

Keeping Friends Close, But Enemies Closer: Foreign Aid Responses to Natural Disasters

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May 28, 2018

Abstract

Despite a robust body of evidence that suggests that aid donors are largely motivated by strategic considerations when dispensing aid, anecdotal evidence suggests that countries often receive substantial humanitarian aid following natural disasters, even from strategic opponents. In this paper, we square this seeming incongruity by arguing that natural disasters can serve to, at least temporarily, emphasize the humanitarian, as opposed to the political or economic, aspects of a bilateral relationship. We argue that natural disaster severity increases the likelihood of donors giving humanitarian aid to strategic adversaries in the short term. However, we find that in the long-term, donors are still more likely to pursue strategic self-interest by increasing civil society aid to strategic adversaries following a natural disaster. We test our findings using a new measure of strategic interest which we argue improves upon existing measures by accounting for third-order dependencies in dyadic data. Our findings suggest that social context matters in short-term humanitarian aid allocation. They also have important implications for the future of foreign aid allocations more generally, as the number of natural disasters is likely to rise, not fall, with changing climate conditions.

Introduction

In the early morning hours of December 26, 2003, a massive earthquake measuring 6.3 on the Richter scale struck the city of Bam, Iran. Its effects were devastating. Out of Bam's 100,000 residents, approximately 26,000 to 40,000 were killed while those who survived were left to grapple with the destruction of 70 to 90 percent of the city's housing infrastructure (Montazeri et al., 2005).¹ As part of the international response that followed, more than 44 countries sent aid, including the United States, which contributed eight plane loads of medical and humanitarian supplies as well as several dozen teams of experts to the relief effort.

However, while the US response to the 2003 Bam earthquake was seemingly analogous to that of any foreign actor offering aid and support, *a priori*, it was not obvious whether the US would send any humanitarian aid at all, to say nothing of whether Iran would accept it. Just the year prior, then-President George W. Bush had famously anointed Iran membership in the "Axis of Evil" (Heradstveit and Bonham, 2007). Meanwhile, at the time of the earthquake, US-Iran relations were particularly delicate as the countries navigated the issue of nuclear weapons in Iran.² Indeed, given the broader context of contentious bilateral relations, the process of transferring aid from the US to Iran entailed greater intentionality than normal. To initiate the flow of any aid, President Bush was obliged to institute a special 90-day measure to ease US sanctions on Iran (which had been in place since 1979 and continue to be enforced to this day).³ For Iran's part, accepting US aid meant allowing U.S. military planes to land in Iran, which had not happened in over 20 years.⁴ For a country that had undergone a revolution in part because the US military was perceived to have had too strong a domestic influence, such an act was far from benign.⁵

¹Fathi, Nazila. "Deadly Earthquake Jolts City in Southeast Iran." *The New York Times*. 26 December 2003. Accessed October 2017: <https://web.archive.org/web/20090620230700/http://www.nytimes.com/2003/12/26/international/26CND-QUAKE.html?ex=1225166400&en=c550b50a2ad59dd6&ei=5070>

²http://news.bbc.co.uk/2/hi/middle_east/3362443.stm

³"US eases Iran sanctions to speed earthquake relief." *China Daily*. 1 January 2004. Accessed October 2017: http://www.chinadaily.com.cn/en/doc/2004-01/01/content_295063.htm

⁴"Iran Quake Toll May Hit 50,000." *China Daily*. 31 December, 2003. Accessed October 2017: http://www.chinadaily.com.cn/en/doc/2003-12/31/content_294833.htm

⁵<https://www.stratfor.com/geopolitical-diary/geopolitical-diary-tuesday-dec-30-2003>

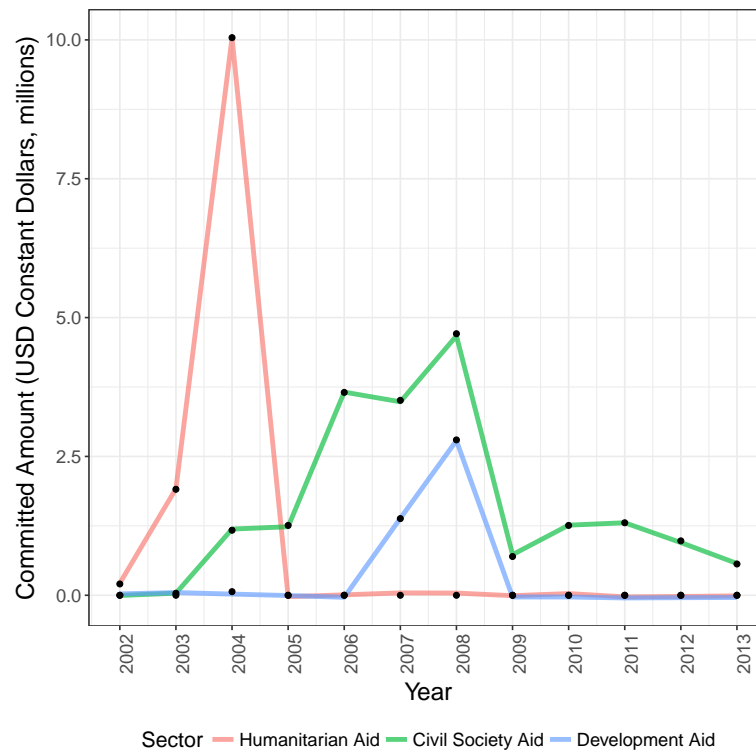


Figure 1: US aid commitments to Iran, 2002 - 2013

Plot of US aid commitments to Iran from 2002 to 2013 by sector type. Note that lines are jittered around 0 and slightly transparent to deal with overlaps of aid by type around 0.

