Halos or Horns?

Reputation and the Contingent Financial Returns to Non-Market Behavior

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ACADEMIC ABSTRACT

Strategy scholars have long sought to demonstrate the financial value of corporate social responsibility (CSR). This work suggests that stakeholders respond positively when CSR aligns with their values or interests, or signals behaviors that are valued but difficult to observe. Arguments focus on typical forms of CSR (e.g., emissions reductions, charitable donations, responsible employment practices) and build on the premise that stakeholders have stable preferences, recognize certain behaviors as responsible, and respond accordingly. However, firms are also increasingly being asked to help address and have stepped forward to mitigate social hardships caused by sudden shocks. In such contexts, there is likely to be uncertainty about what constitutes an appropriate response, disrupting the link between CSR actions and stakeholder responses. Other cues may be used to reduce ambiguity and shape evaluations. When the first firm to steps forward, we suggest that stakeholder evaluations will be shaped by the firm's reputation, as stakeholders often use this as a cue to reduce ambiguity. Well-reputed firms will thus derive rents regardless of their response, while poorly-regarded firms may be punished. In turn, we argue that these assessments will become cognitive anchors that shape how subsequent responses are viewed. The reputation of the first mover overrides the reputation of the follower, which obtains a spillover benefit or loss. Analysis is based on a dataset comprising disaster-response corporate donations from 5,845 firms in 74 countries between 2003-2015. Results align with our argument and point to important boundary conditions for the relationship between CSR and rent accrual.

MANAGERIAL ABSTRACT

Despite the increasing social value of corporate philanthropy in the aftermath of disasters, donors often face social backlash in response to their giving. These results extrapolate to data comprising all the reported corporate responses to disasters that affected the world in the period 2003-2015 and corporate donors obtain losses that are not explained by normal market operation 51% of the time. We argue that the conditions of high uncertainty and ambiguity under which corporate disaster giving takes place lead decision makers to use signals not associated with the firm behavior and the social need. Particularly, stakeholders rely on firms' pre-disaster reputation to estimate the contextual appropriateness of the firm response. Well-reputed firms will thus derive rents regardless of their response, while poorly-regarded firms are often punished.

Keywords: **non-market strategy, decision-making under uncertainty, corporate disaster giving, corporate social responsibility, first-mover advantage, timing strategy.**

INTRODUCTION

Within hours of a devastating earthquake and tsunami in Chile on February 27, 2010, multinational mining company Anglo American pledged $10 million for relief and recovery; the first major private donor to step forward. In the days that followed, three other major competitors in Chile—Antofagasta, Barrick, and BHP Billiton—also pledged identical gifts. Consistent with previous studies, our data show that each firm benefited from a bump in host-country revenue following the disaster, assumedly because their donations were appreciated by stakeholders (Crampton and Patten, 2008; Madsen and Rodgers, 2014; Muller and Kräussl, 2011; Patten, 2008). A very different pattern was evident in the aftermath of the 2008 earthquake in Sichuan, China, however, as prominent firms also stepped up with large relief donations. Samsung was the first to respond, pledging a gift of $8.3 million, and this was quickly matched by Nokia, Panasonic, and others. Yet rather than being hailed, these firms were derided as providing "a drop in the bucket," and each suffered from a decline in local revenue following the disaster (McGinnis et al., 2009; Xinhua News Agency, 2008).

Our data covering all natural disasters between 2003 and 2015 show that these patterns are common. The response from firms in the same industry seems to be more closely associated with the donation from the first responder—which is then mimicked by significantly different firms (e.g., in size and market share)—than it is with measures of disaster hardship, such as deaths and economic loss. In addition, regardless of a firm's attributes or the amount that it donates, the consequences of donating vary widely. First-movers and followers are sometimes rewarded for helping communities recover, but are often punished. Strikingly, we observe that over 51% of donating firms see a dip in local revenues after participating in disaster aid.

These observations are difficult to reconcile with studies that have examined the effects of non-market behavior on firm performance. By and large, this work suggests that firms benefit from acting in socially responsible ways (Kaul and Luo, 2017). Doing so is thought to signal a firm's

legitimacy (Marquis, Davis, and Glynn, 2013; Zhang and Luo, 2013) and yield positive responses from stakeholders who perceive either direct (Ballesteros, Useem, and Wry, 2017; Flammer and Luo, 2015) or indirect benefits (Cheng, Ioannou, and Serafeim, 2014). Received wisdom thus suggests that stakeholders should react positively when a firm moves quickly and commits substantive aid following a disaster, or when it offers aid that that closely aligns with the scale of local needs (Luo, Zhang, and Marquis, 2016; Madsen and Rodgers, 2014; Muller and Kräussl, 2011).

How can we explain, then, why the benefits of disaster giving are so variable? Or, why firms are so apt to imitate the gifts made by first movers, rather than vary their giving in response to firm-specific features and the characteristics of the disaster? Given that over 90% of the world's 3,000 largest firms participate in disaster relief each year—with donations that often exceed a firm's entire non-market budget—these are important questions with significant managerial and theoretical implications (Ballesteros, 2017; Useem, Kunreuther, and Michel-Kerjan, 2015).

To address these issues, we suggest that it is useful to consider how disaster giving differs from other types of non-market strategies. In the extant literature exploring the performance consequences of non-market behavior, there is a common assumption that stakeholders have stable preferences, reliably interpret certain firm behavior as responsible, and react in predictable ways. These assumptions may not hold under conditions of high urgency and uncertainty, however (Kunreuther, Meyer, and Zeckhauser, 2002). This is germane to our context, as 83% of corporate aid comes within a month of a disaster, when the impact to the firm, its market, and the needs of its stakeholders have not been defined. Moreover, each disaster is different, and accurate information about the nature and scale of the devastation caused is not available for months or sometimes years after the shock (Kousky, 2013). As such, there is likely to be considerable uncertainty among both firms and their stakeholders as to what constitutes a sufficient response.

