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Masters of Disasters? An Empirical Analysis of How Societies Benefit From Corporate Disaster Aid

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Abstract

Corporations are increasingly influential within societies worldwide, while the relative capacity of national governments to meet large social needs has waned. Consequentially, firms face social pressures to adopt responsibilities that have traditionally fallen to governments, aid agencies, and other types of organizations. There are questions, though, about whether this is beneficial for society. We study this in the context of disaster relief and recovery, in which companies account for a growing share of aid, as compared to traditional providers. Drawing on the dynamic capabilities literature, we argue that firms are more able than other types of organizations to sense areas of need following a disaster, seize response opportunities, and reconfigure resources for fast, effective relief efforts. As such, we predict that, while traditional aid providers remain important for disaster recovery, relief will arrive faster and nations will recover more fully when locally active firms account for a larger share of disaster aid. We test our predictions with a proprietary data set comprising information on every natural disaster and reported aid donation worldwide from 2003 to 2013. Using a novel, quasi-experimental technique known as the "synthetic control method," our analysis shows that nations benefit greatly from corporate involvement when disaster strikes.

Keywords

corporate disaster giving, corporate social responsibility, disaster relief and recovery, international aid, synthetic control method

Disciplines

Management Sciences and Quantitative Methods

Comments

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Masters of Disasters? An Empirical analysis of how Societies Benefit from Corporate Disaster Aid

ABSTRACT

Corporations have become increasingly influential within societies around the world, while the relative capacity of national governments to meet large social needs has waned. Consequentially, firms are being asked to adopt responsibilities that have traditionally fallen to governments, aid agencies, and other types of organizations. There are questions, though, about whether or not this is beneficial for society. We study this in the context of disaster relief and recovery; an area where companies account for a growing share of aid as compared to traditional providers. Drawing on the dynamic capabilities literature, we argue that firms are better-equipped than other types of organizations to sense areas of need following a disaster, seize response opportunities, and reconfigure resources for fast, effective relief efforts. As such, we predict that—while traditional aid providers are important for disaster recovery—relief will arrive faster, and nations will recover more fully when locally active firms account for a larger share of disaster aid. We test our predictions with a proprietary dataset comprising information on every natural disaster and reported aid donation worldwide from 2003 to 2013. Our analysis uses a novel, quasi-experimental technique known as the synthetic control method and shows that nations benefit greatly from corporate involvement when disaster strikes.

Keywords: **corporate disaster giving, corporate social responsibility, disaster relief and recovery, international aid, synthetic control method**

Globalization and the advance of neoliberal economic policies have made it more difficult for nations to regulate their economies and provide for their citizens, while bolstering the power and influence of corporations therein (Matten & Crane, 2005; Palazzo & Scherer, 2008). One consequence of this is that firms are being relied upon to adopt responsibilities that have traditionally fallen to governments, aid agencies, and non-governmental organizations. Industry self-regulation increasingly substitutes for standards that governments are unable or unwilling to enforce (Ostrom, 2000; Potoski & Prakash, 2005); companies provide public goods by building hospitals, schools, and community projects (Palazzo & Scherer, 2008); and many firms contribute to infrastructure reconstruction efforts after natural disasters (Wassenhove, Tomasini, & Stapleton, 2008). Scholars have begun to examine when and why firms engage in these unique forms of social responsibility (CSR) (Crilly, 2011; Scherer & Palazzo, 2011) and how they might benefit from doing so (Henisz, Dorobantu, & Nartey, 2013; Madsen & Rodgers, 2014). Yet, as with the broader CSR literature, we know little about societal outcomes and opinions are divided as to whether or not social welfare benefits should be expected.

Proponents view CSR as intrinsically good for society. This can be seen in studies that recognize firms may be strategic with their CSR (McWilliams & Siegel, 2011), but consider it positive they are expanding their social responsibility repertoires to include the creation of public goods (see Scherer & Palazzo, 2011). However, this work stops short of assessing the extent to which these practices actually benefit society. Industry self-regulation studies have adopted a similar focus, examining how standards are created (Bartley, 2007) and when they lead to better corporate environmental performance (King & Lenox, 2000; Potoski & Prakash, 2005). Yet this work is limited to harm reduction, versus welfare enhancement, and ecological outcomes are assumed rather than shown.

Taking another view, critics have argued that these forms of CSR do little to benefit society because firms use them primarily to secure government favors, forestall activism, and mollify local communities (Banerjee, 2008). This is supported by evidence that CSR is often

symbolic or political, and that firms make little effort to understand or effectively respond to social and environmental problems (Marquis & Qian, 2013; Mellahi, Frynas, Sun, & Siegel, 2015). As a result, CSR initiatives may be suboptimal, or even counterproductive, from a societal perspective (Cavallo & Daude, 2011). For instance, a study of resource-extraction firms in the developing world found that more than $500m of CSR spending yielded almost no social welfare benefits (Frynas, 2005). Similar anecdotes have led some to argue that, while companies have the potential to contribute to social welfare based on their resources and influence, this work is best left to organizations such as governments and aid agencies that specialize in these activities and can be held accountable for their pursuit (Frynas, 2005; Sundaram & Inkpen, 2004).

In short, we know little about the societal effects of CSR initiatives—particularly those related to the provision of public goods—and what we do know raises questions about the effectiveness of their contribution to social welfare. We also lack theory to predict when and why a firm's actions will create meaningful social welfare benefits, or the conditions under which businesses might be better-able than other types of organizations to deliver such benefits. To this end, we suggest it is useful to consider the unique capabilities of corporations vis-à-vis other types of organizations, and the situations where these capabilities are likely to be deployed in ways that yield positive outcomes for society. We argue that disaster responses are one such area, and that the speed of emergency relief and the level of a nation's recovery will be greater when locally active corporations account for a greater portion of aid.

Responding effectively to natural disasters is a grand and growing challenge worldwide. The inflation-adjusted cost of a typical disaster has sextupled in the last 40 years, but the level of aid from traditional responders such as governments and aid agencies has been stagnant (Becerra, Cavallo, & Noy, 2014). Firms are increasingly called upon to address this gap, and have emerged in the past 25 years as a large contributor to disaster relief (White & Lang, 2012). While these contributions undoubtedly supplement the efforts of traditional aid providers, we argue that corporate involvement may also create unique benefits for a disaster-afflicted country.

To account for this, we develop a theoretical model based on insights from the dynamic capabilities literature (Teece, Pisano, & Shuen, 1997). Studies in this milieu examine how firms sense threats in the external environment, seize response opportunities, and reconfigure routines and resources to do so (Teece, 2007). Typically, this is used to explain firm-level performance differences. However, there is also evidence that dynamic capabilities differ systemically among organizations with different forms (Rindova & Kotha, 2001). Building on this, we argue that corporations—as compared to other types of organizations that give disaster aid—have dynamic capabilities that enable them to more effectively sense areas of critical need following a disaster, make fast decisions, and reconfigure resources for efficient, effective responses. As such, we predict that aid will arrive more quickly, and a nation will recover more fully, when locally active firms account for a larger share of disaster aid. We further argue that these outcomes will be enhanced when disaster giving leverages firm-specific routines and resources.

We test our arguments with a proprietary dataset comprising all reported contributions from firms, governments, and aid agencies to relief efforts following every major natural disaster in the world from 2003 to 2013. To isolate the effect of corporate aid on our outcomes of interest, we use the synthetic control method (SCM) (Abadie, Diamond, & Hainmueller, 2015). The method is similar to other matching techniques often used in organizational research. Rather than matching treated entities with a single member of the control group, though, SCM constructs comparison units based on a combination of multiple entities: a synthetic control. The approach can thus be applied in contexts where it is hard to find suitable single comparisons, either because analysis focuses on aggregate entities like nations, or because the pool of potential controls is small (Abadie, Diamond, & Hainmueller, 2010). This is useful for us because our analysis requires a comparison of nations that have similar attributes and are afflicted by similar disasters, but receive different levels of corporate aid.

Results support our hypotheses and suggest that disaster aid from locally active firms is not only socially beneficial, but also creates value beyond that provided by other entities. As

such, we demonstrate societal benefits of CSR and identify factors that generate and enhance positive outcomes. This addresses a weak spot in the CSR literature and complements firm-level studies by suggesting that, at least in the context of disaster aid, strategic CSR may indeed be a win-win proposition (McWilliams & Siegel, 2011). The social impact of CSR is also a metric that is increasingly demanded by stakeholders such as customers and governments (Eccles, Ioannou, & Serafeim, 2014); we provide a way to show this using unambiguous measures. Our study also has policy implications. Disaster costs have grown at a pace that far exceeds the real value of traditional relief funding. Closing the gap is not only a matter of giving more, but giving more efficiently (United Nations, 2015; 2016). We illuminate conditions and mechanisms under which the business community can contribute to this goal in disaster responses.

THEORY AND HYPOTHESES

Disasters and the Rise of Corporate Responses

Nations face significant challenges in the aftermath of disasters. Earthquakes, floods, hurricanes and other calamities destroy infrastructure, cause human suffering, and are a source of negative economic growth that can take years to recover from (von Peter, von Dahlen, & Saxena, 2012). A typical large disaster causes a 20% reduction in national GDP (Barro, 2007), and the annual inflation-adjusted loss from even average disasters has grown from $54 billion in 1980 to over $314 billion in 2015 (United Nations, 2016). Disasters are also underinsured, even in developed nations (Bevere, Orwig, & Sharan, 2015). As a result, there is a growing gap between the scale of disasters and the capacity of traditional aid providers, such as governments and multilateral agencies, to undertake effective responses (United Nations, 2016).

As with other areas of CSR, the diminished capacity of traditional actors has led to growing calls for firms to be involved in disaster relief and recovery (Matten & Crane, 2005; Twigg, 2001; United Nations, 2015). Reflecting this, there has been a large increase in corporate disaster giving over the past 15 years. More than 90 percent of the world's 2000 largest firms now participate in relief efforts each year, and their average inflation-adjusted donation has

grown by over 10 times to $1.6 million (Ballesteros, 2015).[1] Corporate giving also comprises a growing share of all disaster aid, and in some cases exceeds the contributions of traditional providers (Ballesteros, 2015; White & Lang, 2012). For instance, in the aftermath of the 2010 earthquake and tsunami in Chile, 55.4% of aid was from corporations; more than the combined amount provided by foreign governments and multilateral aid agencies. Similarly, 68.3% of the aid that Japan received after the 2011 tsunami was from firms, as was 51.7% of aid received by the Philippines after Typhoon Haiyan (OCHA, 2016).

Although corporate giving undoubtedly helps to address disaster funding gaps, we argue that such efforts are more than a supplement for traditional aid. We base this on the fact that the effectiveness of a disaster response is related to not just the quantity of aid, but also to the speed with which it arrives and the extent to which it addresses areas of critical need (Cutter, Emrich, Webb, & Morath, 2009; Klinenberg, 2003; Wassenhove et al., 2008). Following a disaster, resources can be directed to many different areas, with the implication that allocations may create logistical clogs in the disaster zone, not match the emergency at hand, or focus in areas that do not contribute to a nation's long-run recovery. There is also evidence that the damage and suffering caused by a disaster is inversely related to the speed that aid reaches beneficiaries (DeLeo, 2013; Wassenhove et al., 2008). To wit, disaster recovery is significantly affected by the fast delivery of essential resources, such as food, water, and medicine, as well as the quick restoration of communication and transportation infrastructure (Day, Junglas, & Silva, 2009; Day, Melnyk, Larson, Davis, & Whybark, 2012). The slow response to Hurricane Katrina is a case in point: harm from the storm's physical destruction was greatly compounded by the inability of Federal and local officials to respond quickly and adequately (Horowitz, 2008).

[1] The recent rise of corporate disaster giving is an expected consequence of firms' strategic behavior. During the last thirty years, the number of firms with multinational operations and the number of foreign affiliates among the world's largest companies grew three-fold and 10-fold, respectively. Given that exposure to disasters is higher for the average MNE than for single-country firms, the internationalization of economic activity has likely increased management attention to disaster risk.

In what follows, we develop a theoretical framework which predicts that corporations that have an active economic presence in a disaster-affected nation are uniquely well-suited to undertake fast and effective responses, and that their involvement thus contributes to more socially beneficial relief and recovery efforts.[2]

Dynamic Capabilities and the Advantage of Locally Active Firms in Disaster Response

Our approach for theorizing about the social value of corporate disaster giving is based on the dynamic capabilities literature. This research studies how organizations identify threats and opportunities in the external environment and reconfigure their routines and resources to undertake strategic responses (Teece, 2007; Teece et al., 1997). The core insight is that performance differences—especially in rapidly changing and uncertain environments—arise from the varied dynamic capabilities of different organizations (Eisenhardt & Martin, 2000). Recent work has also used this approach to explain variance in the strategic CSR of different companies (Scherer & Palazzo, 2011). While most studies have been at the firm-level, there is also evidence that dynamic capabilities differ systematically among organizational forms, which are groups of entities that share common distinguishing features (Hannan & Freeman, 1984; Romanelli, 1991). This has been shown in cross-sectional research on firms with different governance structures (Hedlund, 1994), and in studies that examine how strategic behavior changes when a company switches forms (Lampel & Shamsie, 2003; Rindova & Kotha, 2001). Studies have also observed systematic differences in the governance structures, goals, and decision-making processes of businesses, charities, and government agencies as distinct organization forms (Cobb, Wry, & Zhao, 2016; Lee, Battilana, & Wang, 2014).