Intriguingly, the Bam earthquake led not only to an increase in US humanitarian aid to Iran, but was followed by other types of aid as well. Figure 1 shows that after 2004, aid commitments to "strengthen civil society" increased markedly and consistently, reaching its apex with the creation of the 2006 "Iran Democracy Fund" to promote democracy in Iran.⁶ Meanwhile, US aid for a variety of developmental purposes, (i.e. economic and development policy and planning, infectious disease control, social/welfare services) also increased sporadically following 2003. Particularly noteworthy is that because the US State Department designated Iran a "state sponsor of terrorism" in 1984, Iran has generally been barred from receiving US foreign aid.⁷



What to make of this remarkable turn of events? Why did the US send humanitarian aid to Iran despite its objectively chilly extant relations? And what drove Iran to accept it? Was this event *sui generis* or is it possible to observe other dyadic pairs acting in a

⁶Carpenter, J. Scott. "After the Crackdown: The Iran Democracy Fund." *The Washington Institute for Near East Policy, PolicyWatch* 1576 8 September 2009. Accessed May 2018: <http://www.washingtoninstitute.org/policy-analysis/view/after-the-crackdown-the-iran-democracy-fund>

⁷Available data from AidData and the OECD suggest that the US did not commit any aid to Iran from 1974 to 2001.

similar fashion more generally? And if so, does increasing humanitarian aid to strategic opponents crack the door open toward sending other types of aid? Answering these questions has important implications for our understanding of how donors allocate aid more broadly. Furthering such an understanding is perhaps more important than ever given that the incidence of natural disasters is likely to increase with changing climate conditions. Meanwhile, given an existing literature that emphasizes strategic factors as driving foreign aid, a more nuanced understanding of what motivates donor aid allocations is needed to answer these questions. [Excellent framing of how important/relevant your paper/puzzle is.](#)

In this paper, we derive and test four hypotheses to explain the development and drivers of aid commitments. We show that countries are more likely to commit to providing more humanitarian aid to strategic opponents, relative to strategic allies, that have faced a natural disaster, suggesting that natural disasters can have a humanizing effect on strategic allies. However, this effect seems to only apply to humanitarian aid, which is generally intended as stop-gap, rather than an active catalyst of economic development. We further find that donors are still primarily interested in furthering their strategic interests when it comes to longer-term goals as they tend to increase civil society aid, rather than development aid, following a natural disaster. We evaluate our argument using a new measure of strategic interest that we believe greatly improves on existing measures given its ability to: 1) capture the [third-order effects](#) that the broader literature on donor motivations generally neglects 2) and more efficiently incorporate many different dimensions of strategic interest . [Brief definitions of humanitarian vs civil society aid here?](#)

In what follows, we first give a brief overview of the existing literature on natural disasters and foreign aid allocations before outlining our hypotheses. We then introduce our new measure of strategic interest, and present our empirical analysis of how natural disasters condition foreign aid allocation decisions.

Accounting for Natural Disasters in Determining Donor Motivations for Foreign Aid

Natural disasters can lead to the destruction or impairment of physical and social infrastructure and even more significantly, the devastating loss of human lives. For example, the 1985 Mexico City Earthquake, one of the most devastating natural disasters in modern times, killed at least 10,000 people⁸ and cost around 4 billion 1985 dollars (around 9 billion in 2017 dollars).⁹ While the resulting devastation prompted the Mexican government to institute a number of regulatory measures to limit future damage, 32 years later, Mexico City's 2017 earthquake still resulted in a death toll of at least 360¹⁰ and the recovery effort could cost more than 2 billion dollars.¹¹ The 2011 Fukushima incident meanwhile, stands out for both its death toll and high cost, leaving nearly 1,600 dead and more than 174,000 displaced.¹² Recent 2017 projections estimate that it will cost around 187 billion dollars – double the 2013 estimate.¹³ Similarly, estimates put the cost of responding to Hurricane Harvey, which left 82 dead,¹⁴ at around 180 billion dollars, likely to be the most expensive natural disaster in US history.¹⁵

⁸The Editors of Encyclopaedia Britannica. "Mexico City earthquake of 1985." *Encyclopaedia Britannica*. 20 September 2017. Accessed September 2017: <https://www.britannica.com/event/Mexico-City-earthquake-of-1985>

⁹Williams, Dan. 'Mexico Quake Loss put at \$4 Billion: Report by U.N. Panel Includes Damages to Economy.' *Los Angeles Times*. 25 October 1985. Accessed September 2017: http://articles.latimes.com/1985-10-25/news/mn-14160_1_mexico-city.