To understand how stakeholders are likely to respond in the face of such uncertainty, we turn to the literature on corporate reputation (Fombrun and Shanley, 1990). Studies have shown that, in the absence of clear evaluative criteria, stakeholders often rely on cues like reputation to reduce ambiguity and make inferences about a firm's behavior (Pfarrer, Pollock, and Rindova, 2010; Schnietz and Epstein, 2005). Applied to our context, this suggests that the sufficiency of a first-mover's response may be interpreted through the lens of its preexisting reputation. Based on this, we speculate that well-regarded first-movers may benefit from disaster giving, and ill-reputed first-movers may be punished, regardless of the size of their donation. Further, while the high uncertainty surrounding natural disasters suggests that subsequent firms will mimic the gifts made by prominent first-movers (Haunschild and Miner, 1997), we reason that the outcomes of doing so may vary. If the first-mover's reputation leads to its donation being perceived in a positive or negative light, followers that 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 responses to sudden natural disasters. Our data comprise information on every corporate donation to every recorded natural disaster in the world between 2003 and 2015. Our measure of reputation follows the literature and is based on media coverage in an afflicted nation, gathered from Factiva, for one year before and after a disaster (Deephouse, 2000). As with other studies on disaster giving (Ballesteros et al., 2017) our analyses use the synthetic control method (SCM); a quasi-experimental technique that allows us to isolate the fiscal implications of disaster giving by creating a *synthetic* counterfactual unit to compare to each focal firm. The synthetic firm is a composite of multiple different companies that, together, closely mirror the features of a focal firm. This approach is useful in contexts like ours where single suitable comparison units are not

[1] Revenue 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.

available—i.e., our analysis requires heterogeneity in donation and firm characteristics, but homogeneity in everything else (Abadie, Diamond, and Hainmueller, 2015).

Results support our intuition. First movers with positive reputations benefit from disaster giving, while those with poor reputations are punished. We also observe that subsequent donations are not correlated with the scale of a focal disaster, but rather with the gifts of prominent first-movers. This is variously beneficial to the imitating firms. Followers benefit from mimicking donations made by first movers with positive reputations, while the opposite applies if the first mover has a bad reputation. Some firms thus accrue performance benefits despite making donations that are socially and financially suboptimal, whereas others suffer for offering substantive aid that mimics poorly regarded first movers. Our results expose boundary conditions in the strategic value of non-market behavior and suggest that the ability of a firm to accrue benefits under conditions of high uncertainty and urgency is primarily related to reputation, timing, and imitation.

THEORY AND HYPOTHESES

Corporate Disaster Giving, Uncertainty and Urgency, and the Role of Reputation

For decades, scholars have sought to understand the strategic value of corporate pro-social behavior or corporate social responsibility (CSR)—i.e., voluntary activities that benefit stakeholders, society, and the natural environment. By and large, this work has argued that pro-social behavior is not a misallocation of resources, but rather a source of competitive advantage (Dorobantu, Kaul, and Zelner, 2017). A common explanation for this link is that companies benefit from CSR to the extent that it is valued by key stakeholders and thus contributes to positive relationships with these groups (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). Practices that address these interests—such as high pay for employees, transparent reporting for investors,

and high quality products for customers—are expected to bring increased support from these groups, and thus benefit the firm (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 and suggest an association where responsible practices yield positive stakeholder responses, which in turn contribute to firm financial performance (Barnett and Salomon, 2012; Flammer and Luo, 2015; Henisz, Dorobantu, and Nartey, 2013).

Notably, this work suggests that for CSR to have strategic value, stakeholders should have stable preferences, reliably interpret certain behaviors as responsible, and react in predictable ways (Marquis et al., 2013). This is unproblematic when non-market behavior constitutes practices such as increasing employee benefits (Flammer and Luo, 2015), engaging in transparent financial reporting (Eccles, Ioannou, and Serafeim, 2014), or reducing harmful emissions (Barnett and King, 2008). However, firms also engage in behavior that entails high informational constraints, such as when they are asked to help address the hardship caused by events like sudden natural disasters (Ballesteros et al., 2017; Muller and Kräussl, 2011). Such efforts comprise a growing share of non-market strategy for firms worldwide. Between 1990 and 2015, for instance, for instance, the fraction of the 10,000 largest multinational enterprises engaging in disaster aid in any given year went from 15% to over 70%, and the average donation increased 1800% (Ballesteros, 2017).

To date, studies that have examined how firms benefit from disaster giving have tended to follow the same assumptions that characterize the broader non-market literature. Stakeholders are thought to value disaster aid and react positively to corporate donations, so long as they are aware of a firm's initiatives (Madsen and Rodgers, 2014). Disaster giving has thus been linked to increased reputational capital (Muller and Kräussl, 2011), responsiveness to institutional forces (Zhang and Luo, 2013), and favorable host nation operating conditions (Ballesteros et al., 2017).

Still, our data suggest that such benefits are unequally distributed, and that the financial outcomes of corporate disaster aid are considerably more contingent and varied.

To help explain this, we note that studies in social psychology (Simonsohn and Ariely, 2008), strategy (Bingham and Eisenhardt, 2011; Kaplan, 2008), and institutional theory (Ioannou and Serafeim, 2015; Marquis and Lee, 2013) all warn that the link between actions and outcomes is difficult to discern under conditions of high uncertainty, such as in the aftermath of a disaster. When a disaster hits, information about the nature and scale of devastation may be unavailable for months or even years.