Building on this, we argue that corporations—as compared to other organizational forms such as government agencies and multilateral aid providers—are likely to have capabilities that enable fast and effective disaster responses. Following Teece (2007), we decompose dynamic

[2] We define local presence based on a company having an affiliate or subsidiary that creates products or performs services in a focal nation.

capabilities into sensing, seizing, and reconfiguring components, and argue that firms with a presence in a disaster-afflicted nation are well suited to 1) sense threats and diagnose areas of critical need following a disaster, 2) seize upon opportunities to respond, and 3) quickly reconfigure routines and resources to do so effectively. We suggest that, collectively, these factors will lead to a nation receiving aid more quickly, and recovering more completely, when locally active firms account for a greater share of total disaster relief.

Sensing areas of need. As with rapidly changing competitive environments, the aftermath of a disaster is characterized by uncertainty, complexity, and urgency (Baker & Bloom, 2013; Day et al., 2012). In such contexts, the first step for organizations in determining how to respond is to sense and interpret the situation at hand (Lampel, Shamsie, & Shapira, 2009; Teece et al., 1997). This entails scanning the environment and gathering data that can be used to inform strategic decision-making. In this regard, effective sensing capabilities yield diverse, accurate, and nuanced information, and thus support a robust understanding of threats and opportunities (Helfat & Peteraf, 2015).

The most immediate way that a firm is likely to sense a disaster is through its effects on local operations. The destruction of physical infrastructure directly affects the production and distribution of goods, while the human toll of a disaster affects employees and the functioning of local markets. Firms are likely to be sensitive to such disruptions because they are expeienced directly, and interpret them as areas of need because they have obvious financial implications (Hoffman & Ocasio, 2001; Sundaram & Inkpen, 2004). Indeed, studies have shown that in the aftermath of a disaster, locally active firms often rebuild transportation infrastructure to restore distribution and supply channels, construct housing and health facilities to bring normalcy to customers and employees, and make direct transfers to disaster victims to restore purchasing power (Ballesteros, 2013). This aligns with strategic CSR arguments that predict companies will act in the public good when doing so serves their own interests (McWilliams & Siegel, 2011). Broadly speaking, firms are likely to sense disaster impacts that threaten their market

performance and view these as requiring immediate responses (Horwitz, 2009). Discussing this, a Coca-Cola manager explained her firm's response to the 2011 earthquake and tsunami in Japan by saying: "We are part of a system. If the government cannot [respond effectively], we need to rebuild. We need the market to recover."[3]

Further, to the extent that decisions about how to respond to market disruptions are best made when informed by nuanced and diverse information (Teece et al., 1997), companies are likely to benefit from relationships developed through their operations in a country. There is evidence that firms utilize local grass-roots relationships, affiliate networks, and partner organizations to help assess the damages caused by a disaster and to determine where aid is most urgently needed and will have the greatest impact (Useem, Kunreuther, & Michel-Kerjan, 2015). Having employees and other stakeholders present in the disaster zone may also enable a firm to gather to contextualized information about disaster impacts, and understand the needs and preferences of local communities (Horowitz, 2008). Thus, just as having 'boots on the ground' aids a firm in making sense of complex and uncertain competitive environments (Teece et al., 1997), local operations offer a close-up look at the nature and scale of disaster impacts, and can thus help with sensing areas of critical need.

By comparison, non-local governments and multilateral aid agencies usually do not have significant established infrastructure or contact networks in a disaster zone (Cohen & Werker, 2008). As a result, the information that guides response planning for these organizations is more likely to be second-hand and from fewer sources. This may create challenges for sensing disaster impacts as well as confusion about how and where to best intervene. Indeed, a lack of local understanding has been cited as a key factor in the insufficient and misguided response from FEMA and other Washington, D.C. based aid providers following Hurricane Katrina (Horwitz, 2009). The same issue is made vivid in the account of a municipal official in Chile's Maule region, which was devastated in 2010 by an earthquake and tsunami:

[3] Manager, International Public Affairs, Coca-Cola Company: interview with the first author.

> *The government disappeared… and when they arrived, they did not know exactly what to do, how to coordinate the aid, what functions to perform… we coped with it with our own resources and with a lot of help from the private sector." (Polanco, 2012).*

There is also evidence that, whereas a firm's fiduciary interests contribute to a focus on economically relevant disaster impacts (Ballesteros, 2015), traditional aid providers often confront multiple pressures and preferences that shape how they interpret information coming from a disaster zone. For governments, decisions about how to intervene following a disaster may be guided by political factors (Reeves, 2011). Indeed, studies have shown that up to 50 percent of the variance in disaster relief allocations is explained by electoral considerations (Garrett & Sobel, 2004). Foreign governments also tend to be more attuned to disasters that affect political allies, culturally similar nations, and oil-exporting countries (Fink & Redaelli, 2011). There is also evidence that the amount of aid pledged by governments, NGOs, and multilateral agencies is influenced by the level of media coverage that a disaster receives, irrespective of its actual impacts (Eisensee & Strömberg, 2007; Franks, 2013). In sum, the capability of these organizations to sense areas of critical need following a disaster is often constrained by political considerations and special-interest pressures, rather than being guided by assessments of need and impact alone (Cohen & Werker, 2008; Platt, 2012).

The above considerations support the argument that locally active companies are more likely than traditional aid providers to sense and accurately interpret information about disaster impacts that relate to a nation's economic functioning. In turn, this should motivate responses that focus on rebuilding key infrastructure and restoring the market status quo. Importantly, there is evidence that such initiatives have a positive effect on national growth and social welfare: in comparison, the less focused and politically motivated initiatives undertaken by governments and aid agencies have been shown to generate less social surplus (Cavallo & Daude, 2008; Khan & Kumar, 1997; Robinson & Torvik, 2005). For instance, in a sample of 24 countires, Khan and Reinhart (1990) found that public investments had an overall negative influence on economic growth, whereas private investment had a significant positive effect.

Seizing opportunities to act. Once an organization has sensed disaster impacts and come to an understanding of where to intervene, the next step is to seize the opportunity to act (Teece, 2007). As with other strategic decisions, the speed with which action takes place has significant implications for the effectiveness of disaster relief and recovery (Day et al., 2012; Eisenhardt & Martin, 2000). In this regard, dynamic capabilities research shows that local autonomy and decentralized decision-making enhance the speed and effectiveness with which a firm can respond to threats and opportunities in the external environment (Teece et al., 1997). Extending this to disaster relief, we argue that locally active companies will likely have a speed advantage over other types of aid providers.

When a firm is motivated to restore market functioning in a nation, it can delegate decisions about aid allocation to managers whose local knowledge and situational proximity are conducive to the agility and improvisation required for quick and effective action in complex environments (Fan, Wong, & Zhang, 2007). In comparison, governments and multilateral aid agencies often have centralized, bureaucratic decision-making processes which can impede rapid action (Dolowitz & Marsh, 2000). Hence, when a disaster requires donors to swiftly ramp-up their engagement, firms likely face fewer decision-making constraints than other aid providers (White & Lang, 2012). For example, following the 2010 Chile disaster, multi-national mining firm, Anglo American, relied on local managers to assess damages and lead its response. Just hours after the earthquake, the company's London-based headquarters was briefed on the destruction and authorized managers to respond. The result was one of the first major relief and recovery donations from any source (Useem et al., 2015).

Reconfiguring and the effective provision of aid. In addition to decision-making speed, locally active companies are also likely to have resources and routines that can be quickly reconfigured for disaster relief (Teece, 2007). With regard to resources, the cash position of most large firms allows them to purchase response goods or transfer money to victims (Matten & Crane, 2005). Productive assets within an affected country can also be repurposed to address

disaster needs, such as when Anglo American rapidly dispatched heavy equipment from its mining operations to gather debris and remove rockslides after the Chile earthquake (Useem et al., 2015). Similarly, following the 2004 Indian Ocean tsunami, handset manufacturer, Ericsson, moved quickly to provide mobile phones to help disaster responders. Large firms also have the ability to smoothly redeploy resources from across their network of corporate affiliates (Teece, 2014). This contributes to a broader and more diverse resource base that can be deployed at speed to support relief efforts. For instance, Wal-Mart and other large retailers were able to mobilize inventory from across their subsidiary networks to bolster the supply of medicines, food, and clean-up supplies following Hurricane Katrina (Horwitz, 2009).

Routines and competencies that a company has developed for business purposes can also be utilized to implement fast, effective relief efforts (Eisenhardt & Martin, 2000). Following the Indian Ocean tsunami, for example, industrial companies helped rebuild schools by drawing on their experience with large-scale engineering projects. These firms had no history building schools, but ample expertise with construction materials and methods. Coordinating with makers of mobile buildings, they quickly built state-of-the-art, earthquake-proof schoolhouse structures (Fernando, 2010). In another example, the logistics company, TNT, assisted the United Nations in designing relief warehouses in Italy by using its expertize to help optimize warehouse storage and to train personnel in inventory management: the result was an estimated $450,000 reduction in annual operating costs (Wassenhove et al., 2008).

In comparison, the centralization and bureaucracy that often slows decision-making in governments and multilateral agencies can create barriers to efficient and effective aid deployment. Unlike companies that already have resources in a nation, these organizations typically need to marshal resources and put local infrastructure into place before a response can begin (Cohen & Werker, 2008; Lipscy & Takinami, 2013). In addition to slowing the flow of aid, it is costly to create new structures and routines, and there are often kinks to be worked out before operations become smooth (Raffaelli & Glynn, 2014; Teece et al., 1997). The need to

navigate layers of bureaucracy may also contribute to bottlenecks that slow the dispersion of disaster relief (Fritz, 2004). Indeed, nearly 40% of the aid pledged by foreign governments and aid agencies following the 2010 Haiti earthquake was still outstanding in 2013, whereas all corporate aid had been distributed (Ballesteros, 2015; Becerra, Cavallo, & Noy, 2013).

Without discounting the importance of traditional aid providers for effective disaster relief, our collected arguments suggest that firms have capabilities that are uniquely well-suited to fast and effective responses. In turn, this should contribute to positive outcomes for afflicted nations when corporations account for a larger share of disaster relief. Formally, we predict:

Hypothesis 1 (H1). The speed with which aid is provided to a disaster-affected nation will be faster when locally active corporations account for a greater share of total disaster aid.

Hypothesis 2 (H2). The long-term recovery of a disaster-affected nation will be greater when locally active corporations account for a greater share of total disaster aid.

The value of firm-specific versus general resources. While we expect that corporations as an organizational form have a comparative advantage in delivering fast and effective aid following a disaster, there is undoubtedly variance in the degree to which responses fit with the need being addressed (Kogut & Zander, 1992). For instance, even at a high level of analysis, there is likely to be a difference in the speed and effectiveness of responses that draw on firm specific versus general routines and resources. According to the dynamic capabilities literature, firms work to develop areas of core expertise around co-specialized routines and resources, which they then look to deploy in response to environmental shifts (Kogut & Zander, 1992; Teece, 2014). Mirroring the general finding that firms perform better when they are able to leverage such competencies, research on strategic CSR has shown that companies are more disciplined with their giving when it is consistent with business objectives (Porter & Kramer, 2002; Saiia et al., 2003), and that CSR that is *related* to core business competencies is more likely to produce financial benefits for the firm (McWilliams & Siegel, 2000). Extending this to societal outcomes, Kaul and Luo (forthcoming) developed a theoretical proof that suggests

related CSR contributes to social welfare more efficiently than comparable government or charity initiatives.

Applied to disaster response, this points to a distinction between firms that respond with general resources—such as donating money to relief efforts—versus those that respond by reconfiguring areas of core expertise. Financial donations undoubtedly make a valuable contribution to disaster relief, but they also insert a layer between the firm and aid implementation, while offering little additive value beyond the cash infusion. This may contribute to a relatively slower and less effective response. In comparison, leveraging areas of expertise has the potential to add unique value that contributes to the effectiveness of a relief effort without imposing major transactional or operational costs. Such efforts can also be undertaken quickly, as they draw on existing products or services and generally don't require intermediaries for implementation.

For instance, it stands to reason that the impact of disaster giving will be greater when a firm contributes resources that are similar to those it has expertise producing for private sale. For the firm, the marginal cost of providing such goods is relatively low, as significantly new skills and routines are not required for their production. Quality and speed of delivery should also be high, given the firm's production competencies. In comparison, it will likely be costly for other entities—corporate or otherwise— to provide similar goods if they lack the relevant capabilities (Besley & Ghatak, 2007). The implication is that related CSR should be more efficient, cost effective, and high quality than other options.

Illustrating this, in the aftermath of the 2004 Indian Ocean tsunami, Coca-Cola converted soft-drink production lines in Sri Lanka to bottle water, and used its own trucks to distribute the water to victims. In so doing, Coke was able to quickly produce and distribute an essential good in a cost efficient and effective manner (Fritz, 2004). Supporting this argument with formal models, Kotchen (2006) compared the provision of public goods that firms produced jointly with private goods, versus those that they produced separately. Results suggested there are

greater social welfare impacts in the first example because production integrates capabilities that are used to produce the private good: this affects the equilibrium provision of the public good. This effect is absent for unrelated giving, however, such as when a transport company donates food or a fraction of sales to disaster relief.