¹⁰The Associated Press. 'Death toll rises to 360 in Mexico earthquake.' *The Denver Post*. 21 September 2017. Accessed October 2017: <http://www.denverpost.com/2017/09/30/mexico-earthquake-death-toll-update/>

¹¹The Associated Press. 'Economic Costs of Mexico's Earthquake Could Surpass \$2B.' *Insurance Journal* 29 September 2017. <http://www.insurancejournal.com/news/international/2017/09/29/465995.htm>

¹²Hamilton, Bevan. 'Fukushima 5 years later: 2011 disaster by the numbers.' *CBC News*. 10 March 2016. Accessed September 2017: <http://www.cbc.ca/news/world/5-years-after-fukushima-by-the-numbers-1.3480914>

¹³McCurry, Justin. 'Possible nuclear fuel find raises hopes of Fukushima plant breakthrough.' *The Guardian*. 30 January 2017. Accessed September 2017: <https://www.theguardian.com/environment/2017/jan/31/possible-nuclear-fuel-find-fukushima-plant>

¹⁴Moravec, Eva Ruth. "Texas officials: Hurricane Harvey death toll at 82 in 2017, 'mass casualties have absolutely not happened.'" *The Washington Post*. 14 September 2017. Accessed September 2017: https://www.washingtonpost.com/national/texas-officials-hurricane-harvey-death-toll-at-82-mass-casualties-have-absolutely-not-happened/2017/09/14/bff3ffea-9975-11e7-87fc-c3f7ee4035c9_story.html?utm_term=.f5eeca9ee21


¹⁵Hurricane Harvey Damages Could Cost up to \$180 Billion.' *Fortune*. 3 September 2017. Accessed September 2017: <http://fortune.com/2017/09/03/hurricane-harvey-damages-cost/>

Few countries are spared the devastation that natural disasters can wreak. Between 1980 and 2004, approximately 7,000 natural disasters led to the deaths of around two million people and further negatively affected the lives of five billion more, according to the dataset maintained by the Centre for Research on the Epidemiology of Disasters (CRED) at the University of Louvain. The economic costs are also considerable and rising, with the direct economic damage from natural disasters between 1980-2012 estimated to be around \$3.8 trillion (Gitay et al., 2013).

While dealing with both the immediate and long-term damage wrought by natural disasters can seriously drain existing resources for any country, developing countries generally find it especially difficult to cope. Often, their existing physical infrastructure is grossly unequal to the task of withstanding natural disasters. Meanwhile, the resilience and capacity of their institutional infrastructure is often ill-suited to dealing with the often long and complex process of rebuilding. In general, when natural disaster strikes, developing countries are likely to experience more serious damage and have less state capacity to recover. For example, prior to its 2010 earthquake, Haiti had no building codes and many of its buildings were not designed to withstand even a mild earthquake.¹⁶ Meanwhile, the lack of governmental leadership and low state capacity, along with other factors, has meant that even 7 years after the disaster, Haiti has yet to fully recover (Hartberg et al., 2011).

From a purely strategic perspective then, natural disasters represent an opportune **Inflict harm how? Attack? Sanctions?** time to inflict harm on a strategic adversary, especially if it is a developing country, as both government officials and public resources are fully engaged with responding to the emergency. Yet, anecdotal evidence suggests that strategic adversaries rarely take advantage of this tactical opportunity, at least as far as can be openly observed. Many of the deadliest natural disasters (which should present foreign opponents the best opportunity to inflict harm) do not seem to have been followed up by hostile overtures. For instance, Taiwan did not use the 1976 Tangshan earthquake, believed to be the largest earthquake in the 20th century by death toll, as an opportunity improve its

¹⁶Watkins, Tom. 'Problems with Haiti building standards outlined.' *CNN*. 2010 January 14. Accessed September 2017: <http://edition.cnn.com/2010/WORLD/americas/01/13/haiti.construction/index.html>

strategic position vis-a-vis China. Similarly the 2011 Fukushima disaster was not followed by hostile gestures from China nor did Russia react to Hurricane Harvey with belligerence toward the US.¹⁷ 

Context of course matters. There is a sizable difference between taking advantage of a country that one has contentious relationship with and taking advantage of a country with which one is actively engaged in outright conflict. In the former context, though taking preemptive action against a strategic opponent may lead to short term gains, it could very well lead to long term losses. But even by this hard-nosed logic, we might expect countries to simply do nothing when tragedy befalls their strategic opponents. Such behavior would fit well with the larger literature that investigates donor motivations for allocating foreign aid. Indeed, scholars have produced a large body of evidence suggesting that donors overwhelmingly prioritize strategic considerations over developmental or humanitarian ones when dispensing aid.¹⁸

Yet, much anecdotal evidence suggests that rather than jockeying for a more favorable strategic perch or doing nothing, natural disasters encourages the flow of *aid* from strategic opponents. For example, during the famine that ravaged North Korea from 1994 to 1998, the United States, South Korea, Japan and the European Union stepped up as the primary donors of food aid (Noland, 2004). Meanwhile, Taiwan was one of the biggest donors to China in the aftermath of the 2008 Sichuan earthquake.¹⁹ Taiwan also actively contributed to the rescue effort²⁰ and further offered to share the technical expertise it developed from its own devastating earthquake experience in 1999.²¹ Similarly, following Hurricane Katrina, the United States accepted Russian aid, despite coetaneous frosty relations.²²

¹⁷Note, whether countries take advantage of their strategic opponents using more covert methods during times of natural disaster is a more open question.