Further, considering that disasters are infrequent events, a company's experience with the rescue and recovery that follows generally has little precedent (Lampel, Shamsie, and Shapira, 2009); (Holguín-Veras *et al.*, 2012; United Nations, 2016; White and Lang, 2012). For the same reason, most local stakeholders are unlikely to have (a) experience navigating disaster situations, (b) expectations about how locally active firms should behave in response, nor (c) a meaningful understanding of the types and magnitude of initiatives required to ameliorate suffering and initiate recovery. Is $10 million too much or too little to alleviate the emergency and rebuild? (Cavallo *et al.*, 2013). In short, neither firms nor their stakeholders are likely to have a clear understanding about what constitutes an appropriate response to any particular disaster.

In the face of such ambiguity, studies suggest that actors rely on social rather than technical considerations to make inferences about what constitutes appropriate action (Elfenbein, Fisman, and Mcmanus, 2012; Festinger, 1954). We speculate that this is germane to understanding the performance consequences of disaster giving. Given that there are unlikely to be clear, a-priori criteria for assessing the sufficiency of a firm's response, it reasons that stakeholders will turn to other indicators, such as a firm's previous behavior (i.e., its reputation), when evaluating its choices (Fombrun and Shanley, 1990).

Indeed, studies suggest that a positive reputation can buffer an organization against crisis (Elfenbein et al., 2012), increase the benefits of positive shocks in earnings (Pfarrer et al., 2010), and bolster perceptions of social legitimacy (Bitektine, 2011). In short, beliefs about a firm's underlying nature, reinforced through recurring actions over time, provide a lens for making sense of otherwise ambiguous behavioral cues (Deephouse and Carter, 2005). Some firms thus receive the benefit of the doubt when stakeholders evaluate their actions, while others are punished for the same behaviors (Barnett and Salomon, 2012). 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.

Anecdotal 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 company to donate to disaster relief and recovery. The firm, which held a positive reputation in Chile, and had recently been lauded in the local press for its work with small farms, realized a bump in post-donation off-trend revenue. In comparison, Samsung made a large donation to lead the business response to the 2008 earthquake in Sichuan, China. Yet the firm, which had been accused of unethical local labor practices, faced a public backlash over its gift that included consumer boycotts of its products. In turn, this contributed to negative off-trend revenue (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 of its motives for disaster giving. We speculate that a positive reputation will foster the belief that a firm is a reliable actor whose engagement in humanitarian aid is socially desirable. This *halo* effect may result in stakeholders perceiving the firm's response to be contextually appropriate, and believing that the donation will meet social needs and be in keeping with local norms, customs, 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 firms with negative pre-disaster reputations, resulting in a *horns* effect where donations are viewed as insincere, 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 capacity to devise an optimal gift, nor 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 realize greater post-disaster off-trend revenue than first donors with a negative pre-disaster reputation.

The Imitation of First Movers

Regardless of reputation, we expect that subsequent corporate donors will imitate the disaster giving of prominent first movers. The same uncertainty that leads stakeholders to rely on social criteria to assess the sufficiency of a disaster response likely also applies to firms (Gaba and Terlaak, 2013). Deducing the size and target of a donation that will optimize a firm's expected benefits is a complex task (Kunreuther et al., 2002). Disaster giving is an infrequent and loosely structured activity for most firms, and each disaster is unique in the nature and scale of the suffering that it causes. Firms are rarely provided with anything that approaches a detailed description of what aid is needed by whom, and where (Fritz, 2004). Moreover, the idiosyncratic features 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 responding to disasters, there are likely to be significant frictions when trying to apply any learnings to future responses. As such, it is very difficult to produce a meaningful analysis that compares different donation choices (Ballesteros, 2017; White and Lang, 2012).

Furthermore, disruptive events can change or create new regulations, such as building codes and government policies, in an afflicted area (Useem *et al.*, 2015). They can also bring prominence to societal dynamics that were less salient prior to the calamity, such as regional and demographic

divisions or income inequality and muckraking writers (Klinenberg, 2003). Corporate responders may thus have to work with new or more empowered stakeholders whose strategic interests and resources may be hard to discern.

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; Henisz and Delios, 2001). In this regard, 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 rivals with high financial performance when considering market entry and expansion (Belderbos, Olffen, and Zou, 2011; Guillén, 2002; Haveman, 1993; Hsieh and Vermeulen, 2014), or adopting operational practices or technology (Kogut and Zander, 1992; Ritchie and Melnyk, 2012; Yeung, Lo, and Cheng, 2011).

We expect that this also applies when formulating beliefs about how to respond in a crisis. Financial 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. This type of trait-based imitation provides information on stakeholder dynamics (Howard-Grenville, 2008; Nikolaeva, 2014) and spurs legitimization in market systems (Deephouse, 1996; Salomon, 2013; Tilcsik and Marquis, 2013; Volberda et al., 2012) and occurs frequently in the market for public goods (Lieberman and Asaba, 2006). To the extent that disaster giving from prominent first-movers creates a referent that subsequent firms conform to, this may also contribute to a bandwagon effect that creates further mimetic pressure (Anderson, 2010). Supporting this, our data show that, in 89% of all the disasters that affected the world from 2000 to 2015, the donation amount of the first mover was almost exactly mimicked by numerous other industry players, despite significant variance in their market capitalization, market share, and financial performance.

That said, one might reasonably contend that companies should hold-off on donating until the outcomes of doing so become apparent, and the firm can 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 respond to different levels of giving. 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 non-market strategy. Reflecting this, the vast majority of corporate pledges come within 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). As such, we predict that:

Hypothesis 2 (H2). The donations of high-performance first movers explain the average amount of corporate aid for a disaster more than measures of disaster hardship.