Company-specific knowledge and routines may also be germane to disaster relief efforts. The types of expertise required for many aspects of disaster response—for instance, logistics, construction, and planning—have analogs in business (Wassenhove et al., 2008). Firms incur little cost when they contribute such expertise, yet this can have a meaningful effect on the speed with which aid reaches beneficiaries, as well as the effectiveness of a disaster response (Horwitz, 2009). The actions of express delivery firm, DHL, offer a case in point. DHL often assumes a lead role in coordinating the reception and distribution of relief supplies after a disaster. By drawing on its competencies in rapid dispatch and inventory control, DHL's involvement in disaster logistics regularly contributes to fewer donated goods going to waste and less airport congestion in the disaster-affected nation (Wassenhove et al., 2008). Similar outcomes were apparent when FedEx took a lead role coordinating the delivery of relief goods following the 2008 floods in Mexico (Ballesteros, 2013). As such, we predict:

Hypothesis 3 (H3). Aid from locally active corporations will have a greater effect on the speed with which aid is provided to a disaster-affected nation when this giving leverages firm-specific routines and resources.

Hypothesis 4 (H4). Aid from locally active corporations will have a greater effect on a nation's recovery from disaster when this giving leverages firm-specific routines and resources.

METHODS

We tested our hypotheses with a dataset that covers every major natural disaster in the world from 2003 to 2013, as reported in the International Disaster Database (EM-DAT) from the

Centre for Research on the Epidemiology of Disasters.[4] Whereas EM-DAT records all disasters, we restricted our analysis to sudden disasters, such as earthquakes and hurricanes, which have a clear triggering event, immediate disruption, and peak impacts within 30 days. We excluded slowly-emerging disasters, such as famines, because impacts unfold over a long period of time and it is difficult to identify the magnitude and timing of disaster responses. We also excluded human-caused disasters, such as 9/11, as these are often accompanied by social and political factors that affect the likelihood of receiving aid (Birkland, 1997; Klinenberg, 2003).

Overall, there were 3,523 disaster-nation pairs in our analysis period (i.e., instances where a country was affected by a sudden natural disaster). Of these, we dropped 119 where the start- and end-dates of the disaster were imprecise, as well as 191 where peak impacts occurred outside of 30 days. We gathered information on the economic and human toll of each disaster using data provided by the company, Swiss Re, which tracks insured and uninsured disaster losses (Sigma, 2014), and from international-aid data provided by the United Nations Office for Coordination of Humanitarian Affairs. Data on these variables were missing or incomplete for 1,031 of the records in our dataset, which were dropped from our analysis. This left us with 2,084 discrete disaster-nation events that we used to test our predictions about the speed of aid provision (H1 and H3). For our analysis of post-disaster recovery (H2 and H4), we took into account that a nation may be affected by multiple disasters in the same year. In such cases, we added the damages for each disaster to create a collective annual disaster. This resulted in 464 country-year disasters. Collectively, the disasters in our analysis affected over 836 million people in 129 countries and caused over $1.3 trillion in damage.

For disaster aid, we built a propriety dataset with information on every donation that a nation received for 12 months following a disaster, and from what source (i.e., corporations, governments, and multilateral agencies). To do this, we began by searching Factiva and Lexis

[4] 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/.

Nexis for media reports with headlines that featured a combination of the affected country, the type of disaster, and—where relevant—the name of the disaster (e.g., Typhoon Haiyan).[5] We then narrowed our sample to reports that contained information on disaster giving by searching for a Boolean combination of the term 'donate' as well as various derivations and synonyms. In total, this yielded 2,310,000 items which formed the core of our analysis. We used an automated coding process to search within each report for details about the type, financial value, date, and source of each donation. This yielded information on over 73,000 donations from more than 34,000 corporations. For each donation, we coded those that were coming from corporations with local affiliates as reflected in the Lexis Nexis Corporate Affiliations Database. For each in-kind donation, we recorded the characteristics of the product or service in question and converted this to a monetary figure based on current prices in the affected nation (as reported in the Billion Prices Project[6]), the monetary value reported by the donor, or the reported value of similar donations from other organizations. Donations were converted into U.S. dollars using the exchange rate on the date the gift was made.

We elaborate on our search strategy, coding procedures, and validity checks in an online appendix at https://disastergiving.wordpress.com/.

Estimation Strategy

Our hypotheses focus on how corporate disaster giving affects the speed of aid provision and the level of disaster recovery in a nation following a sudden natural disaster. Given the impossibility of a clean experimental design where disaster-affected nations are randomly allocated into groups with different levels of corporate disaster giving and donation relatedness, we aim for the second-best econometric tool for causal inference: a quasi-experimental design. For our analysis, isolating causality requires an approach that compares relief and recovery among nations that receive different levels of corporate aid, but are otherwise similar with

[5] These databases cover 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, among other sources.
[6] http://bpp.mit.edu/.

regard to underlying attributes and disaster impacts. The assumption of heterogeneity in corporate disaster giving, but homogeneity in everything else, is difficult to satisfy and poses an estimation challenge for conventional panel-data techniques. To wit, nations may have capacities that are independent of corporate giving, but difficult to empirically isolate, such as variance in their ability to care for citizens and manage disaster responses. Failing to take these factors into account may lead to biased, inefficient estimates, or spurious causation.

Tools such as country-specific fixed-effects and control variables can be used to help address these issues, but this imposes the assumption that *ex ante* disaster trends extrapolate to *ex post* conditions, which is often not the case, particularly over long time periods (Cavallo, Galiani, Noy, & Pantano, 2013). In comparison, traditional quasi-experimental designs, such as differences-in-differences, allow for the inclusion of unobserved confounding influences. These effects must be time-invariant, though, so that the temporal differences method can address them. Large sample inferential techniques like coarsened-exact matching are another way to deal with this issue. It is difficult to apply these techniques in contexts such as ours, however, because suitable single comparisons often do not exist for aggregate entities like nations (Abadie et al., 2010, 2015). The challenge is amplified when the number of potential control units or sample periods is small (Cavallo et al., 2013).

Synthetic control method. Based on these considerations, we chose the synthetic control method (SCM) for our analysis, which is a quasi-experimental technique that overcomes some of the limitations of traditional matching approaches (Abadie et al., 2010, 2015). As with other matching techniques, SCM matches a focal (treated) entity with a control that is statistically similar for a set of relevant predictors, but different with regard to a focal independent variable (the treatment). Comparison units are selected to reproduce the counterfactual for the focal entity, and thus isolate how treatment affects the outcome of interest. SCM is unique, though, in that controls are a combination of multiple potential comparators, rather than single entities.

The approach works by using an algorithm that, first, evaluates the capacity of every entity not affected by an intervention to emulate pre-treatment characteristics of the treated entity. From this, weights are assigned to multiple control entities, which are then combined to form a synthetic comparator that closely resembles the treated entity, except for the presence of the intervention (see Abadie et al., 2010, 2015 for detailed discussions). The approach is also capable of matching entities over a long pre-treatment time-period. 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." As applied to our analysis, this means that SCM matches each treated nation with a combination of carefully selected countries in the control group: a synthetically created nation. For instance, no one country approximates Chile in the years leading up to the 2010 earthquake and tsunami. However, features of Argentina, Brazil, Colombia, Paraguay, Brazil, Mexico, and the United States can be integrated in different proportions to form a synthetic Chile that is a close match on features that predict the speed of disaster relief as well as the nation's historical levels of social welfare.[7]

The efficiency of SCM centers on the capacity of the algorithm to minimize, for each pre-treatment period, the distance between treated entities and each of the control entities on a case-by-case basis. As a result, significance levels are not computed as in traditional panel-data techniques, and effect sizes are interpreted directly as the difference between the values for treated versus control entities on the outcome of interest (Abadie et al., 2015). The statistical likelihood that observed outcomes are the result of treatment versus chance is calculated using placebo tests. The approach works by telling the SCM algorithm that entities in the control group have received treatment (even though they have not). These 'placebo' entities are then matched with synthetic counterparts, and outcomes of interest are assessed. Repeating this

[7] Our online appendix shows how the SCM algorithm combines features of these nations to approximate 2010 Chile. See https://disastergiving.files.wordpress.com/2016/08/synthetic-control-method.pdf.

analysis for all non-treated entities creates a distribution of outcomes that are essentially observed by chance. This distribution of false treatment effects is then used to compare with the actual treatment effects and generate p-values (see Abadie et al., 2015).

Variable Definitions

Outcome variables. Our analysis features two outcome variables: the *speed of aid provision*, and; a nation's *disaster recovery*. As with previous studies of disaster management, we used the portion of total disaster aid provided in the four weeks following a disaster as a proxy for the speed of aid provision (Day et al., 2012; O'Donnell, 2009). We analyze a nation's recovery from disaster based on the annual growth rate of its Human Development Index (HDI) score, which is a measure of aggregate social welfare (Anand & Sen, 1994). HDI is calculated annually by the United Nations Development Program and tracks a nation's level of health and longevity, knowledge and education, and standard of living.

Treatment variables and levels. For hypotheses 1 and 2, our treatment variable is the share of *aid from locally active firms*. We used the Lexis Nexis Directory of Corporate Affiliates to determine which firms were located, or had a subsidiary, in an affected country and were thus 'locally active'. Our variable is the amount of aid from these firms divided by the total amount of aid received by a nation in the year following a disaster. To test our hypotheses, we analyzed three levels of treatment. The distribution of corporate giving is highly skewed, which means that is not an efficiency strategy to select treatment levels based on the mean value and standard deviations. Instead, we use the 75^{th} (7.7% of aid is from locally active firms), 95^{th} (24.5%), and 99^{th} (44.4%) percentiles as treatment levels (see Caravallo et al., 2013 for a similar approach).

For hypotheses 3 and 4 we developed a measure of *related giving* that reflects the degree to which disaster aid leverages firm-specific routines or resources. To calculate this, we began by using a firm's four-digit SIC code to identify its key business activities. We coded the dollar amount of in-kind donations that aligned with these activities as *related* [i.e., products, services, or activities that are relevant to the firm's market operation (e.g., Bayer providing medicines in

response to Typhoon Haiyan)]. Details about how we coded related versus unrelated giving can be found at https://disastergiving.wordpress.com/. Our specific variable is the value of related aid divided by the total value of disaster aid from locally active firms. Again, we used three treatment levels in our analysis. As the distribution for relatedness is relatively normal, we used the mean (26.9% of corporate aid is in the form of related giving) and +/- one standard deviation (11.5% and 42.4%) for treatment indicators.

Predictor variables. We created a synthetic counterpart for each treated nation using the STATA algorithm developed by Abadie et al. (2010). For all matching, we included a variable for the economic hardship caused by a disaster, as reflected in USD amount of damage to property, crops, and livestock reported by Swiss Re and EM-DAT. Beyond this, however, different predictors are relevant for the speed of aid provision versus a nation's recovery from disaster (Day et al., 2012; Ray, 1998; Wassenhove et al., 2008). As such, we added different matching variables for these two analyses.

Speed of aid provision. Studies of disaster management and corporate disaster giving have suggested that key predictors for aid speed include the size of a nation's economy, it's openness to aid, and the prominence of a disaster (Eisensee & Strömberg, 2007; Stromberg, 2007). To this end, we used the following predictors in our matching: 1) *size of the economy*, measured as the natural logarithm of a country's pre-disaster GDP per capita (PPP); 2) *human hardship*, which is the natural logarithm of either the number of people killed or number of people affected, as reported by EM-DAT; 3) *salience*, measured with the natural logarithm of (one plus) the count of news articles in Factiva and Lexis Nexis that referred to the event in the 48 hours after its occurrence; 4) *newsworthy events,* defined as the average of the median number of minutes that a news broadcast devotes to the top three news segments in a day over the forty days after the disaster (see Eisensee & Strömberg (2007) for an explanation of this indicator and a test of its effectiveness); 5) number of *disasters* at the country and 6) at the international level, which speaks to other events that may dilute the attention paid to a focal

disaster and; 7) *openness to aid*, which is a binary variable indicating the national government's consent to receive foreign aid, as coded from articles in Factiva and Lexis Nexis.

Disaster recovery. We chose predictors of disaster recovery based on their relevance to HDI as reflected in a voluminous literature on economic development and the social costs of disaster (cf., Barro, 2009; Cavallo et al., 2013; Kousky, 2013). These are: 1) *schooling* measured by secondary education attainment; 2) *life expectancy* at birth; 3) *inflation rate* as reflected in the annual percentage change for consumer prices; 4) *trade openness* proxied by real exports plus real imports as a percentage of real GDP; 5) *investment rate,* which is the ratio of real domestic private and public investment to real GDP. Data for these variables is from World Bank's World Development Indicators (WDI). For each treated nation, we constructed a synthetic control based on 15 years of pre-disaster data. For calculating disaster recovery, we followed nations for 10 years and, thus, in some cases use forecast values for 2016 to 2023 as reported in the WDI.[8] Table 1 shows descriptive statistics while Table 2 shows correlations.

-----Insert Table 1 and Table 2 about here------

RESULTS

The Effect of Corporate Aid on Response Speed and Recovery from Disaster

Table 3 shows results for hypothesis 1, which predicted that the speed of aid provision will be faster when locally active corporations account for a greater share of disaster aid. Models 1-3 reflect the 7.7%, 24.5%, and 44.4% levels of the treatment variable, respectively. We observe similar average values for treatment and control groups on each predictor variable, which shows that our matching was effective. P-values were calculated using the placebo method discussed above.[9] Results show that there is no significant difference in the speed of aid

[8] Some country-specific data were missing from the WDI, in such case, we applied the multiple-input bootstrapping algorithm for time-series-cross-sectional data as explained by Honaker et al. (2011). The online appendix provides a detailed description of the missing data, our approach and the relevant checks of accuracy and efficiency. See: https://disastergiving.files.wordpress.com/2016/08/treatment-of-country-specific-missing-data.pdf.