¹⁸For example, see McKinlay and Little (1977, 1978, 1979); Maizels and Nissanke (1984); Schraeder et al. (1998); Alesina and Dollar (2000); Berthélemy (2006); Stone (2006); De Mesquita and Smith (2007); Bermeo (2008); Hoeffler and Outram (2011); Dreher et al. (2015).

¹⁹'FACTBOX-Earthquake aid for China.' 14 May 2008. <http://uk.reuters.com/article/idUKPEK29448220080514>

²⁰French, Howard and Edward Wong. 'In Departure, China Invites Outside Help.' *The New York Times*. 16 May 2008. Accessed September 2017: <http://www.nytimes.com/2008/05/16/world/asia/16china.html>

²¹Hille, Kathrin. 'Taiwan shares quake lessons with Sichuan.' *Financial Times*. 9 June 2008. Accessed September 2017: <https://www.ft.com/content/b0204002-3641-11dd-8bb8-0000779fd2ac>

²²'U.S. accepts Russian Katrina aid.' *UPI*. 2 September 2005. Accessed September 2017. <https://www.>

Are these anecdotes of non-strategic behavior indicative of a systemic pattern or one-off exceptions to the rule of strategic self-interest? If the former, what could explain this decidedly non-strategic behavior? Finding an answer to these questions in the current literature is difficult. For one, in evaluating the relative roles that donor interest and recipient need play in foreign aid allocation, what researchers refer to as recipient need may be more precisely understood as 'developmental need' and as such, targeted towards addressing chronic poverty. To that end, development need is frequently measured using gross domestic product (GDP) or gross national product (GNP) per capita;²³ and occasionally a more holistic measures of social outcomes such as the Physical Quality of Life Index,²⁴ the average life expectancy,²⁵ or the daily caloric intake.²⁶

Meanwhile, a much smaller body of research investigates the degree to which aid is given in response to acute crises, such as natural disasters, which will be referred to here as humanitarian need. Considering that around 11% of ODA was officially categorized as being given for humanitarian reasons in 2015, the systematic failure to include natural disasters as a potential driver of foreign aid is puzzling.²⁷ What evidence that does exist suggests a null or small effect of humanitarian aid on foreign aid allocations. For instance, Bermeo (2008) finds no relationship between the number of people affected by disasters and the allocation of bilateral aid for France, Japan, the UK and the US.²⁸ Similarly, David (2011) finds no statistically significant relationship between development aid flows and climatic or human disasters. David does find evidence for increased development aid following geological disasters, but the effect is lagged by 2 years and substantively small.²⁹ Yang (2008) also finds that ODA increases after a

upi.com/US-accepts-Russian-Katrina-aid/39221125680989/.

²³For example, see McKinlay and Little (1977, 1978, 1979); Maizels and Nissanke (1984); Alesina and Dollar (2000); Berthélemy (2006); Stone (2006); De Mesquita and Smith (2007); Bermeo (2008).

²⁴See Maizels and Nissanke (1984).

²⁵See Schraeder et al. (1998).

²⁶See McKinlay and Little (1979); Schraeder et al. (1998).

²⁷Total ODA for DAC countries was 131.6 billion in 2015, 15.6 billion of which was designated as humanitarian assistance <http://www.oecd.org/dac/development-aid-rises-again-in-2015-spending-on-refugees-doubles.htm> <http://www.oecd.org/dac/stats/humanitarian-assistance.htm>

²⁸Note, Bermeo (2008) also conceptualizes humanitarian aid using measures of the number of refugees and civil war, with mixed effects across countries for both

²⁹David (2011) defines climatic events as 'floods, droughts, extreme temperatures and hurricanes';

hurricane, but only with a lag of 2 years.³⁰

Finally, there appears to be virtually no work that has explored whether there are interactive effects between donor's strategic interest and recipient's humanitarian need. To our knowledge, our paper is the first to explore whether there may be an interactive relationship between donor's strategic interest and recipient's humanitarian need on foreign aid allocation decisions.

How Natural Disasters Affect Foreign Aid Allocations

Expending public resources to relieve the human suffering of foreigners shifted from being a virtually inconceivable act to a relatively commonplace one around the turn of the twentieth century, in no small part due to the unparalleled scale of modern war and disaster. The devastation wrought by the two world wars was particularly instrumental in bringing about this change. However, such aid was strictly intended to serve as temporary transfers that would facilitate a return to the previous status quo, rather than a long-term commitment to "development" as such. The turn toward development aid was instead fostered by ongoing Cold War hostilities, which simultaneously promoted the use of aid to further donor's strategic goals while also building a new norm of rich countries aiding poor countries (Lancaster, 2008).

The role of mitigating disaster and suffering on the one hand and furthering strategic interest on the other then, are baked into modern foreign aid's very conception. This history also suggests that initial humanitarian aid meant to serve as a temporary expedient can lead to the establishment of aid with longer-term strategic goals. Whether this pattern exists more generally and if so, whether it is driven primarily by strategic or humanitarian concerns is unclear however. The role of the Cold War in foreign aid's origin story dictated that recipients of humanitarian aid were generally within a partic-

human disasters as: famines and epidemics; geological events as: earthquakes, landslides, volcano eruptions and tidal waves.