The Variable Outcomes to Imitation

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 assess whether or not a particular level of disaster giving is appropriate. Yet evaluative benchmarks—or cognitive referents—may begin to emerge as stakeholders interpret and react to these early donations (Powell and Colyvas, 2008). As we argued, there are reasons to think that such evaluations will be shaped by the first mover's pre-disaster reputation, creating positive or negative associations with a particular donation behavior. Imitating a well-regarded first mover may thus yield positive reputational spillovers to the extent that followers are conforming to a socially desirable level of giving (Deephouse, 1996; Howard-Grenville, 2008; Nikolaeva, 2014; Salomon and Wu, 2012). However, the opposite likely holds as well. Previous studies have

showed that business decision makers often suffer from their mere association with blacklisted internal or external stakeholders (Pontikes *et al.*, 2010). We reason that followers will be viewed negatively for imitating the donations of ill-reputed first movers. Notably, this does not appear to be an uncommon occurrence in disaster philanthropy. Firms with strong financial performance, but poor reputations often donate first following a disaster, ostensibly in the hope of rehabilitating their public image (Muller and Kräussl, 2011).

There are also reasons to expect that such reputational spillovers will supersede a firm's own reputation when stakeholders evaluate its behavior. Studies have also found that the negative perceptions caused by corporate misconduct diffuse throughout an affected industry, staining the reputations of all member-firms. And recent behavior suffers from an original "sin of their elders" (Bénabou and Tirole, 2006). Thus firms in an industry share a "reputation commons" that is only as good as that of its leaders (Barnett and King, 2008). Hence, if stakeholders favorably judge the initial donations that follow a disaster, it is strategically advantageous for followers to mimic this in their own gifts. However, if an initial donation is considered inappropriate or insufficient, followers have more opportunities to capture rents by deviating, and giving a different amount.

Anecdotal evidence motivates this causal intuition. In the case of the 2010 Chile earthquake, BHP imitated the $10 million pledge made by its much more well-regarded competitor, Anglo American, and subsequently benefited from a similar bump in off-trend revenue. In comparison, Nokia and Panasonic imitated the much more profitable Samsung in the wake of the 2008 Sichuan earthquake, but seem to have suffered through their association with the latter's "drop in the bucket" donation, suffering negative off-trend revenue. Notably, though, Sony gave less and latter than Samsung after the Sichuan earthquake, but its local reputation was more favorable: the company accrued positive post-donation off-trend revenue in the Chinese market (McGinnis et al., 2009; Xinhua News Agency, 2008). To summarize, we predict:

Hypothesis 3 (H3). Imitating the donation of a first donor with a positive pre-disaster reputation yields greater post-disaster off-trend revenue than deviating from such donation.

Hypothesis 4 (H4). Deviating from the donation of a fist donor with a negative pre-disaster reputation yields greater post-disaster off-trend revenue than imitating such donation.

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). [2] We complemented the EM-DAT with data on the associated human and economic losses using datasets provided by the reinsurance company Swiss Re and the United Nations Office for Coordination of Humanitarian Affairs. We focused on sudden disasters, such as earthquakes and hurricanes, which have a clear triggering event, immediate disruption, and peak impact within 30 days. We thus omitted evolutionary or slowly-emerging disasters such as famines and heat waves where the identification of consequences and aid response is challenging (Ballesteros et al., 2017). We also excluded manmade disasters, such as terrorist attacks and industrial accidents, as they are commonly associated with ex-ante and ex-post socioeconomic and political factors that may introduce unobserved heterogeneity in our study (Cohen and Werker, 2008; Hannigan, 2013; Platt, 2012). We thus studied a population of 4,396 sudden disaster-country pairs that affected over 1.3 billion people in 179 countries.

For corporate disaster giving, we built a propriety dataset with information on all media-reported donations in the wake of each disaster. We searched Factiva and Lexis Nexis for reports within one following the event that featured a Boolean combination of the affected country; the type of disaster; the name of the disaster, where relevant, and; derivations and synonyms referring to the act of donating.[3] This yielded 2,310,000 items that formed the core of our analysis. To make

[2] To register 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 declaration of a state of emergency, or a call for international assistance. Further information can be accessed at http://www.emdat.be/.

[3] We 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

these electronic reports computationally tractable, we applied differential language analysis and used *JavaScript Object Notation* (i.e., *JSON* and *AJAX*) to parse the data. Within each report, the algorithm searched for the organization making the donation, the timing and cash value of the donation, the type of donation made (for in-kind giving), and the mechanisms used for aid allocation. The appendix contains a description of the procedure we followed to determine the monetary value of in-kind giving; convert gifts to U.S. dollars, and; assess measurement error and data quality for information provided by third-parties. We merged the resulting dataset with data from several other sources. Firm-specific data is from Lexis Nexis Corporate Affiliates, Capital IQ; reputation data is from Factiva (see description below); and country-specific data is from the World Bank and the United Nations. The final dataset includes 5,845 multinational firms 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 complex because reputation, financial standing, and donation choices are likely endogenous to firm performance. It is impossible to use a fully experimental design to identify causality in this case because it would entail random assignment of corporate donors with distinct donation choices based on their reputation.