[9] The online appendix https://disastergiving.files.wordpress.com/2016/08/inference-with-placebo-exercises.pdf provides details on the placebo tests that were used to support our analysis.

provision at 7.7% share of corporate giving in total aid. However, this changes dramatically as corporations comprise progressively larger shares of disaster giving. At the 24.5%, treated nations received 121% more aid during the first month as compared to synthetic counterfactuals. The effect is even greater when the share of corporate giving is above 44.4% of aid. Here, treated nations received more than twice the aid of synthetic control nations by the end of the fourth post-disaster week. Thus, while corporate giving has little effect on the speed of aid provision for most disasters (because firms comprise a relatively small share of aid in these instances), we observe that high levels of giving have a strong and significant effect that is consistent with our prediction in H1. Table 3 and Figure 1 show the average and the trajectory of the accumulated donation each post-disaster week for treatment and synthetic control groups.

-----Insert Table 3 and Figure 1 about here-----

Table 4 shows results for hypothesis 2, which predicted that the overall recovery of a nation will be greater when locally active corporations account for a larger share of disaster aid. Again, models reflect different levels of the treatment variable, and report average values for treatment and control groups on each predictor. The outcome variable is the annual growth rate of HDI 10 post-disaster years. We observe a significant difference between HDI growth rate for treatment and control groups when locally active firms account for more than 24.5% of disaster aid. The result is stronger when firms contribute more than 44.4% of all aid. However, we do not observe a significant effect on social welfare when the share of corporate disaster aid equals, or is lower than, 7.7%, suggesting that positive effects only become apparent when corporations play an outsized role in a disaster response.

Figure 2 shows the trajectory of change in the annual growth rate between treated and control nations. Given that the SCM algorithm generates the synthetic controls based on the pre-disaster history of the predictors of HDI, we expect no significant differences before the disaster. Accordingly, we observe the differences in the HDI growth rate only during the 10 post-disaster years. Results show that the level of recovery after 10 years is notably higher for countries that

receive over 24.5% of disaster aid from locally active firms. On average, the HDI growth rate for such nations is 92% higher than for their synthetic controls: this gap grows to 145.5% at the 44.4% of share of corporate giving. As such, our results suggest a slight decrease in the positive effect on HDI at higher levels of corporate giving. Hence, we find support for hypothesis 2, but note that our results suggest that corporate involvement is not panacea for disaster responses, and that a nation's long-term recovery likely benefits from the participation of other entities.

-----Insert Table 4 and Figure 2 about here-----

The Value of Firm-Specific versus General Resources

Regarding our last two hypotheses, we found that the positive effect of corporate aid on the speed of aid provision and a nation's recovery from disaster becomes greater when the portion of this giving that is related to firms' core business increases. To analyze this, we examined the effects of relatedness (i.e., 11.5%, 26.9%, and 42.4%) at each treatment level of corporate giving (i.e., 7.7%, 24.5%, and 44.4%). Table 5 reports the results for hypothesis 3, which focuses on the effects of related giving on the speed of aid. We observe that increases in relatedness lead to significantly faster aid provision when the share of giving from locally active firms is at least 24.5% of total aid. For instance, at 95th percentile of share of corporate giving and 7.7% of relatedness, treated nations receive aid 170% faster than counterfactual nations; at 44.4% of share of corporate giving and 42.4% relatedness, nations receive aid 260% faster than control nations. In other words, the marginal effect on relief speed increases with the share of related corporate giving. Figure 3 plots the trajectory of accumulated aid for each post-disaster week for the cases of a nation with at least 24.5% of aid coming from locally active firms and 11.4% of relatedness; and one receiving 44.4% and 42.4% respectively. In sum, these effects suggest a strong case for hypothesis 3.

-----Insert Table 5 and Figure 3 about here-----

We followed the same procedure for hypothesis 4, which predicted that a nation's recovery from disaster will be stronger when a greater portion of corporate aid comes in the form of related giving. Table 6 reports the treatment effect of relatedness on the growth rate of HDI at each level of corporate aid and shows that it has a consistently positive and significant influence. Of particular note, we observe that the greatest average difference between treated and control nations occurs when there are high levels of corporate aid (44.4% share in aid) and a large portion of this aid comprises related giving (42.4%). Ten years after a disaster, the average HDI annual growth rate for such nations is expected to be almost 190% greater than for comparators. To show the magnitude of the role of relatedness in the effect of corporate giving on HDI, we compare in Figure 4 the trajectory of the annual growth of HDI between two similar treated nations and their control nations. When relatedness is not considered, the difference between treated and synthetic controls is 56 percentage points lower. As such, we find strong support for hypothesis 4.

-----Insert Table 6 and Figure 4 about here-----

Robustness Checks and Supplementary Analyses

We ran a variety of supplementary models and robustness checks to deepen our analysis and bolster our findings. All results are available to view in our online appendix at https://disastergiving.wordpress.com/.

Alternate modeling approach. Although SCM allows us to cleanly identify the effect of corporate aid on the speed of aid provision and the level of recovery following a disaster, we conducted additional analyses using traditional regression techniques. While there are limits to this type of approach in contexts like ours—namely that they do an inefficient job of accounting for unobserved heterogeneity—consistent results would add support to our findings, while offering insight into the influence of our treatment variables across a broader range of values.

To this end, we ran OLS regressions: country-level fixed-effects were used to control for time-invariant unobserved factors, and a variety of country-, disaster-, and time-specific

variables were used to control for time-variant effects. A description of these variables, as well as their sources and definitions, is provided in our online appendix. To enhance the econometric efficiency of these estimates, we also applied coarsened-exact matching (CEM) (Iacus, King, & Porro, 2008, 2011). The rationale for using CEM is that it provides a way to deal with unobserved variance in country-specific capacities to manage disasters and enhance HDI over time. To conduct the matching, and balance baseline nation-specific factors between treatment and the control groups, we used the same predictors as in our SCM analysis. As discussed, however, the ability of CEM to produce efficient estimates drops considerably when the number of available comparison entities or periods is low, in addition to its comparative disadvantage vis-à-vis the SCM to account for the aggregate nature of nations.

Results of this analysis were consistent with our reported models. We found that a one standard deviation increase in the share of giving from locally active firms resulted in a 230% increase in the portion of aid that arrived during the first four weeks after a disaster, as well as a 37.2% increase in HDI growth rate. The magnitude of these impacts increases 36% and 29.2%, respectively, for every standard deviation increase in the degree of relatedness of giving.

Alternate dependent variable. In our main analysis, we modelled a nation's recovery from disaster using its HDI annual growth rate, as this provides a measure of aggregate social welfare. Our arguments suggest, however, that the disaster response efforts of locally active firms are likely to center around restoring market functions and economic infrastructure. If this is correct, we would expect to see increases in economic as well as social indicators when corporations account for a greater portion of disaster aid. To test this, we replicated our analysis using a nation's annual growth rate of GDP in place of the correspondent rate for HDI. This exercise replicated the significance and direction of our main findings. Aid from locally active firms strongly affects a nation's economic recovery from disaster. When locally active firms account for at least 44.4% of total aid, GDP growth for treated nations is twice that of control nations. This adds further support to our theoretical arguments. It also aligns with literature on

the economic costs of disasters (Kousky, 2013) as well as work that show private investment has a larger effect than public investment on economic development (Khan & Kumar, 1997).

The influence of locally active vs. other firms. Another key feature of our argument is that it predicts locally active firms will have dynamic capabilities that enhance the efficiency and effectiveness of disaster response. Thus, while disaster aid may also come from firms that do not have a presence in an afflicted nation, we excluded these from our main analysis. If aid from outside firms has a similar effect to what we observed for locally active companies, this would cast doubt on the validity of our theory. While the ideal way to check for this would be to replicate our analysis of giving from locally active firms with an analysis of distant firms, there are not enough cases to support a meaningful comparative analysis: very few nations receive 24.5% (let alone 44.4%) of aid from distant firms. As the next best option, we selected a binary treatment level of 49.9% or more of aid from locally active firms. We see non-significant effects when locally active firms comprise the minority of corporate giving. This supports our argument that the dynamic capabilities relevant for effective disaster responses are related to having a local presence in the affected nation.

The effect of institutional development. One may argue that the underlying quality of national institutions may drive the efficiency of corporate disaster giving. Countries with more developed institutions may be more ready to absorb, manage, and account for aid flows. Less corruption and higher accountability may also increase the willingness of firms to donate. Further, government effectiveness should be associated with a stronger capacity to match relief aid with victim needs. Although our SCM algorithms matched nations on several institutional variables, we took an additional step to evaluate the potential influence of local institutions on the speed and effectiveness of aid from locally active companies. Specifically, we stratified the application of the synthetic case algorithm by *government effectiveness*—which is a measure from the WDI 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 discussed percentiles as cutoff values. We did not use lower percentiles because the number of available disaster countries with which to generate synthetic controls was insufficient. We did not find significant differences in the effect of corporate giving on disaster recovery across these groups (see https://disastergiving.files.wordpress.com/). This is consistent with studies of emergency international assistance that have found no evidence that policy effectiveness or capacity to implement aid affects donation magnitude (Olsen, Carstensen, & Høyen, 2003).

DISCUSSION

Globalization and the advance of neoliberal policies have made it more difficult for nations to ensure the welfare of their citizens, while simultaneously giving more power to the corporations therein (Frynas, 2005; Matten & Crane, 2005). As a result, companies are being called upon to adopt responsibilities that have traditionally fallen to governments, multilateral agencies, and NGOs. Scholars have made a number of inroads with regard to describing these practices (Matten & Crane, 2005; Scherer & Palazzo, 2011), and have begun to make predictions about when firms will adopt them, and with what consequences (Henisz et al., 2014; Prakash & Potoski, 2007). Yet, as with the broader CSR literature, societal outcomes have been largely overlooked (Frynas, 2005; Margolis et al., 2007). We also lack theory to predict when and why a firm's actions will create meaningful social welfare benefits, or the conditions under which businesses might be better-able than other types of organizations to deliver such benefits.

We examined these issues in the context of sudden natural disasters; an area where there are growing calls for corporations to help address the insufficient response capacity of traditional aid providers (United Nations, 2016). To make predictions about the effects of corporate aid, we developed a theoretical framework based on the dynamic capabilities literature (Teece, 2007). We argued that nations will benefit when locally active firms account for a larger share of disaster aid because these firms are better equipped than governments and aid agencies to sense areas of need following a disaster, seize opportunities to respond, and reconfigure routines and

resources to do so. To wit, companies are likely to focus on rebuilding economic infrastructure and restoring market functions as soon as possible after a disaster, leading to faster aid provision and a stronger long-term recovery. We argued these effects would be amplified when responses leveraged firm-specific routines and resources. We tested our predictions using a proprietary dataset comprising information on every major natural disaster from 2003 to 2013, as well as each aid donation and its source. Synthetic control analysis, as well as a number of robustness checks, provided support for our predictions. Corporate disaster aid appears to be not only socially beneficial, but also more efficient and effective than aid from traditional providers.

Theoretical and Practical Implications

Implications for corporate social responsibility research. Our study is relevant to debates about the social desirability and effectiveness of CSR. It is popular among management scholars to focus on the organizational implications of CSR, while inferring societal benefits. Some scholars considered it intrinsically good—and certainly better than the alternative—that companies are developing self-regulation standards (Prakash & Potoski, 2007), engaging in disaster responses (Madsen & Rogers, 2014), and contributing to the provision of public goods (Scherer & Palazzo, 2011). This interpretation is open to critique, however, because societal outcomes are assumed rather than shown. Indeed, critics have argued there are inherent problems with these initiatives, largely because of their strategic nature (Marquis & Qian, 2013; Surroca et al., 2013). According to this view, firms use CSR primarily for symbolic and political purposes, rather than as a tool to deliver meaningful social benefits. This has led some to argue that efforts to enhance social welfare are best left to governments and aid agencies, and should not be ceded to corporations (Banerjee, 2008; Frynas, 2005).

Our study is among the first to provide quasi-experimental evidence for the social value of CSR (Lyneis & Sterman, 2015; Wry, 2009). While our analysis does not focus on individual firms—and suggests that positive effects may only become evident when companies mount a large, collective effort—results suggest there are reasons to believe that strategic CSR is indeed

the win-win proposition that proponents suggest. Our approach assumes that corporate disaster aid is primarily strategic and self-interested (Henisz et al., 2014). Rather than symbolic responses and sub-optimal aid allocation, however, results suggest that firms are taking practical action to restore economic and market functioning (Ballesteros, 2015; Horowitz, 2008). As a result, when firms make a large collective contribution to relief efforts, the net effect is that aid arrives more quickly and a nation recovers more fully following a disaster. In turn, responding companies may benefit from buffering their own economic shocks while also currying favor among local stakeholders (Henisz et al., 2014; Madsen & Rogers, 2014). In this way, our findings raise interesting questions about the degree to which companies might benefit from CSR, not only as a firm-specific resource, but also through the creation of public or club goods (Ballesteros, 2015).