³⁰Strömberg (2007) does find a positive and significant relationship between aid and natural disasters, but his paper is concerned with emergency aid in particular, not foreign aid. Similarly, Olsen et al. (2003) find that donors are more likely to give aid for strategic reasons, though their analysis is confined to emergency aid.

ular strategic bloc, making it difficult to untangle strategic from humanitarian drivers. The vignette of US-Iran aid relations following the 2003 Bam earthquake provides some anecdotal evidence, however, that contrasting examples exist.

As such, looking at how natural disasters affect foreign aid allocation is not only interesting in its own right but also provides an exogenous instrument with which to identify the role of donor interest and recipient need in explaining the development of aid commitments. To that end, we derive and test four hypotheses as to how natural disasters affect foreign aid allocations. In so doing, we seek to offer a more nuanced understanding of the principle drivers of foreign aid allocations.

Short-term Humanitarian Response to Natural Disasters

Responding to natural disasters quickly and efficiently is often crucial to saving lives and alleviating human suffering. The first 72 hours after a natural disaster are often critical as services like electricity, gas, water, and telecommunications may all be disrupted. The timely deployment of humanitarian aid is the first response that donors can extend to countries struck by natural disaster. In what follows, we develop two hypotheses as to how the interaction between strategic interests and natural disaster severity can affect humanitarian aid allocation.

Realist Imperviousness to Natural Disasters

The logic of realism dictates that countries are driven by self-interest to amass power, which is seen as zero-sum. Thus, realist scholars expound the view that “foreign aid is today and will remain for some time an instrument of political power” (Liska, 1960). Under this logic, donors commit aid to recipient countries primarily to further their own strategic interests.

With regards to the interaction between natural disasters and strategic interests then, the realist perspective suggests that donors do not send more humanitarian aid to their strategic opponents in the event of a natural disaster because it is against their

self-interest to do so. Rather, it would be in donor self-interest to send humanitarian aid to their strategic allies in the event of a natural disaster. This does not imply that donors never send humanitarian aid to their strategic opponents, but that they are more likely to send aid to their strategic allies.

Indeed, disaster-afflicted countries appear to be sensitive to the possibility that accepting humanitarian aid from strategic opponents may come with strings attached. In 1999 for example, Venezuela experienced catastrophic flash floods and debris flows in Vargas State, which left as much as 10% of the Vargas population dead (Wieczorek et al., 2001). U.S. troops helped in the relief efforts by running helicopter rescue missions and working to provide clean water. However, consistent with his antagonism toward U.S. hegemony in the region, President Hugo Chavez declined U.S. assistance in rebuilding a critical highway, saying that while, "he would accept American equipment if Venezuelan soldiers operated it...he did not want U.S. troops in his country."³¹ Meanwhile, Iran categorically refused any aid from Israel following the 2003 Bam earthquake, though the Israeli government still encouraged its citizens to donate privately.³² Indeed, even the U.S. first turned down Russian aid for Hurricane Katrina before ultimately accepting it.³³

The logic of hard-nosed realism leads us to the following hypothesis as to how the interaction between natural disasters and strategic aid affects humanitarian aid allocations:

H1A: Donors are driven by self-interest and in the event of a natural disaster, donors are more likely to send humanitarian aid to their strategic allies than their strategic opponents.

How can you measure this "more likely" if allies/opponents don't suffer from natural disasters at the same time? In any other context, there could be numerous reasons why an ally or opponent did/not get aid at a given point in time.

³¹Brand, Richard. 'Chavez assailed on handling of Venezuelan flood disaster.' *The Miami Herald*. 5 August 2001. Accessed September 2017: <http://www.latinamericanstudies.org/venezuela/venezuela-disaster.htm>.

³²Popper, Nathaniel. "Israelis Help Iran Victims Despite Rebuff." *The Forward*. 2 January 2004. Accessed September 2017: <http://forward.com/news/6059/israelis-help-iran-victims-despite-rebuff/>

³³'U.S. accepts Russian Katrina aid.' *UPI*. 2 September 2005. Accessed September 2017. <https://www.upi.com/US-accepts-Russian-Katrina-aid/39221125680989/>.

Natural Disasters as (Temporary) Humanizers of Strategic Opponents

The constructivist literature stresses however that social context matters for understanding how countries interact with each other. As opposed to material interests, under this logic, international interactions are shaped by shared ideas and norms. New research in behavioral economics also underscores the idea that different social contexts cause people in identical situations to behave differently. (Kahneman, 2003; Do, 2011)

Following this vein, natural disasters can encourage donors to increase aid to their strategic opponents because such disasters can drastically shift the social context of the relationship. That is, the loss of human life and destruction of infrastructure, which natural disasters provoke, can serve to, at least temporarily, emphasize the human aspect of the bilateral relationship as opposed to the political, economic, and military aspects which generally typifies foreign relations between two countries. Moreover, if natural disasters do have a humanizing effect, then we might expect strategic opponents to be particularly sensitive to it given the greater gap of humanization they must traverse compared to strategic allies. For example, seeing disaster befall Cubans may humanize them more for Americans compared to Russians purely as a function of the US and Cuba's historic antagonism. The historical antagonism may increase the potential for Cubans to be humanized in American eyes compared to Russians, who already have a relatively sympathetic perception of Cubans.³⁴

That is not to say that natural disasters can always bridge this divide among strategic opponents. For example, India and Pakistan have had an uneasy history in accepting aid from each other following natural disasters.³⁵ In general, we contend only

³⁴Note, regardless of the actual motivation of donors when they give aid to their strategic opponents, there is anecdotal evidence to suggest that aid given under such circumstances can also serve to humanize the donors as well. For example, in the wake of US and South Korean aid for the North Korean famine, one refugee summarized his reaction to the US Institute for Peace this way: "We were taught all these years that the South Koreans and Americans were our enemies. Now we see they are trying to feed us. We are wondering who our real enemies are" Natsios (1999). This suggests that to some extent, social context can matter.