Even if randomization were feasible, it would be problematic because donation choices and stakeholder responses are likely endogenous to context-specific factors (Ballesteros, 2017; 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 countries, time, and firms per factors that are independent of reputation and the characteristics of the donation. Failing to isolate the effect of these factors will result in biased and inefficient estimates. The

websites and reports, among other sources. For robustness purposes, we also used observation windows of three and six months.

assumption of variance in reputation and donation timing, but homogeneity in everything else is 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 non-market behavior 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 affecting donation choices and stakeholder behavior extend to *post disaster* conditions. Amply used quasi-experimental designs such as difference-in-differences are able to mitigate the risk of unobserved heterogeneity, but require the effects of such confounders to be time-invariant in order for the method to work properly (Abadie, Diamond, and Hainmueller, 2010; Bertrand, Duflo, and Mullainathan, 2004). Large sample matching techniques like coarsened-exact matching are inefficient in contexts where the potential control pool is limited (e.g., first movers with good reputation and high financial performance that donated a similar amount in the aftermath of similar disasters) and efficient single comparisons often do not exist.

We chose the synthetic control method (SCM) as the next-best econometric alternative to a field experiment, which mitigates the issues described above and allows to 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 of combinations of different potential counterfactuals (i.e., synthetic control firms) as opposed to a single firm.

The method uses an algorithm that evaluates the capacity of every firm (with similar donation behavior) not affected by an intervention to emulate pre-disaster characteristics of the focal firm. These characteristics are selected from variables (i.e., predictors) expected to affect the outcome variable—the dependent variable in traditional regression— (i.e., off-trend revenue, which is explained below). Once found, these units are averaged into a single case, corresponding to a

synthetically created counterfactual firm (see Abadie et al., 2010, 2015 for more detailed explanations): a firm that had similar donation behavior in the aftermath of a similar disaster. This allows us to integrate the firm- and context-specific complexity affecting the financial consequences of the decision-making processes that we analyze, which is hard to capture using other methods.[4]

For instance, no single firm approximates Anglo American in the years leading up to the 2010 Chile earthquake. However, features of other mining companies such as Rio Tinto, Antofagasta, Tek, Bifox, and Codelco are combined in different proportions to form a *synthetic* Anglo American that closely matches features that predict post-disaster financial performance. Hence, SCM controls constant and time-variant unobserved heterogeneity and allows us to identify what would have happened to the performance consequences associated with disaster giving of a reputable corporate donor, should said firm have had a negative pre-disaster reputation.[5]

The statistical efficiency of SCM relies on minimizing the difference between the predictors of every treated case, a combination of a firm and a disaster-country pair, and its synthetic control in each of the analyzed pre-donation periods. This means that statistical inference with SCM is run differently than traditional panel-data methods where standard errors measure uncertainty in aggregate data. Instead, we calculate the likelihood that the off-trend revenue (explained below) is affected by a firm's media reputation versus chance, by conducting falsification procedures (i.e., placebo tests) similar to permutation exercises.

In practical terms, we artificially reassign the intervention and try to falsify the effect of reputation on the performance consequences of disaster giving by *telling* SCM that control firms, for instance, first donors with negative pre-disaster reputation were first donors with a positive

[4] As Abadie et al. (2015: 498) note, this 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."
[5] Our online appendix shows an example of the SCM algorithm. See https://disastergiving.wordpress.com/.

reputation. We then match this placebo case with a synthetic counterfactual and calculate the difference in financial performance.

By repeating this procedure with every case in the control group, we generate a distribution of effects that are observed by chance. This allows us to calculate p-values by comparing the distribution of false effects with the actual distribution. The benefit of the SCM over other methods is that it is always feasible to calculate the exact distribution of the estimated effect regardless of the number of cases in the treatment and control groups and observation periods. The appendix has a mathematical description of the method and the approach used to calculate statistical significance.

Variable definitions

Outcome variable. We used annual revenue at the subsidiary level to calculate performance outcomes associated with firm responses to country-specific disasters. Revenue is the income that a corporate subsidiary has from its market activities, usually the sale of products or services to external or internal customers.[6] The outcome variable is *off-trend revenue*: the dollar amount of post-disaster income not explained by the historic trajectory of the determinants of revenue at the subsidiary level. To calculating this variable, we used 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 and observe revenue one year after the disaster using Lexis Nexis Corporate Affiliations and Capital IQ as data sources.

[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). Furthermore, the impact of giving on consumer behavior may be observed faster via revenue than other economic consequences of strategic philanthropy, 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).

Predictor variables. After matching firms with similar donation behavior (see below), we followed a data-driven procedure to construct efficient comparison groups that have statistically similar characteristics to each treatment unit. Particularly important are the characteristics 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) and those associated with pro-social behavior (e.g., Marquis et al. 2007, Muller and Kräussl 2011, Servaes and Tamayo 2013). For this, 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. Data are from Capital IQ and Corporate Affiliates.

Given that institutional and event-specific factors may affect donation behavior (Eisensee and Strömberg, 2007; Stromberg, 2007) and firms' ability to obtain performance benefits (Dorobantu *et al.*, 2017), we integrated country variables (i.e., GDP, life expectancy, inflation rate, trade openness, and government effectiveness) and disaster variables (i.e., human hardship and media coverage) in the matching logarithm also includes country variables and event-specific variables.

Treatment. We define the treatment variable, media reputation, as the net pre-event media coverage sentiment score for each firm. Taking into account potential biases and measurement errors, the argument that media captures corporate reputation has been established in several lines of research (Deephouse, 1996). The tone or sentiment of media can be taken as a surrogate for objective measures of a firm's attention to (Hoffman and Ocasio, 2001) and engagement in (Henisz *et al.*, 2013) social issues; its predisposition to risky market behavior (Sitkin and Weingart, 1995), and; its conformity to social norms (Miller, Le Breton-Miller, and Lester, 2012) and regulation (Marquis and Qian, 2013). Media reports are an imperfect substitute for

primary data collected through surveys, but they do serve as reasonable proxy for public opinion (Kuhnen and Niessen-Ruenzi, 2011).

