.00
Media Coverage	8.90	2.57	2.83	29.25

Table 2. Treatment Variable Correlations

	Variable	1	2	3	4
1	Revenue	1.00			
2	USD Donated	0.23	1.00		
3	Media Reputation	0.18	-0.04	1.00	
4	Donation Timing (lag minutes)	-0.14	-0.07	0.25	1.00

Table 3. Predictor of Revenue (First-Moving Firms)

	First Mover with Positive Reputation	First Mover with Negative Reputation
PREDICTOR VARIABLES		
Firm-Specific		
Total Revenue (USDmm ln)	9.67	9.62
Market Capitalization (USDmm ln)	9.61	9.61
Return on Assets %	4.95	4.97
Number of Employees (ln)	10.15	10.09
Total Assets (USDmm ln)	10.24	10.20
R&D Expenses (USDmm ln)	2.92	2.94
Media Reputation*	0.27	(0.74)
Context-Based Variables		
GDP (USDmm ln)	21.74	21.74
Life expectancy	57.32	57.49
Inflation rate	9.15	9.14
Trade openness	57.33	57.48
Government effectiveness	53.98	54.01
Media coverage	14.35	14.33
Human hardship (ln)	12.60	12.59
OUTCOME VARIABLE		
Off-Trend Revenue (USD)	30.15	(20.84)

Note: The table shows the mean values of the predictors used for matching treated firms with their synthetically-generated counterparts only as a reference. The synthetic control algorithm minimizes the distance between potential control firms and the treated firm on a case by case basis.

*Although media reputation is not a predictor in the matching algorithm for these models, we include it here to show the reputational differences between well- versus poorly-regarded first-movers.

Table 4. Predictor of Revenue (Imitating Firms)

Predictors	Imitator of a First-Mover with Positive Reputation	Imitator of a First-Mover with Negative Reputation
PREDICTOR VARIABLES		
Firm-Specific Variables		
Total Revenue (USDmm ln)	9.38	9.38
Market Capitalization (USDmm ln)	9.30	9.47
Return on Assets %	5.89	5.84
Number of Employees (ln)	9.65	9.55
Total Assets (USDmm ln)	9.95	9.90
R&D Expenses (USDmm ln)	2.92	2.94
Media Reputation	0.42	0.42
Context-Based Variables		
GDP (USDmm ln)	21.32	21.34
Life expectancy	57.37	57.54
Inflation rate	9.16	9.15
Trade openness	57.38	57.53
Government effectiveness	54.03	54.06
Media coverage	14.36	14.34
Human hardship (ln)	12.18	12.39
OUTCOME VARIABLE		
Off-Trend Revenue (USD)	19.17	(37.85)

Note: The table shows the mean values of the predictors used for matching treated firms with their synthetically-generated counterparts only as a reference. The synthetic control algorithm minimizes the distance between potential control firms and the treated firm on a case by case basis. Treatment is following firms that imitate first movers with positive media reputation (i.e., net pre-event media coverage sentiment score.); control is imitators of first movers with bad media reputation.

Table 5. Predictor of Revenue (Follower Firms that Deviate from the First-Mover Donation)

Predictors	Deviation from First Mover with Neg. Reputation	Deviation from First Mover with Pos. Reputation
PREDICTORS		
Firm-Specific Variables		
Total Revenue (USDmm ln)	9.54	9.61
Market Capitalization (USDmm ln)	9.41	9.50
Return on Assets %	5.75	5.81
Number of Employees (ln)	9.32	9.33
Total Assets (USDmm ln)	9.82	9.82
R&D Expenses (USDmm ln)	2.67	2.71
Media Reputation	0.47	0.46
Context-Based Variables		
GDP (USDmm ln)	21.32	21.34
Life expectancy	58.03	58.20
Inflation rate	9.26	9.25
Trade openness	58.04	58.19
Government effectiveness	54.65	54.68
Media coverage	14.52	14.50
Human hardship (ln)	12.18	12.39
OUTCOME VARIABLE		
Off-Trend Revenue (USD)	0.14	(2.75)

Note: The table shows the mean values of the covariates used for matching cases only as a reference. The synthetic control study algorithm minimizes the distance between potential control firms and the treated firm on a case by case basis. Treatment is following firms that deviate from first movers with bad reputation (i.e., net pre-event media coverage sentiment score). Control is deviance of first movers with positive reputation.