³⁵Ravishankar, Siddharth. 'Cooperation between India and Pakistan after Natural Disasters.' *Stimson Center*. 9 January 2015. Accessed September 2017: <https://www.stimson.org/content/cooperation-between-india-and-pakistan-after-natural-disasters>

More likely relative to what?

that natural disasters make it more *likely* that a strategic adversary will contribute aid because they reframe the context of bilateral relations toward empathy and altruism. The constructivist frame of understanding how the interaction between natural disasters and strategic interests affects humanitarian aid allocations thus leads us to the following hypothesis:

H1B: Donors who are strategic opponents of the recipient are more likely than strategic allies to be sensitive to the humanizing effect of natural disasters and consequently, are likely to send more development aid.



Long-term Responses to Natural Disasters

Donor countries may dispense aid which not only serves to immediately address the natural disaster at hand, but also through other channels that have longer-term objectives. Here, we make a distinction between civil society aid and development aid. Civil society aid is aimed at supporting non-governmental organizations (NGOs) and their programs. Often, the goal of such aid is to empower grass-roots advocacy and improve governance and government accountability. Meanwhile, development aid is targeted toward promoting long-term economic development in a recipient country often through the building of infrastructure like roads and hospitals as well as the building of human resources via technical training and education. In what follows, we develop hypotheses as to how the interaction between strategic interest and natural disasters can affect the allocation of these two different types of aid.

Natural Disasters as Strategic Opportunities

If, as following the realist logic, foreign aid is used to promote donor interests, then donor governments should be especially inclined to increase the allocation of civil society aid. This is because aiding the development of civil society is an inherently political act.³⁶ From supporting the growth of government watch dogs to increasing advocacy

³⁶<http://foreignpolicy.com/2013/05/21/the-prickly-politics-of-aid/>

Do realists bother with trying to affect someone else's internal politics? Wouldn't this be a high cost strategy with a low likelihood of payoff?

of previously marginalized social groups, whether it is their intention or not, donors are able to exert influence over a recipients domestic politics by directing funds to civil society.



With respect to natural disasters, countries may be motivated to give more civil society aid to their strategic opponents because the temporary suspension in the normal dynamics of the relationship represents a unique opportunity to increase civil society aid and initiate a shift in the nature of the bilateral relationship. That is, donor countries may either already recognize all to well or come to recognize that the natural disasters offers an opportunity to improve the terms of their relationship with the affected country. Either way, donors may seize on a country's inherent vulnerability following a natural disaster to decide to *strategically* increase their civil aid so as to increase their chances of exerting domestic influence over the recipient countries. As such, we derive the following hypothesis:

H2A: Natural disasters present an opportune window for donors to exert influence over recipients who are their strategic opponents and as such, donors are more likely to send civil society aid to their strategic opponents.

Natural Disasters as (Permanent) Humanizers of Strategic Opponents


Whereas humanitarian aid provides stop-gap measures to address the immediate aftermath of a natural disaster, the focus of development aid is to build the conditions for long-term, sustainable economic growth. As such, if as the constructivist frame contends, natural disasters can have a humanizing effect on strategic opponents that is not only short-term, but long-term, then this should be manifested in an increase in development aid. That is, the initial devastation wrought by a natural disaster may not only encourage greater humanitarian aid, but may also encourage greater contact and mutual understanding between donors and recipients and a greater donor commitment to recipient development. As in H1B, strategic opponents may be particularly sensitive to this humanizing effect because relative to strategic allies, they are more likely to have had a dehumanizing view of the recipient country. This results in the final



hypothesis:

*H2B: Natural disasters have a long-term humanizing effect on their strategic opponents
...than allies? Or than before?
and as such, donors are more likely to send development aid to their strategic opponents.*

Measuring Strategic Relationships

One reason for evaluating the *motivations* for aid and not aid *outcomes* is that aid given for strategic reasons may still further development objectives, albeit incidentally, while aid given for humanitarian reasons may also bring unexpected strategic benefits (Maizels and Nissanke, 1984). However, evaluating the motivations for aid is not a straightforward process – any given aid project may work toward providing assistance to a recipient country as well as strategic benefits to a donor country. 