Media reputation is calculated from media reports on the business organization 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-sourced reputation (Bansal and Clelland, 2004; Carroll and Hannan, 1989; Deephouse, 1996) and used the Janis-Fadner coefficient of imbalance, JCE, for our variable.[7] The JCE coefficient is calculated as follows:

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

where, e = annual number of positive media reports on the firm; c = annual number of negative media reports on the firm; and t = e+c.

Hypothesis 2 evaluates the explanatory power of a firm's *financial standing* in the average business donation after a disaster. As a proxy, we used the dollar amount of total annual *revenue* at the corporate level as reported by Capital IQ, lagged by a year related to the disaster date. Different studies in the strategy literature suggest that firm value is an efficient proxy of financial performance and the measure has been used in studies evaluating the performance consequences of non-market behavior (Cuypers *et al.*, 2015; Flammer, 2015; Servaes and Tamayo, 2013).[8]

For donation *timing*, 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

[7] For an analysis of the reliability of this measure to capture the comparative media reputation of a firm, see Bansal & Clelland (2004).
[8] See Hansen and Wernerfelt (Hansen and Wernerfelt, 1989) for a thorough discussion.

media report in the industry[9] (i.e., four-digit Standard Industrial Classification).[10] For the amount of donation, 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, $t^i < t^j$, when $i, j, \in A;$ 2); *imitation*, there is at least one other organization, *h*, that reported the same cash or in-kind dollar amount of donation prior to organization *i* in the industry, $t^h < t^i$, when *h* and $i \in A$; 3); *deviation*, organization *i* reported a donation amount significantly different than those of previous organizations, *1 …h*, in industry A; that is, $t^i < t^h$ when *i* and $h \in A$.[11] For grouping firms and identifying donation timing, we used the industry (i.e., four-digit Standard Industrial Classification), which has been deemed as a primary source of mimetic pressure for managerial decision-making under uncertainty (Ethiraj and Zhu, 2008).

Our data reflect donations that target disaster relief (i.e., aid targeting immediate life-threating concerns), and recovery (i.e., aid for reconstruction, restitution, and resettlement and rehabilitation). In the case of 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 man-power 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 also converted values into U.S. dollars when necessary using the exchange rate on the donation date.

[9] 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).

[10] For robustness tests, we used categorical variables to denote order groups: D1=1, if the firm is the first mover; D2=1, an imitator; D3=1, a deviator. The exclusion case is no-donation.

[11] Company behavior is studied as an intended decision. Business decision makers choose the timing of donation, and, if following, they choose to replicate other organizations' responses (i.e., donate the same amount, with the same form—in-kind or cash, and to the same target area), donate differently, or o abstain (i.e., not to donate). When mimicking, followers face no ambiguity. That is, imitation is not tacit or complex (Lieberman and Asaba, 2006). Followers know the methods used by first-mover organizations to pledge a donation.

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 population of disasters is negative (-$2.08). This suggests that corporate disaster giving resulted often in a loss not explained by normal market operation greater than the value of the average donation ($1.69).

INSERT Tables 1 and 2 ABOUT HERE

Media Reputation and First-Mover Rents

Our first argument suggested 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 our intuition, results presented in Table 3 show that the difference in off-trend revenue between a first mover with positive pre-disaster reputation score (as reflected in media coverage sentiment) 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 Influence of First-Movers on Corporate Disaster Giving

Table 4 shows the results for hypothesis 2 predicting that the average amount of corporate aid following a disaster will be influenced by the donation amount of first movers with high financial standing more so than measures of disaster hardship. Using OLS models with

coarsened-exact matched data, we find that an increase of one standard deviation in the annual revenue of the first mover was associated with an increase of three times in the amount of the average corporate donation for a disaster—controlling for several firm-, country, and event-specific factors and applying fixed effects with clustered-by-event standard errors. On the other hand, the effects of total number of deaths and affected population are statistically insignificant.

INSERT Table 4 ABOUT HERE

The Outcomes of Imitation

Our third prediction was that imitating the donation amount of the first mover would benefit the follower firm if the first mover had a positive reputation but harm the follower if the first mover had a poor reputation. The results in Table 5 show that an imitator of a reputable first mover realized an average off-trend revenue of $19 million, while a counterfactual imitator of a first mover with negative reputation would have faced an average off-trend loss of almost $38 million. In fact, the latter firm obtained a loss in national revenue not explained by market operation 1.81 times larger than the loss of the first mover with bad reputation. On the other hand, the argued rent of the reputable first mover was 1.6 times larger than the rent of the imitator of a reputable first mover. This suggests that, on average, external stakeholders punished imitation in greater magnitude—when the first mover has negative reputation—or rewarded imitation—when the first mover has positive reputation—in lower magnitude than leading the philanthropic response in the industry. However, we also found that firms with negative reputations were better off when deferring their donation than when moving first.

INSERT Table 5 ABOUT HERE

The Outcomes of Deviation

Table 6 shows a statistically insignificant difference between firms that deviate from first-movers with a bad reputation and firms that deviate from reputable leaders. As such, our fourth

prediction is not supported. One should consider, nevertheless, that deviants make an additional choice in comparison with mimickers. When a follower deviates, the next decision is whether to donate more or less than the first donor. Such comparative evaluation needs to be integrated in the analysis to fully assess the material consequences of philanthropy.

INSERT Table 6 ABOUT HERE

Robustness Checks

In this subsection, we focus on four tests to assess the robustness and provide boundary conditions of the results. The Appendix has all the output tables, additional tests and supplementary analyses.