Our approach also contributes to the CSR literature by showing that dynamic capabilities can be usefully applied to theorize about the relationship between corporate action and societal outcomes. Unlike studies that have used this framework to explain why CSR differs among firms (Ramachandran, 2011; Scherer et al., 2016), we followed research that has shown capabilities vary systemically among organizational forms (Battilana & Lee, 2014; Lampel & Shamsie, 2003; Rindova et al., 2007). This allowed us to make theoretically informed predictions about the value of aid from corporations versus other types of organizations. Indeed, our argument and findings casts doubt on the notion that social welfare initiatives are always best left to public organizations (Banerjee, 2008; Sundram & Inkpen, 2004). To be clear, we are not suggesting these organizations are unimportant, but rather that locally active firms have motives and capabilities that enable them to contribute to disaster relief in uniquely valuable ways.

However, by focusing on aggregate initiatives and outcomes, our approach points to a potential tension in the relationship between CSR that benefits society versus individual firms. We argue that society benefits when firms direct their capabilities toward a common goal. Yet there is evidence that firms are incented to mount distinctive responses in order to capture private rents (Ramachandran, 2011; Teece, 2007). It will be important for future studies to identify

factors that predict coordination and cooperation in CSR initiatives, as opposed to idiosyncratic efforts or free-riding (Ostrom, 2000). In this way, our approach also highlights the importance of focusing on the collective level of analysis to understand the conditions under which CSR is most likely to yield societal benefits (Marquis, Davis, & Glynn, 2013; Tilcsik & Marquis, 2013; Wry, Lounsbury, & Glynn, 2011; York, Hargrave, & Pacheco, 2016; Zhao & Wry, 2016).

Also, while our predictions are context specific, the process of sensing, seizing, and reconfiguring is relevant to a broad range of CSR initiatives. This framework is also amenable to predicting both positive and negative outcomes, and should thus be useful for theorizing about the conditions under which corporate initiatives are more or less likely to contribute to desirable social outcomes. Indeed, while the dynamic capabilities of locally active companies appear to be conducive to fast and effective disaster responses, firms may not be as well suited to deal with other social issues. Of course, the efficacy of CSR may also differ among firms. We anticipate that future studies will apply dynamic capabilities at the firm level to make predictions about the variable effectiveness of CSR initiatives undertaken by different companies. Our analysis of related versus unrelated aid is a first step in this direction, and provides evidence in support of the argument that corporations create greater societal benefits when CSR leverages firm-specific competences (Kaul & Luo, 2015; Mcwilliams & Siegel, 2000).

Implications for managers. Companies face growing calls not only to adopt social responsibilities, but also to demonstrate that their efforts in this regard are effective (Eccles et al., 2014). Indeed, the benefits that a firm receives from CSR are blunted when stakeholders criticize its initiatives as being instrumental and symbolic (Frynas, 2005). As such, it is in a firm's self-interest to have objective data that show how its efforts affect outcomes of interest. Scholars have begun to develop tools for assessing the societal outcomes of public sector initiatives (e.g., Ebrahim 2003) but, as Frynas (2005: 276) notes, "linking CSR to development [goals] requires a new repertory of tools…by which such private interventions can be justified, planned, executed and evaluated." Our study offers a first step in this direction by advancing an approach that uses

official data to empirically assess the social outcomes of corporate action. While this requires outcome data that is reliable and relevant to the aims of a focal initiative—and thus has some notable limitations—it nonetheless has the potential to help managers and other stakeholders more critically evaluate the social value of CSR. Such understanding may help firms maximize their social return on investment, while enhancing the strategic benefits of CSR initiatives.

Our findings also have implications for corporate disaster responses. To this end, we show that disasters are an area where locally active firms have a comparative advantage over other organizations in contributing to social welfare. Moreover, these efforts appear to be enhanced when responses are fast and leverage firm-specific routines and resources. For managers, this suggests that there is value in delegating response decisions to local affiliates. It also highlights the value of engaging in responses that leverage a firm's core expertise, as opposed to providing more general forms of aid (Kaul & Luo, 2015).

Implications for disaster relief. While there is anecdotal evidence that disaster responses benefit from corporate involvement (e.g., Horowitz, 2008; Tilcsik & Marquis, 2013; Useem et al., 2015), our study is the first to empirically model this relationship. Our findings point to an important role for locally active firms in disaster relief, but also key limitations. To the extent that corporate aid is motivated by a desire to restore market functions, our analysis suggests that a nation's ability to recover from disasters may be related to the level of development and openness in its economy. Put another way, the small economic footprint of foreign and domestic companies in some nations likely makes corporate giving more a function of social preferences, and—given our argument about the conditions for a comparative advantage of the firm—less impactful for social welfare. Our approach also suggests that firms are more likely than traditional aid providers to engage in responses that are ancillary to their financial interests. There is a broad range of damages wrought by a disaster, and not all of these are equally relevant for a nation's economic functioning. This suggests that 1) the practical contribution that companies make to effective disaster relief varies widely among nations, and 2) corporate

involvement is not panacea for all facets of disaster response. Thus, while firms can play a valuable role in disaster relief, this does not obviate the need for traditional aid providers.

Limitations and Future Work

In this study, we have started to elucidate the characteristics of corporate donors and their giving that may have implications for social welfare outcomes. Disaster relief is only one context where internal and external stakeholders ask firms to play a larger role, though, and caution should be taken when generalizing our findings. We anticipate that future studies will examine the influence of CSR for different social issues, and will develop context-specific predictions and findings. Such efforts will be important for generating a more robust and theoretically nuanced understanding of the relationship between corporate action and social welfare.

Also, while our study strongly suggests that corporate aid is beneficial for disaster relief, important unresolved issues remain. For instance, our results suggest that beneficiaries are likely to receive in-kind goods more quickly than other types of donations, and that these are helpful for a nation's disaster recovery. Yet disaster-management practitioners often ask for liquid resources because in-kind donations cannot be repurposed as needs evolve, and can burden or clog aid-delivery infrastructure (Fritz, 2004). Future studies should deepen our analysis and work to untangle these conflicting predictions. It may be useful here to examine the variable influence of different types of related resources. Some firms may have routines and resources that greatly benefit relief efforts, whereas it may be more beneficial for others to provide general resources. Further, to the extent that firms in some industries are better equipped to contribute to disaster responses, this type of analysis may also give insight into the relationship between a nation's industrial demography and its recovery from disaster.

Finally, while our analysis focused on isolating the value of aid from locally active firms, effective disaster relief requires coordination and cooperation amongst all responders (Cohen & Werker, 2008; Fritz, 2004). As such, the value of corporate aid may be shaped by interactions with other stakeholders, the extent to which aid decisions take into account these other providers,

and the degree to which donations are complementary versus redundant. These issues were beyond the scope of the current paper, but provide fruitful terrain for future research.

CONCLUSION

Addressing the hardship caused by sudden natural disasters is a grand challenge with implications for human misery and the economic functioning of both nations and corporations. As companies are increasingly being called upon to participate in response efforts, it is important to understand their ability to contribute to positive societal outcomes. Our findings suggest that firms with operations in an affected country have unique capabilities that allow them to sense areas of critical need, seize response opportunities, and reconfigure routines and resources to respond more quickly and effectively than traditional aid providers. As such, we not only demonstrate that strategic CSR can deliver meaningful societal benefits in some contexts, but that nations benefit greatly from corporate involvement when disaster strikes.

References

Abadie, A., Diamond, A., & Hainmueller, J. 2010. Synthetic Control Methods for Comparative Case Studies: Estimatint the Effect of California's Tobacco Control Program. ***Journal of the American Statistical Association***, 105(490): 493–505.

Abadie, A., Diamond, A., & Hainmueller, J. 2015. Comparative Politics and the Synthetic Control Method. ***American Journal of Political Science***, 59(2): 495–510.

Anand, S., & Sen, A. 1994. ***Human development index: methodology and measurement***. RPRT. Human Development Report Office (HDRO), United Nations Development Programme (UNDP).

Baker, S., & Bloom, N. 2013. Does Uncertainty Reduce Growth? Using Disasters as Natural Experiments. ***NBER Working Papers***. http://www.nber.org/papers/w19475.

Ballesteros, L. 2013. The Drivers of Corporate Philanthropic Catastrophe Response : The Community-Event-Firm Triad. ***The Wharton School Research Paper***, (83).

Ballesteros, L. 2015. Markets as Clubs: A Study of the Role of Economic Reliance in Corporate Provision of Collective Goods. ***The Wharton School Research Series***, 2015(1): 56. http://proceedings.aom.org/content/2015/1/19077.abstract.

Banerjee, S. B. 2008. Corporate social responsibility: The good, the bad and the ugly. ***Critical sociology***, 34(1): 51–79.

Barro, R. J. 2007. Rare disasters, asset prices, and welfare costs.

Barro, R. J. 2009. Rare disasters, asset prices, and welfare costs. ***American Economic Review***, 99(1): 243–264.

Bartley, T. 2007. How Foundations Shape Social Movements: The Construction of an Organizational Field and the Rise of Forest Certification. ***Social Problems***, 54(3): 229–255.

Becerra, O., Cavallo, E., & Noy, I. 2013. ***Where is the money ? Post - disaster foreign aid flows***.

Becerra, O., Cavallo, E., & Noy, I. 2014. Foreign aid in the aftermath of large natural disasters. ***Review of Development Economics***, 18(3): 445–460.

Benjamin, E., Bassily-Marcus, A. M., Babu, E., Silver, L., & Martin, M. L. 2011. Principles and practice of disaster relief: lessons from Haiti. ***Mount Sinai Journal of Medicine: A Journal of Translational and Personalized Medicine***, 78(3): 306–318.

Besley, T., & Ghatak, M. 2007. Retailing public goods: The economics of corporate social responsibility. ***Journal of Public Economics***, 91(9): 1645–1663.

Bevere, L., Orwig, K., & Sharan, R. 2015. Natural catastrophes and man-made disasters in 2014: Convective and winter storms generate most losses., (2): 7. http://www.actuarialpost.co.uk/downloads/cat_1/sigma2_2015_en.pdf.

Birkland, T. A. 1997. ***After disaster: Agenda setting, public policy, and focusing events***. BOOK, Georgetown University Press.

Cavallo, E., & Daude, C. 2008. Public Investment in Developing Countries : A Blessing or a Curse ? ***Development***, (October).

Cavallo, E., & Daude, C. 2011. Public investment in developing countries: A blessing or a curse?

Journal of Comparative Economics, 39(1): 65–81. http://dx.doi.org/10.1016/j.jce.2010.10.001.

Cavallo, E., Galiani, S., Noy, I., & Pantano, J. 2013. Catastrophic Natural Disasters and Economic Growth. ***Review of Economics and Statistics***, 95(5): 1549–1561. http://dx.doi.org/10.1162/REST_a_00413%5Cnhttp://www.mitpressjournals.org/doi/abs/10.1162/REST_a_00413#.VNTkc3Y2ybg%5Cnhttp://www.mitpressjournals.org/doi/pdf/10.1162/REST_a_00413#.VNTkc3Y2ybg.

Cobb, J. A., Wry, T., & Zhao, E. Y. 2016. Funding Financial Inclusion: Institutional Logics and the Contextual Contingency of Funding for Microfinance Organizations. ***Academy of Management Journal***, amj-2015.

Cohen, C., & Werker, E. D. 2008. The Political Economy of ``Natural'' Disasters. ***Journal of Conflict Resolution***, 52(6): 795–819. http://jcr.sagepub.com/content/52/6/795%5Cnhttp://jcr.sagepub.com/content/52/6/795.short.

Crilly, D., Ni, N., & Jiang, Y. 2015. Do-no-harm versus do-good social responsibility: Attributional thinking and the liability of foreignness. ***Strategic Management Journal***, (852): n/a-n/a. http://onlinelibrary.wiley.com/doi/10.1002/smj.2388/abstract%5Cnhttp://onlinelibrary.wiley.com/doi/10.1002/smj.2388/full%5Cnhttp://onlinelibrary.wiley.com/store/10.1002/smj.2388/asset/smj2388.pdf?v=1&t=iget8ne6&s=a29b4476d76884502abd4d8cbbea81428a59c37e.

Cutter, S. 2006. The geography of social vulnerability: Race, class, and catastrophe. ***Understanding Katrina: Perspectives from the social sciences***, 120–122.

Cutter, S. L., Emrich, C. T., Webb, J. J., & Morath, D. 2009. Social vulnerability to climate variability hazards: A review of the literature. ***Final Report to Oxfam America***, 5.

Day, J. M., Junglas, I., & Silva, L. 2009. Information flow impediments in disaster relief supply chains. ***Journal of the Association for Information Systems***, 10(8): 1.

Day, J. M., Melnyk, S. A., Larson, P. D., Davis, E. W., & Whybark, D. C. 2012. Humanitarian and disaster relief supply chains: a matter of life and death. ***Journal of Supply Chain Management***, 48(2): 21–36.

DeLeo, R. 2013. Anticipatory policymaking: when government acts to prevent problems and why it is so hard.

Dolowitz, D., & Marsh, D. 2000. Learning from Abroad: The Role of Policy Transfer in Contemporary Policy-Making. ***Governance***, 13(1): 5. http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=3556331&site=ehost-live.

Eccles, R. G., Ioannou, I., & Serafeim, G. 2014. The impact of corporate sustainability on organizational processes and performance. ***Management Science***, 60(11): 2835–2857.

Eisenhardt, K. M., & Martin, J. A. 2000. Dynamic capabilities: what are they? ***Strategic Management Journal***, 21(10–11): 1105–1121. http://www.jstor.org/stable/3094429.