Of critical importance to investigating whether strategic considerations (and by extension, the interaction between strategic considerations and humanitarian need) affect foreign aid considerations then is constructing a valid and reliable measure of strategic interest. In our review of the literature of the drivers of foreign aid however, we find that Alesina and Dollar (2000)'s remark that “unfortunately the measurement of what a ‘strategic interest’ is varies from study to study and is occasionally tautological,” still holds true. Indeed, strategic interest has alternately been operationalized as: trade intensity (Berthélemy and Tichit, 2004; Bermeo, 2008; Hoeffler and Outram, 2011), UN voting scores (Alesina and Dollar, 2000; Weder and Alesina, 2002; Hoeffler and Outram, 2011; Dreher and Fuchs, Forthcoming), arms transfers (Maizels and Nissanke, 1984), colonial legacy (Alesina and Dollar, 2000; Bermeo, 2008; Berthélemy and Tichit, 2004; Berthélemy, 2006), alliances (Bermeo, 2008; Schraeder et al., 1998), regional dummies (Bermeo, 2008; Berthélemy, 2006; Maizels and Nissanke, 1984), bilateral dummies (Alesina and Dollar, 2000; Berthélemy and Tichit, 2004; Berthélemy, 2006)³⁷ or some combination of the above. Meanwhile other papers take a negative approach and argue that any shortfall between what would theoretically be expected from poverty-

³⁷A US-Egypt or US-Israel dummy seems to be the most common instance of a bilateral dummy

efficient aid allocation and actual aid allocation (Collier and Dollar, 2002; Nunnenkamp and Thiele, 2006; Thiele et al., 2007), or similarly between a theoretical allocation based on good governance and actual aid allocation (Dollar and Levin, 2006; Neumayer, 2005), is evidence of strategic interest at play.


Such inconsistency in the operationalization of strategic interest is not simply a matter of using different variables to measure the same concept but a matter of using different variables to measure different *aspects* of the underlying concept. However, while a dyad's strategic bilateral relationship is quite multifaceted, to date, there has not been a readily available measure of strategic relationships which captures its various aspects the same way that scholars have done for other complex concepts.³⁸ To address this problem, we create a new measure of strategic interest that is able to capture different aspects of strategic interest into one variable, which we discuss more fully in the next section.

A new measure of strategic relationships

Our measure of strategic relationships introduces greater coherency to the literature by providing a more rigorous measure that captures aspects of strategic interest. We do so by measuring the latent space of three different dyadic variables: **dyadic alliances, UN voting and joint membership in an intergovernmental organizations (IGOs)**. We then combine the latent distances for each variable through a principal components analysis (PCA). As such, our political strategic relationship measure is the first principal component that results from the PCA of the latent distance between each variable.

The three component variables were chosen because they capture to different degrees, the political and military relationship between two countries and, perhaps not coincidentally, because of their ubiquity in the foreign aid literature and. Dyadic alliances largely capture the strategic and military aspect of the dyadic relationships.

³⁸For example, Polity and Freedom House have provided measures of political institutions while the World Bank's World Governance Indicators (WGI) project provides measures for six dimensions of governance

Meanwhile, joint membership in IGOs is better able to capture the dyadic relationship across many political issue areas over multiple fora while UN voting is better able to capture this relationship in a centralized fora. 

The main advantage of calculating the latent space of different dyadic variables as opposed to using alternative specifications such as the S Score algorithm³⁹ is that it allows us to account for third order dependencies within the data. To review, first order dependency refers to the propensity for some actors to send or receive more ties than others, second-order dependency refers to reciprocity of exchange between actors, and a third-order dependency refers to interactions among three or more actors. Dyadic data are rife with these types of dependencies, and aside from first-order dependencies, they pose serious challenges to the basic assumption of independence between observations (Poast, 2010; Hoff and Ward, 2004).

More precisely, third order dependency includes the concepts of (a) transitivity, (b) balance and (c) clusterability. Formally, a triad ijk is said to be transitive if for whenever $y_{ij} = 1$ and $y_{jk} = 1$, we also observe that $y_{ik} = 1$. This follows the logic of “a friend of a friend is a friend”. Meanwhile, a triad ijk is said to be balanced if $y_{ij} \times y_{jk} \times y_{ki} > 0$. Conceptually, if the relationship between i and j is ‘positive’, then both will relate to another unit k identically, either both positive or both negative. Finally a triad ijk is said to be clusterable if it is balanced or all the relations are all negative. It is a relaxation of the concept of balance and seeks to capture groups where the measurements are positive within groups and negative between groups.

Thus third order dependencies suggest that “knowing something about the relationship between i and j as well as between i and k may reveal something about the relationship between i and k , even when we do not directly observe it” (Hoff and Ward, 2004). Such dependences would seem especially relevant for our purposes as one cannot understand the strategic relationship between two countries without taking into account their respective relationships with other countries. The importance for ac-

³⁹Leeds and Savun (2007), for example, measure a states “threat environment” as the set of all states for which ones is contiguous with or which is a major power and with an S score below the population median.

counting for these dynamics have long been acknowledged in the foreign aid literature. Trumbull and Wall (1994) for example, note that, “donors do make their decisions with knowledge of what each other are doing, and may actually act cooperatively. Any study that ignores the interrelationship of donor behavior risks problems with simultaneity bias.” However, we find that until now, this critique has largely gone unaddressed by the existing literature.