Is pre-disaster media reputation a sufficient driver of rents?

The extant 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 these cooperative behaviors determine post-event revenue growth (Ahuja and Yayavaram, 2011).

To test this argument, 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 by engaging in disaster giving than were reputable non-donors (Table 7 in the Appendix).

INSERT Table 7 ABOUT HERE

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 in place the policy instruments (e.g., tax benefits) enabling the strategic 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 civil service and its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies—using the 50^{th}, 75^{th}, and 90^{th} percentiles as cutoff values. As shown in Table 8, we did not find significant differences in the effect of pre-disaster reputation on the off-trend revenue associated with disaster giving.

INSERT Table 8 ABOUT HERE

Is the substantiveness of giving what matters?

Recent research suggests that substantive philanthropy is more likely to result in performance benefits than symbolic giving (Cuypers *et al.*, 2015; Madsen and Rodgers, 2014; Marquis and Qian, 2013). For instance, stakeholders perceive in-kind giving as more sincere, altruistic, and generous regardless of the effect of reputation. To test this argument, in Table 9, we split firms between in-kind and cash donors and integrate the categorical variable of timing of the donation,

reputation, and financial standing in the SCM logarithm. We found no statistical significance in the difference in off-trend revenue between the two groups.

INSERT Table 9 ABOUT HERE

Is the size of the donation what matters?

Studies have found that giving relatively large amounts is more likely to be associated with higher rewards than giving relatively low (Madsen and Rodgers, 2014). For instance, stakeholders give more attention to large donors because they believe that these firms will give more attention to their claims in the future. To test this alternative explanation, Table 10 compares firms that gave that at least one standard deviation more than the mean with firms that gave less or one standard deviation less than the mean. As in the previous test, the SCM algorithm matches firms the categorical variable of timing of the donation, reputation, and financial standing in the SCM logarithm. The probability of gaining off-trend revenue was not significantly different.

INSERT Table 10 ABOUT HERE

DISCUSSION

We began this paper by puzzling over the empirical observations that: 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, rather than the scale of the local need, and; 3) firms oftentimes "get it wrong" by imitating high-performing first-movers that have bad reputations, with the result that their own giving elicits a negative reaction. Indeed, our data

shows that some firms benefit from providing the first donation following a disaster, while others suffer for making similar donations to similar disasters. Likewise, some followers benefit from imitating the gifts made by prominent first-movers, 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 reliable ways, we argued that insight can be gained by embracing the urgency and uncertainty that surrounds natural disasters, and leveraging this to make novel predictions about the outcomes of corporate giving. Drawing on insights about how uncertainty unsettles the link between previously understood cause-effect relationships, and shifts evaluative criteria toward social versus technical considerations (Helfat and Peteraf, 2015), we speculated that reactions to disaster giving may reflect a firm's pre-existing reputation (Fombrun and Shanley, 1990)more so than the nature of its gift. Given that the initial donations following a disaster likely take place in a vacuum of understanding about what constitutes an appropriate response, we argued that the effect of reputation on the outcomes of 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 might spillover to affect how follower firms that make similar gifts are perceived.

Results support this causal intuition and show that: 1) for first movers, the outcomes of disaster giving reflect the firm's reputation, regardless of the size of its donation; 2) subsequent donations are much more likely to imitate high-performing first movers, rather than be guided by the scale of the hardship caused by a disaster, and; 3) follower firms 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 have practical and theoretical implications for research on the relationship between non-market behavior and financial performance—particularly as this relates to issues of timing strategy and imitation—and for the study of disaster aid. With regard to the performance implications of non-market behavior, our findings build upon and extend research that has suggested a firm's ability to profit from CSR depends on its ability to influence its stakeholders (Barnett and Salomon, 2012).

Our results are similar to this work insofar as 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 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's nature 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. To wit, followers do not appear to gain any significant benefit if they have a positive reputation, nor do they suffer if they have a bad reputation. Rather, the reputation of the first mover seems to create a cognitive referent that stains (or benefits) imitators in a fairly consistent fashion. As such, there appear to be notable 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. However, 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 basic 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 bad reputation, it may end up making a larger donation than it otherwise would have, while deriving little or no benefit.

In comparison, it appears to be advantageous for firms with a bad reputation to imitate the behavior of their 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, however, the same firms might reasonably expect to accrue rents.

In this regard, our results also suggest that firms often "get it wrong" when imitating the donations of high-performing first movers. Per existing research, firms in our sample appear to look to alters with strong financial performance for cues about how to behave in uncertain conditions (Haunschild and Miner, 1997). However, our results suggest that stakeholders look to the first mover's reputation—not its financial performance—to make inferences about the appropriateness of its behavior. In short, firms and stakeholders are relying on different referents to evaluate corporate behavior. In many cases, this results in strategic missteps.

Our data show that the majority of first movers following 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 to imitate these high performers—and, indeed, we observe a high level of convergence around the gifts made by prominent first movers—results suggest that a better approach would be to imitate (or not) based 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 most problematic when the result is the insufficient provision of disaster aid, such as in the case of many Caribbean islands devastated 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 aid, there are often logistical difficulties in delivering this to those most in need. This challenge can become acute when there is a glut of aid to distribute, or when donations are misaligned with local needs following a disaster (Ballesteros *et al.*, 2017).