Eisensee, T., & Strömberg, D. 2007. News droughts, news floods, and US disaster relief. ***The Quarterly Journal of …***, (May). http://qje.oxfordjournals.org/content/122/2/693.short, March 11, 2014.

Fan, J. P. H., Wong, T. J., & Zhang, T. 2007. Organizational structure as a decentralization device: evidence from corporate pyramids. ***Available at SSRN 963430***.

Fernando, M. 2010. Corporate social responsibility in the wake of the Asian tsunami: Effect of time on the genuineness of CSR initiatives. ***European Management Journal***, 28(1): 68–79.

Fink, G., & Redaelli, S. 2011. Determinants of International Emergency Aid-Humanitarian Need Only? ***World Development***, 39(5): 741–757.

Franks, S. 2013. ***Reporting Disasters: Famine, Aid, Politics and the Media***. BOOK, Hurst Publishers.

Fritz, L. 2004. Relief , Inc . ***Harvard Business Review***, 114–122.

Frynas, J. G. 2005. The false developmental promise of corporate social responsibility: evidence from multinational oil companies. ***International Affairs***, 81(3): 581–598. http://tinyurl.com/yzalhgh.

Garrett, T. A., & Sobel, R. S. 2004. ***The political economy of FEMA disaster payments***. BOOK, Springer.

Haveman, H. A., Rao, H., & Paruchuri, S. 2007. The Winds of Change: The Progressive Movement and the Bureaucratization of Thrift. ***American Sociological Review***, 72(1): 117–142. http://www.jstor.org/stable/25472450%5Cnhttp://www.jstor.org/stable/pdfplus/25472450.pdf?acceptTC=true.

Hedlund, G. 1994. A model of knowledge management and the N form corporation. ***Strategic management journal***, 15(May): 73–90. http://onlinelibrary.wiley.com/doi/10.1002/smj.4250151006/full.

Helfat, C. E., & Peteraf, M. A. 2015. Managerial cognitive capabilities and the microfoundations of dynamic capabilities. ***Strategic Management Journal***, 36(6): 831–850.

Henisz, W. J., Dorobantu, S., & Nartey, L. J. 2013. Spinning gold: The financial returns to stakeholder engagement. ***Strategic Management Journal***.

Hoffman, A. J., & Ocasio, W. 2001. Not All Events Are Attended Equally: Toward a Middle-Range Theory of Industry Attention to External Events. ***Organization Science***, 12(4): 414–434.

Honaker, J., King, G., & Blackwell, M. 2011. Amelia II: A program for missing data. ***Journal of Statistical Software***, 45(7): 1–47.

Horwitz, S. 2009. Wal-Mart to the rescue private enterprise's response to Hurricane Katrina. ***Independent Review***, 13(4): 511–528.

Iacus, S. M., King, G., & Porro, G. 2008. Matching for causal inference without balance checking. ***Unpublished Manuscript, IQSS, Harvard University***.

Iacus, S. M., King, G., & Porro, G. 2011. Causal Inference without Balance Checking: Coarsened Exact Matching. ***Political Analysis***, 20(1): 1–24. http://pan.oxfordjournals.org/cgi/doi/10.1093/pan/mpr013, May 2, 2014.

Kaul, A., & Luo, J. 2015. The Economic Case for CSR: The Competitive Advantage of For-Profit Firms in the Market for Social Goods. ***Available at SSRN 2600780***.

Khan, M. S., & Kumar, M. S. 1997. Public and private investment and the growth process in developing countries. ***Oxford Bulletin of Economics and Statistics***, 59(1): 69–88.

Khan, M. S., & Reinhart, C. M. 1990. Private investment and economic growth in developing countries. ***World Development***, 18(1): 19–27.

Klinenberg, E. 2003. ***Heat wave: A social autopsy of disaster in Chicago***. BOOK, University of Chicago Press.

Kogut, B., & Zander, U. 1992. Knowledge of the firm, combinative capabilities, and the replication of technology. ***Organization science***, 3(3): 383–397.

Kotchen, M. J. 2006. Green Markets and Private Provision of Public Goods, 114(4): 816–834.

Kousky, C. 2013. Informing climate adaptation: A review of the economic costs of natural disasters. ***Energy Economics***, 46: 576–592. http://dx.doi.org/10.1016/j.eneco.2013.09.029.

Lampel, J., & Shamsie, J. 2003. Capabilities in Motion: New Organizational Forms and the Reshaping of the Hollywood Movie Industry. ***Journal of Management Studies***: 2189–2210.

Lampel, J., Shamsie, J., & Shapira, Z. 2009. Experiencing the improbable: Rare events and organizational learning. ***Organization Science***, 20(5): 835–845.

Lee, M., Battilana, J., & Wang, T. 2014. Building an Infrastructure for Empirical Research on Social Enterprise: Challenges and Opportunities BT - Social Entrepreneurship and Research Methods. ***Social Entrepreneurship and Research Methods***: 241–264. http://www.emeraldinsight.com/doi/abs/10.1108/S1479-8387_2014_0000009017%5Cnpapers3://publication/doi/10.1108/S1479-8387_2014_0000009017, Emerald Group Publishing Limited.

Lipscy, P. Y., & Takinami, H. 2013. The politics of financial crisis response in Japan and the United States. ***Japanese Journal of Political Science***, 14(3): 321–353. http://www.scopus.com/inward/record.url?eid=2-s2.0-84882409234&partnerID=40&md5=1762facad46addfd9fdf1fd3c3a87660.

Lyneis, J., & Sterman, J. 2015. How to Save a Leaky Ship: Capability Traps and the Failure of Win-Win Investments in Sustainability and Social Responsibility. ***Academy of Management Discoveries***, 2(January): amd-2015.

Madsen, P. M., & Rodgers, Z. J. 2014. Looking good by doing good: The antecedents and consequences of stakeholder attention to corporate disaster relief. ***Strategic Management Journal***.

Marquis, C., & Qian, C. 2013. Corporate Social Responsibility Reporting in China: Symbol or Substance? ***Organization Science***, (June). http://pubsonline.informs.org/doi/abs/10.1287/orsc.2013.0837, June 10, 2014.

Matten, D., & Crane, A. 2005. Corporate citizenship: Toward an extended theoretical conceptualization. ***Academy of Management Review***, 30(1): 166–179.

Mcwilliams, A., & Siegel, D. 2000. Corporate Social Responsibility and Financial Performance : Correlation or Misspecification ?, 609(January 1999): 603–609.

McWilliams, A., & Siegel, D. S. 2011. Creating and Capturing Value Strategic Corporate Social Responsibility, Resource-Based Theory, and Sustainable Competitive Advantage. ***Journal***

of Management, 37(5): 1480–1495.

Mellahi, K., Frynas, J. G., Sun, P., & Siegel, D. 2015. A review of the nonmarket strategy literature: toward a multi-theoretical integration. ***Journal of Management***.

O'Donnell, I. 2009. Practice Review on Innovations in Finance for Disaster Risk Management. ***A Contribution to the***.

OCHA, U. N. 2016. FTS Financial Tracking Service. GEN, .

Olsen, G. R., Carstensen, N., & Høyen, K. 2003. Humanitarian crises: what determines the level of emergency assistance? Media coverage, donor interests and the aid business. ***Disasters***, 27(2): 109–126.

Ostrom, E. 2000. Collective Action and the Evolution of Social Norms. ***The Journal of Economic Perspectives***, 14(3): 137–158.

Palazzo, G., & Scherer, a. G. 2008. Corporate Social Responsibility, Democracy, and the Politicization of the Corporation. ***Academy of Management Review***, 33(3): 773–775.

Platt, R. H. 2012. ***Disasters and democracy: The politics of extreme natural events***. BOOK, Island Press.

Polanco, M. M. 2012. Efectos sociales del terremoto en Chile y Gestión Política de la reconstrucción durante el gobierno de Sebastián Piñera (2010-2011). ***Revista Enfoques***, X, N° 16: 19–46.

Porter, M. E., & Kramer, M. R. 2002. The competitive advantage of corporate philanthropy. ***Harvard business review***, 80(12): 56–68, 133.

Potoski, M., & Prakash, A. 2005. Green clubs and voluntary governance: ISO 14001 and firms' regulatory compliance. ***American Journal of Political Science***, 49(2): 235–248.

Prakash, A., & Potoski, M. 2007. Collective Action through Voluntary Environmental Programs: A Club Theory Perspective. ***Policy Studies Journal***, 35(4): 773–792. http://doi.wiley.com/10.1111/j.1541-0072.2007.00247.x.

Raffaelli, R., & Glynn, M. A. 2014. Turnkey or tailored? Relational pluralism, institutional complexity, and the organizational adoption of more or less customized practices. ***Academy of Management Journal***, 57(2): 541–562.

Ray, D. 1998. ***Development economics***. BOOK, Princeton University Press.

Reeves, A. 2011. Political Disaster: Unilateral Powers, Electoral Incentives, and Presidential Disaster Declarations. ***The Journal of Politics***, 73(4): 1142–1151.

Rindova, V. P., & Kotha, S. 2001. Continuous "morphing": Competing through dynamic capabilities, form, and function. ***Academy of Management Journal***, 44(6): 1263–1280.

Robinson, J. A., & Torvik, R. 2005. White elephants. ***Journal of Public Economics***, 89(2–3): 197–210.

Romanelli, E. 1991. The Evolution of New Organizational Forms. ***Annual Review of Sociology***, 17(1): 79–103. http://dx.doi.org/10.1146/annurev.so.17.080191.000455.

Saiia, D. H., Carroll, A. B., & Buchholtz, A. K. 2003. Philanthropy as strategy when corporate charity "begins at home." ***Business & Society***, 42(2): 169–201.

Scherer, A. G., & Palazzo, G. 2007. Toward a political conception of corporate responsibility:

Business and society seen from a habermasian perspective. ***Academy of Management Review***.

Scherer, A. G., & Palazzo, G. 2011. The New Political Role of Business in a Globalized World: A Review of a New Perspective on CSR and its Implications for the Firm, Governance, and Democracy. ***Journal of Management Studies***, 48(4): 899–931.

Sigma. 2014. Natural catastrophes and man-made disasters in 2013: large losses from floods and hail; Haiyan hits the Philippines, (1): 52.

Stromberg, D. 2007. Natural Disasters, Economic Development, and Humanitarian Aid. ***The Journal of Economic Perspectives***, 21: 199–222. http://www.ingentaconnect.com/content/aea/jep/2007/00000021/00000003/art00011; http://dx.doi.org/10.1257/089533007781798276.

Sundaram, A. K., & Inkpen, A. C. 2004. The Corporate Objective Revisited. ***Organization Science***, 15(3): 350–363.

Teece, D. J. 2014. A dynamic capabilities-based entrepreneurial theory of the multinational enterprise. ***Journal of International Business Studies***, 45(1): 8–37. http://www.palgrave-journals.com/doifinder/10.1057/jibs.2013.54.

Teece, D. J. D. 2007. Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance. ***Strategic Management Journal***, 28(13): 1319–1350. http://onlinelibrary.wiley.com/doi/10.1002/smj.640/abstract.

Teece, D. J., Pisano, G., & Shuen, A. 1997. Dynamic capabilities and strategic management. (G. Dosi, R. R. Nelson, & S. G. Winter, Eds.)***Strategic Management Journal***, 18(7): 509–533. http://doi.wiley.com/10.1002/(SICI)1097-0266(199708)18:7%3C509::AID-SMJ882%3E3.0.CO;2-Z.

Twigg, J. 2001. ***Corporate social responsibility and disaster reduction: A global overview***. http://drr.upeace.org/english/documents/References/Topic 7-Preparedness- Early Warning, Planning, Monitoring and Evaluation/Twigg 2001 CSR and disaster management.pdf, March 11, 2014.

United Nations. 2015. Third Un World Conference on Disaster Risk Reduction, (March). http://www.unisdr.org/files/45069_proceedingsthirdunitednationsworldc.pdf.

United Nations. 2016. ***Too important to fail — addressing the humanitarian financing gap***.

Useem, M., Kunreuther, H., & Michel-Kerjan, E. 2015. ***Leadership Dispatches: Chile's Extraordinary Comeback from Disaster***. BOOK, Stanford University Press.

von Peter, G., von Dahlen, S., & Saxena, S. 2012. Unmitigated disasters? New evidence on the macroeconomic cost of natural catastrophes. ***BIS Working Papers***, 394: 1–38.

Wassenhove, L. N., Tomasini, R. M., & Stapleton, O. 2008. Corporate responses to humanitarian disasters: The mutual benefits of private-humanitarian cooperation. CONF, Conference Board.

White, S., & Lang, H. 2012. ***Corporate Engagement in Natural Disaster Response Corporate Engagement in Natural Disaster Response***.

Wokutch, R. E., Singal, M., Poria, Y., & Hong, M. 2013. Crisis situations and role of strategic CSR in decision-making. ***Academy of Management Proceedings*** , 2013(1).

http://proceedings.aom.org/content/2013/1/16136.abstract.

Wry, T. 2009. Does business and society scholarship matter to society? Pursuing a normative agenda with critical realism and neoinstitutional theory. ***Journal of Business Ethics***, 89: 151-171.

Wry, T., Lounsbury, M., & Glynn, M. A. 2011. Legitimating Nascent Collective Identities: Coordinating Cultural Entrepreneurship. ***Organization Science***, 22(2): 449-463.

York, J., Hargrave, T., & Pacheco, D. 2016. Converging winds: Logic hybridization in the Colorado wind energy field. ***Academy of Management Journal***, *59*(2): 579-610.