FUTURE WORK

Our findings suggest a call for further studies of the material consequences of non-market strategy under volatile environmental conditions. The diminished capacity of the government to meet increasingly complex and fast-changing societal needs associated with natural disasters and other complex social issues has fueled doubts about whether the state can meet rising demand (Besley and Ghatak, 2007; Lepoutre, Dentchev, and Heene, 2007). As a result, business firms have experienced a growing number of calls to intervene in areas that historically have been more the province of government agencies, multilateral organizations, and nonprofit charities (Ballesteros *et al.*, 2017). Manufacturing companies are running elementary schools in India, banks are setting up telemedicine facilities in Nigeria, consumer-products firms rebuilt roads in the aftermath of Japan's 2011 earthquake, and technology firms are constructing community

centers in Mexico. In many instance, this activity comes as 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 association between corporate pros-social behavior and financial performance under high uncertainty and urgency, and that it will develop context-specific predictions since we have seen that the drivers of non-market behavior vary across contexts. Such efforts will also be critical for a more theoretically nuanced understanding of the role that social, versus 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). Our study suggests that the integration of insights from ancillary literatures into evaluations of the social implications of corporate giving and CSR may serve as a fruitful research approach. And with such work, it can be anticipated that as societies accumulate better information on business intervention in disaster giving and managers better learn to respond to disasters, the influence of cognitive referents will decline. Our findings also suggest that isomorphic forces are likely to foster greater accumulation and concentration of aid resources. As organizational learning and more calculated choices replace cognitive referents, there are questions about whether or not diminished imitation has positive or negative implications for rescue and relief efforts.

CONCLUSION

Our analysis provides unique insight into the variable performance implications of corporate disaster giving. In so doing, we highlight a context where urgency and uncertainty abound, and the assumptions that inform previous research are unlikely to hold. In such situations, social considerations, timing, and imitation appear to be the primary drivers of the strategic value that a

firm realizes through the its donations. Going beyond studies that have shown the value of past action as a predictor of financial returns to social responsibility, our approach shows that, under uncertainty, reputation becomes the primary lens through which such behavior is evaluated. Moreover, in an information-poor environment, the reputation of prominent first-movers appears to create a referent against which all subsequent donations are judged. The practical implication is that many firms commit strategic errors in their disaster giving by imitating first-movers that have strong financial performance, but bad reputations. The reputational spillovers that unfold in such situations affect the follower-firms in similar ways, regardless of their own reputations. As a result, the overall empirical pattern is that most firms do not realize any meaningful value from their disaster giving, though most could if they altered the timing of their donations.

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Table 1. Descriptive Statistics

VARIABLES	Mean	SD	Min	Max
	Outcome variable			
Off-Trend Revenue	-2,084,994.11	14,276,140.96	-98,307,157.83	278,713,403.72
	Covariates			
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 ($USDmm)	16,802.84	30,751.42	3,577.49	470,171.00
	Predictors			
	Firm			
Total Employees	24,743.85	120,956.29	19.00	2,200,000.00
Total Assets ($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
	Country			
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
	Event			
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. Correlations

	Variable	1	2	3	4	5	6	7
1	Revenue	1.00						
2	USD Donated	0.10	1.00					
3	Media Reputation	0.11	0.01	1.00				
4	Financial Standing	0.09	0.01	0.02	1.00			
5	Economic Reliance	0.17	0.23	0.42	0.09	1.00		
6	Donation Timing (lag minutes)	-0.01	0.00	-0.02	-0.04	-0.03	1.00	

Table 3. Predictor of Revenue (First Mover)

Predictors	First Mover with Positive Reputation	First Mover with Negative Reputation
Firm-Specific Variables		
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	**30.15**	**(20.84)**

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.

Table 4. The Effect of The First-Mover's Financial Standing on the Average Corporate Donation

VARIABLES	Model 3 Dependent variable: Average Corporate Donation (RE)	Model 4 Dependent variable: Average Corporate Donation (FE)
Financial Standing (First Mover)	6.121***	2.706**
	(3.151)	(3.022)
Number of Deaths	-0.164	-0.142
	(0.530)	(0.701)
Affected Population	0.789	2.972
	(3.355)	(3.810)
CONTROLS		
Return on Assets %	0.069	0.017
	(0.043)	(0.098)
Consumer Orientation	0.705	
	(0.437)	
Industry	0.026**	
	(0.013)	
Employees	0.096	-1.742
	(0.207)	(1.114)
Market Capitalization	0.272	-0.191
	(0.176)	(0.428)
Population	-0.089	-0.003
	(0.276)	(0.296)
Land Area	-1.133***	
	(0.341)	
Number of Disasters (Global)	0.743	1.834***
	(0.522)	(0.495)
Number of Disasters (Country)	0.216	-1.166***
	(0.495)	(0.395)
Affected Population	-0.350***	-0.328***
	(0.107)	(0.125)
GDP Million	0.238**	0.088
	(0.114)	(0.109)
Economic Damage (USD)	0.233*	0.316**
	(0.127)	(0.131)
International Aid	0.153	-0.097
	(0.208)	(0.200)
Storm	4.582**	4.348**
	(1.884)	(1.969)
Flood	3.133	2.762
	(1.969)	(1.969)
Earthquake	4.066**	4.391**
	(1.955)	(1.884)
Constant	-21.848***	
	(4.017)	
Country FE		YES
Year FE		YES
Month FE		YES
Firm FE		YES

Clustered-by-event standard errors in parentheses (*** p<0.01, ** p<0.05, * p<0.1). Fixed-effects model has robust standard errors, month-, year-, country-, and firm-effects.

Table 5. Predictor of Revenue (Imitator)

Predictors	Imitator of a First Mover with Positive Reputation	Imitator of a First Mover with Negative Reputation
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	**19.17**	**(37.85)**

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 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 6. Predictor of Revenue (Deviator)

Predictors	Deviator of a First Mover with Negative Reputation	Imitator of a First Mover with Positive Reputation
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	**0.14**	**(2.75)**

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.