Zhao, E., & Wry, T. 2016. Not all inequality is equal: Decomposing the societal logic of patriarchy to understand microfinance lending to women. ***Academy of Management Journal***, Forthcoming.

Tables and Figures

Table 1. Descriptive Statistics

VARIABLES	mean	sd	min	max
Donation Amount (US Million)	9.09	46.26	.014	595.45
GDP (PPP per capita)	13,730.17	14,179.09	388.20	62,571.35
Human Development Index	0.31	0.35	0.00	0.94
Human Hardship (deaths)	392.61	6,904.36	1.00	222,570.00
Life Expectancy at Birth, total (years)	70.37	8.10	42.15	83.33
Annual Number of Disasters (Nation)	7.45	7.90	0.00	33.00
Annual Number of Disasters (Global)	237.78	16.71	213.00	260.00
Newsworthy Events	8.90	2.57	2.83	29.25
Salience	18.83	17.32	0.18	50.00
Openness to Aid	35.37	18.16	0.12	137.97
Estimated Damage (US Million)	1,163.80	8,175.15	0.01	210,000.00
School Enrollment, Secondary, (% net)	70.19	21.12	6.92	99.84
Total Investment (ratio of total investment to GDP)	26.31	8.92	6.59	61.47

Table 2. Correlations

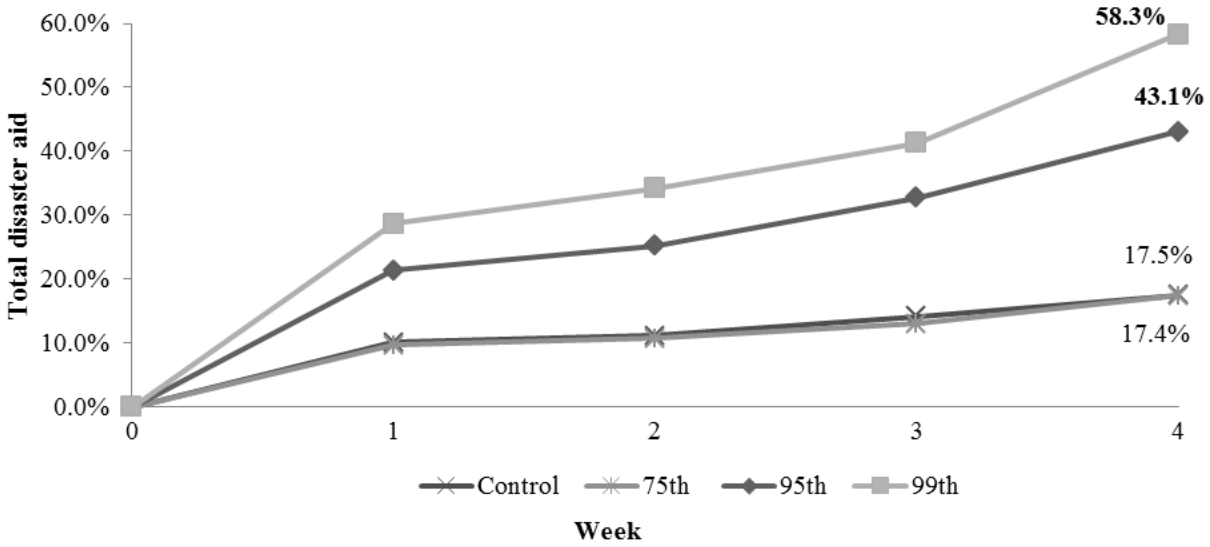
	VARIABLES	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Donation Amount (US Million)	1.00												
2	GDP (PPP per capita)	0.09	1.00											
3	Human Development Index	0.10	0.19	1.00										
4	Human Hardship (deaths)	0.20	-0.05	-0.03	1.00									
5	Life Expectancy at Birth, total (years)	0.05	0.79	0.24	-0.05	1.00								
6	Annual Number of Disasters (Nation)	0.05	0.27	-0.17	0.05	-0.03	1.00							
7	Annual Number of Disasters (Global)	0.01	-0.08	-0.20	-0.04	-0.09	0.02	1.00						
8	Newsworthy Events	0.17	0.10	0.15	0.04	0.10	-0.01	-0.08	1.00					
9	Salience	0.07	0.51	0.10	0.01	0.33	0.37	0.09	0.04	1.00				
10	Openness to Aid	0.07	0.57	0.07	0.02	0.44	0.41	0.08	0.01	0.93	1.00			
11	Estimated Damage (US Million)	0.58	0.14	0.14	0.11	0.13	0.03	-0.07	0.27	-0.11	0.12	1.00		
12	School Enrollment, Secondary, (% net)	0.05	0.74	0.21	-0.06	0.85	-0.01	-0.06	0.11	-0.25	0.31	0.13	1.00	
13	Total Investment (ratio of total investment to GDP)	0.01	-0.05	-0.05	0.06	0.11	-0.12	0.09	0.06	0.08	0.04	-0.03	0.07	1.00

Table 3. The Effect of Giving from Locally Active Firms on Speed of Aid

Share of Aid from Locally Active Firms	**Model 1** **7.7%**		**Model 2** **24.5%**		**Model 3** **44.4%**	
Predictors	**Treated**	**Control**	**Treated**	**Control**	**Treated**	**Control**
Size of the Economy	10782.72	11074.42	11677.95	11680.89	22236.14	22311.46
Human Hardship	418.47	438.71	397.28	394.78	7515.66	6872.36
Salience	15.07	16.33	17.12	17.24	25.21	23.89
Disasters (Nation)	8.75	8.95	7.24	7.31	8.46	8.69
Disasters (Global)	241.11	237.44	240.37	239.98	239.61	241.28
Newsworthy Events	8.69	8.87	8.11	8.36	7.15	7.58
Openness to Aid	0.79	0.82	0.89	0.86	0.68	0.71
Estimated Damage	811.74	810.83	1025.42	1017.85	117176.74	99815.27
Outcome Variable						
% of disaster aid 4 weeks	**17.5**	**14.6**	**43.1**	**19.5**	**58.3**	**18.4**
p-value	0.234		0.006		0.000	

Note: The table shows the mean values of the covariates used for matching cases and the magnitude of the disaster response for the analyzed period only as a reference—the synthetic control algorithm minimizes the distance between potential control disaster countries and the treated disaster country on a case by case basis.
Treated are disaster countries with a substantial share of disaster giving coming from firms economically active in the affected country (as defined by the 7.7%. 24.5% and 44.4% cutoff points). The total sample of country disasters in the period 2003-2013 is 2,084.

Figure 1. The Effect of Giving from Locally Active Firms on Speed of Aid



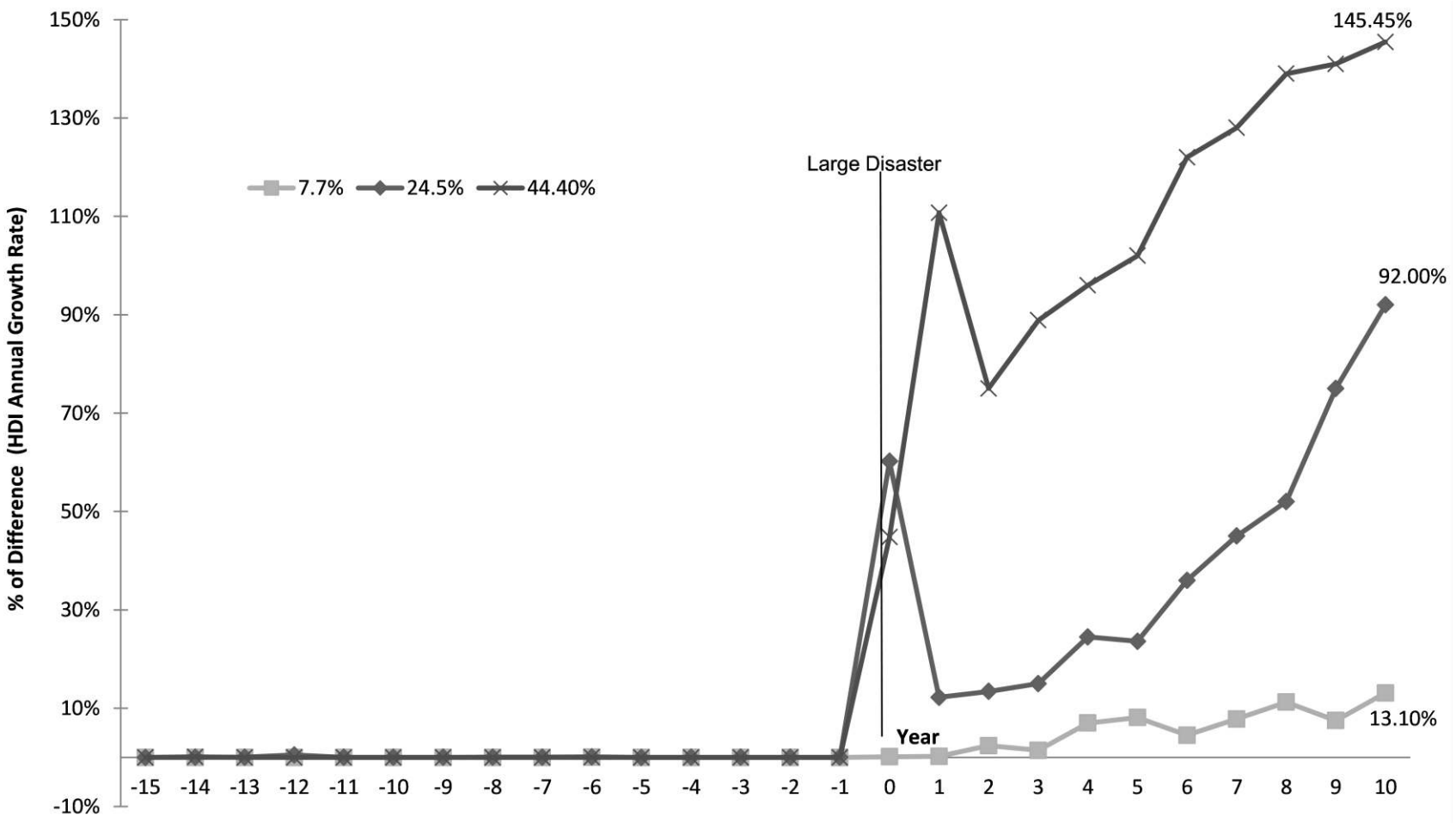
Note: The outcome variable is the accumulated amount of disaster aid. Treated are disaster countries with a substantial share of disaster giving coming from firms economically active in the affected country (as defined by the 7.7%. 24.5% and 44.4% cutoff points). The total sample of country disasters in the period 2003-2013 is 2,084.

Table 4. The Effect of Giving from Locally Active Firms on Disaster Recovery

Share of Aid from Locally Active Firms	**Model 4 7.7%**		**Model 5 24.5%**		**Model 6 44.4%**	
Predictors	**Treated**	**Control**	**Treated**	**Control**	**Treated**	**Control**
School Enrollment	70.24	70.39	89.12	84.68	82.75	83.33
Life Expectancy	70.11	71.25	80.44	79.98	76.95	75.48
Inflation rate	2.58	3.15	1.99	2.01	1.44	2.54
Trade openness	31.48	31.25	49.91	48.71	46.96	47.91
Total Investment	23.14	24.19	20.74	21.14	19.66	19.84
Estimated Damage	810.14	790.36	1008.74	1000.79	117176.74	98815.27
Outcome Variable						
% of annual HDI growth (10th post-disaster year)	**0.95**	**0.84**	**0.48**	**0.25**	**0.54**	**0.22**
p-value	0.239		0.007		0.004	

Note: The table shows the mean values of the covariates used for matching cases and the magnitude of the disaster response for the analyzed period only as a reference—the synthetic control algorithm minimizes the distance between potential control disaster countries and the treated disaster country on a case by case basis. Treated are disaster countries with a substantial share of disaster giving coming from firms economically active in the affected country (as defined by the 7.7%. 24.5% and 44.4% cutoff points). The total sample of country-year disasters in the period 2003-2013 is 464.

Figure 2. The Effect of Giving from Locally Active Firms on Disaster Recovery



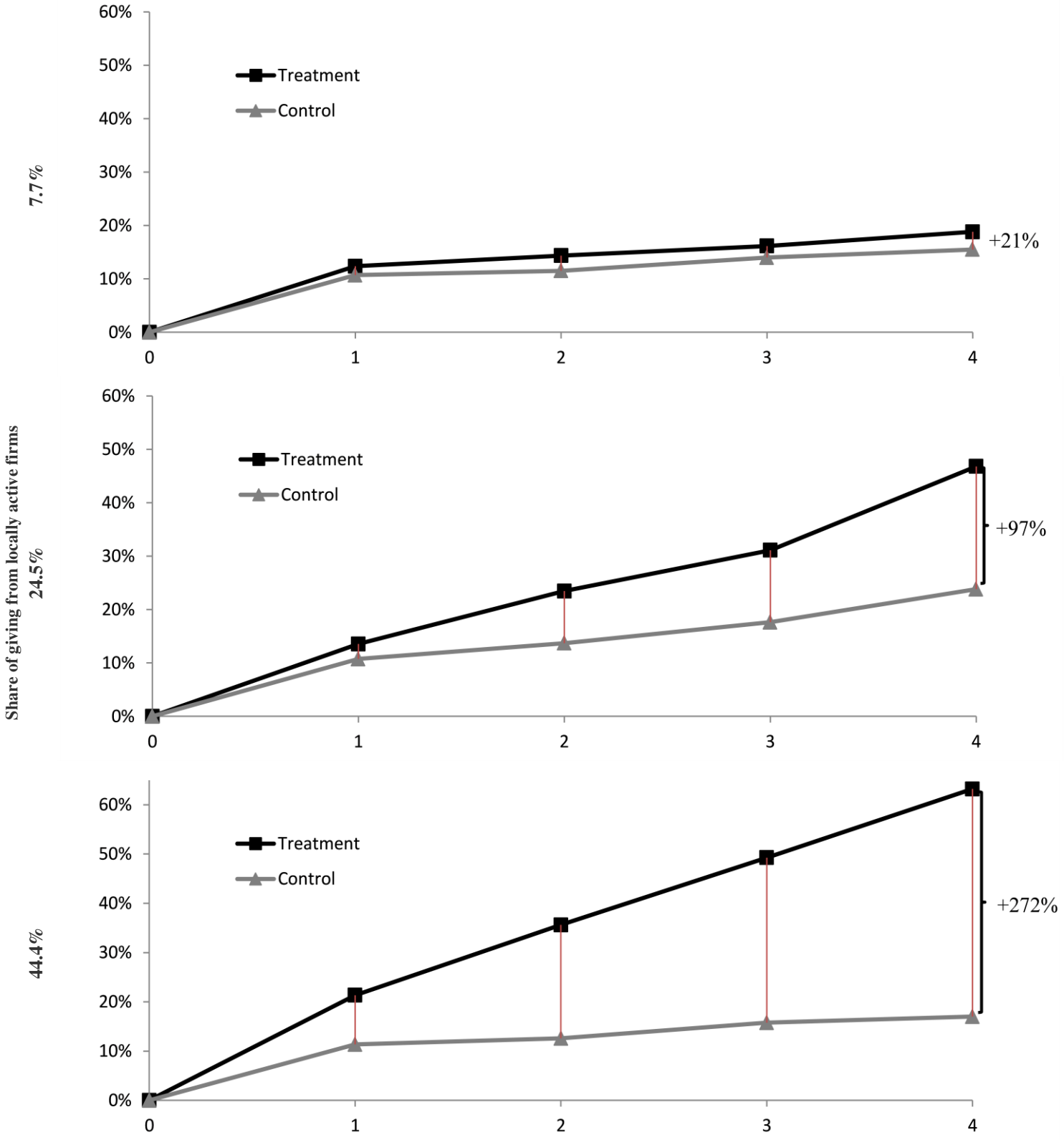
Note: Instead of showing absolute values, the figure shows the difference in HDI growth rate between treatment nations and correspondent synthetic controls for 15 years before the disaster and 10 years after the disaster. Period (0) is the disaster year. No sizeable effects before the disaster year suggest that the synthetic control method has generated efficient control nations. Treated are disaster countries with a substantial share of disaster giving coming from firms economically active in the affected country (as defined by the 7.7%. 24.5% and 44.4% cutoff points). The total sample of country-year disasters in the period 2003-2013 is 464.

Table 5. The Effect of Relatedness in the Relationship between Disaster Giving from Locally Active Firms and Speed of Aid

Share of Aid from Locally Active Firms	**7.7%**						**24.5%**						**44.4%**					
Relatedness of Corporate Aid	**Model 7 11.5%**		**Model 8 26.9%**		**Model 9 42.4%**		**Model 10 11.5%**		**Model 11 26.9%**		**Model 12 42.4%**		**Model 13 11.5%**		**Model 14 26.9%**		**Model 15 42.4%**	
Predictors	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**
Size of the Economy	785.6	700.5	15845.4	15511.7	17890.4	16998.2	2748.4	2478.5	17864.3	17448.8	50711.8	49788.2	0.0	0.0	7412.1	7314.1	29648.2	29008.4
Human Hardship	1025.4	1031.7	994.3	987.4	380.7	380.2	847.6	888.3	236.8	236.2	348.5	347.3	0.0	0.0	6125.3	6785.2	8211.7	8305.5
Salience	11.7	11.9	15.0	15.4	18.3	18.4	16.8	16.7	24.6	25.1	25.9	24.8	0.0	0.0	21.7	22.2	35.1	30.5
Disasters (Nation)	8.3	8.3	8.8	7.6	8.8	7.7	7.8	7.8	7.3	7.2	7.5	7.4	0.0	0.0	9.0	9.1	9.8	9.7
Disasters (Global)	289.1	289.9	240.4	229.7	240.8	222.0	310.1	309.7	248.4	247.7	239.4	239.6	0.0	0.0	211.3	215.4	240.9	241.3
Newsworthy Events	8.2	8.2	8.2	8.0	8.5	7.2	8.3	8.5	7.4	7.3	8.0	8.6	0.0	0.0	6.1	6.8	7.1	7.1
Openness to Aid	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.8	0.9	1.0	1.0	1.0	0.0	0.0	1.0	1.0	0.5	0.6
Estimated Damage	557.6	553.8	810.8	799.1	811.0	756.4	739.2	736.6	976.5	981.5	1008.7	1000.8	0.0	0.0	11594.5	11587.5	169974.6	167857.4
Outcome Variable																		
% of disaster aid, first four weeks	**11.6**	**10.6**	**15.4**	**13.3**	**18.8**	**15.5**	**30.7**	**11.4**	**38.4**	**16.7**	**46.8**	**23.8**	**NA**	**NA**	**48.7**	**17.6**	**63.2**	**17.0**
p-value	0.470		0.225		0.209		0.030		0.004		0.001		NA		0.002		0.000	

Note: The table shows the mean values of the covariates used for matching cases and the magnitude of the disaster response for the analyzed period only as a reference—the synthetic control algorithm minimizes the distance between potential control disaster countries and the treated disaster country on a case by case basis. Treated are disaster countries with a substantial in-kind giving that is related to the donor's core operation coming from firms economically active in the affected country (as defined by the 7.7%, 24.5%, and 44.4% cutoff points). The total sample of country disasters in the period 2003-2013 is 2,084

Figure 3. The Effect of Relatedness in the Relationship between Disaster Giving from Locally Active Firms and Speed of Aid



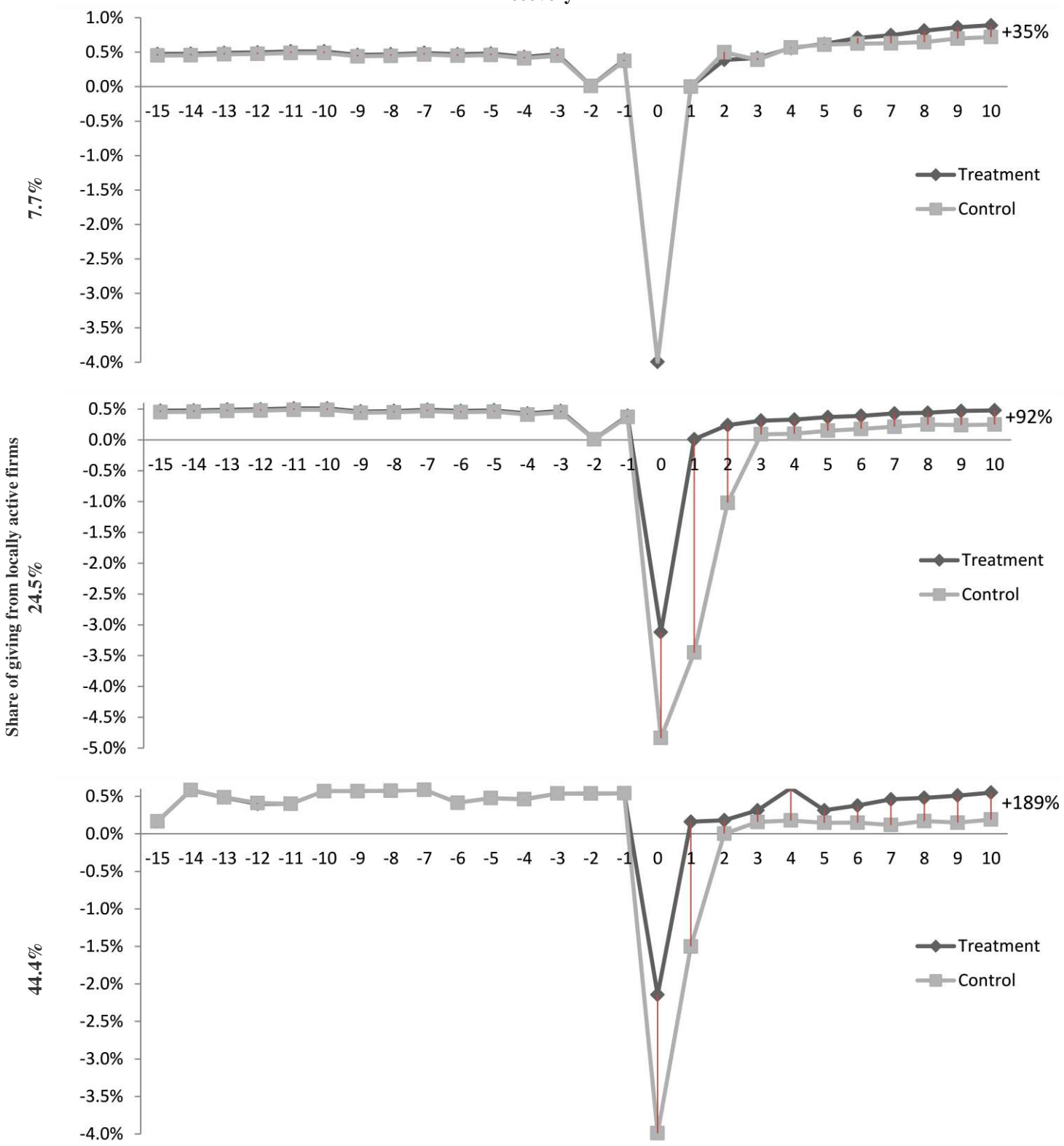
Note: The outcome variable is the accumulated amount of disaster aid for the first four post-disaster weeks. Treated are disaster countries with at least 42.4% of in-kind giving that is related to the donor's core operation coming from firms economically active in the affected country (as defined by the 7.7%, 24.5%, and 44.4% cutoff points). The sample for the period 2003-2013 is 2,084 disasters.

Table 6. The Effect of Relatedness in the Relationship between Disaster Giving from Locally Active Firms and Recovery

Share of Aid from Locally Active Firms	**7.70%**						**24.50%**						**44.40%**					
Relatedness of Corporate Aid	**Model 16 11.50%**		**Model 17 26.90%**		**Model 18 42.40%**		**Model 19 11.50%**		**Model 20 26.90%**		**Model 21 42.40%**		**Model 22 11.50%**		**Model 23 26.90%**		**Model 24 42.40%**	
Predictors	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**	**T**	**C**
School Enrollment	63.11	64.85	69.72	70.02	71.98	71.71	0.00	0.00	0.00	0.00	89.12	84.68	0.00	0.00	65.14	66.05	91.55	90.14
Life Expectancy	67.15	67.89	68.57	67.39	72.51	73.51	0.00	0.00	0.00	0.00	80.44	79.98	0.00	0.00	68.71	69.14	81.07	82.17
Inflation rate	5.69	6.11	4.56	4.78	3.39	3.52	0.00	0.00	0.00	0.00	1.99	2.01	0.00	0.00	2.93	2.68	0.69	1.25
Trade openness	21.36	22.18	28.67	28.11	34.78	32.14	0.00	0.00	0.00	0.00	49.91	48.71	0.00	0.00	27.91	26.87	57.21	57.36
Total Investment	15.4	15.68	19.75	19.84	26.34	27.89	0.00	0.00	0.00	0.00	20.74	21.14	0.00	0.00	19.66	18.76	21.6	20.7
Estimated Damage	557.64	553.81	810.76	799.13	811.01	756.36	0.00	0.00	0.00	0.00	1008.74	1000.79	0.00	0.00	11594.47	11587.47	169974.58	97994.17
Outcome Variable																		
% of HDI annual growth, end of 10th year	**1.47**	**1.48**	**0.96**	**0.97**	**0.89**	**0.72**	**NA**	**NA**	**NA**	**NA**	**0.48**	**0.25**	**NA**	**NA**	**0.52**	**.24**	**0.55**	**0.19**
p-value	0.374		0.317		0.224		NA		NA		0.007		NA		0.005		0.002	

Note: The table shows the mean values of the covariates used for matching cases and the magnitude of the disaster response for the analyzed period only as a reference—the synthetic control algorithm minimizes the distance between potential control disaster countries and the treated disaster country on a case by case basis. Treated are disaster countries with a substantial in-kind giving that is related to the donor's core operation coming from firms economically active in the affected country (as defined by the 7.7%, 24.5%, and 44.4% cutoff points). The total sample of country-year disasters in the period 2003-2013 is 464.

Figure 4. The Effect of Relatedness in the Relationship between Disaster Giving from Locally Active Firms and Recovery



Note: The outcome variable is the annual growth rate of HDI. Treated are disaster countries with at least 42.4% of in-kind giving that is related to the donor's core operation coming from firms economically active in the affected country (as defined by the 7.7%, 24.5%, and 44.4% cutoff points). Each figure shows the difference between the annual growth rates of HDI for treated and control nations 15 years before the disaster and 10 years after the disaster. The total sample of country-year disasters in the period 2003-2013 is 464.

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