To do so, we run a null generalized bilinear mixed effects model (GBME) to estimate the latent space for each component of our strategic interest variables (Hoff, 2005), which is formally represented as follows:

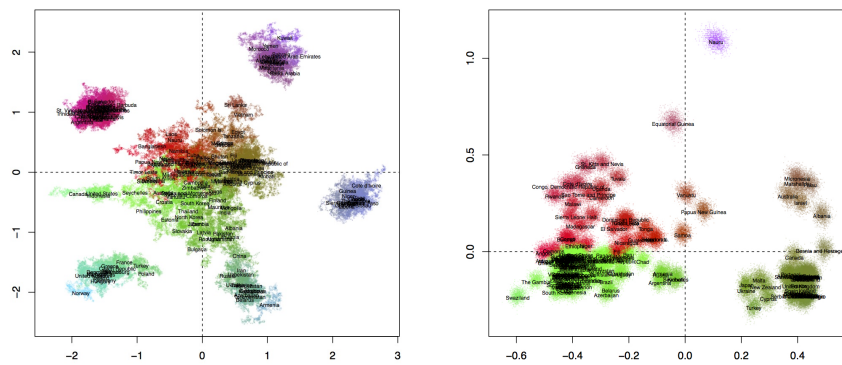
$$\theta_{i,j} = a_i + b_j + \gamma_{i,j} + z_i' z_j$$

where $\theta_{i,j}$ is the dyadic variable of interest (e.g., alliances), a_i estimates ‘sender’ effects, b_j estimates ‘receiver’ effects and $z_i' z_j$ is the bilinear effect which estimates the latent space and accounts for third order dependencies common in dyadic data. We estimate the model via Gibbs sampling of full conditionals of the parameters. For a more detailed discussion of this model, see Hoff (2005). In Figure 2, we present a visualization of the resultant latent space we calculated for each variable for the year 2005.

Countries that cluster together in this two-dimensional latent space are more likely to interact with each other. The plots for alliances, UN voting and IGO membership suggest that there is distinct clustering among countries. Moreover, these clusters are different across the different measures, suggesting that each variable is indeed capturing different aspects of strategic interest.

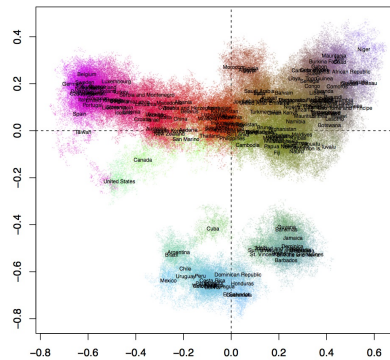
After estimating the latent spaces for these components, we calculate the Euclidean distance between each dyad for each component. We then combine them in a principal components analysis (PCA) to reduce the dimensionality of our measure while retaining as much variance as possible. That is, alliances, UN voting and joint membership in IGOs all capture certain aspects of political strategic interest. Instead

Figure 2: Latent Spaces for components of Political Strategic Interest Measure during 2005



(a) Alliances

(b) UN voting



(c) IGO membership

I like the colors! But what do they mean?

of choosing only one of them as our measure of strategic interest as other papers have done, we combine them in order to increase our explanatory power. We estimate the PCA of these variables for each year separately⁴⁰ and use the first principal component for each year as our measure of strategic interest. On average over all the years, we find that the first component of our PCA of alliances, UN voting and joint membership in IGOs, which we use as our measure of strategic interest, explains about 51% of its variance. For further validation checks of our strategic interest variable, please see Appendix A.

⁴⁰For each year, we conduct a bootstrap PCA of 1000 subsamples each

Data

Aid flows

Our data from foreign aid flows is taken from the AidData project (Tierney et al., 2011). This database includes information on over a million aid activities from the 1940s to the present. We use the country level aggregated version of this database to create a directed-dyadic dataset of total aid dollars committed. In this analysis, we focus specifically on OECD donor countries as they both are the best able and have the best incentive to give foreign aid to advance their strategic interests. In the final tally, our dataset includes the 18 most active senders⁴¹ and 167 receivers of aid flows from 1975 to 2006. Accounting for all possible senders of aid during this time frame is difficult because of the amount of missing data. That being said, issues with missingness in our dataset still exist and we deal with them by employing a multiple imputation method developed by Hoff (2007) and shown to have good performance by Hollenbach et al. (2014).

We use the AidData's Sector coding scheme in order to disaggregate bilateral ODA into humanitarian aid, development aid, and civil society aid.⁴² To that end, our measure of humanitarian aid encompasses the sectors of "Emergency Response", "Reconstruction Relief", and "Disaster Prevention and Preparedness."

Meanwhile, development aid is defined as aid given to the following sectors: "Education", "Health", "Water Sanitation", "Other Infrastructure and Services", "Economic Infrastructure and Services", "Environmental Protection", "Other Social Infrastructure and Services", "Agriculture Forestry and Fishing", "Industry, Mining and Construction", "Other Development Aid", "Food Aid" and "Debt Relief".

Finally, civil society aid is measured as aid to the sectors of "Government and Civil Society", "Women", "Support to Non-Governmental Organizations and Governmental Organizations".

⁴¹More specifically, the included donor countries are: Australia, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, the United Kingdom and the United States.

⁴²"AidData's Sector Coding Scheme." http://docs.aiddata.org/ad4/files/aiddata_coding_scheme_0.pdf

We note that bilateral ODA often represents only one channel through which a donor country may allocate foreign aid and that an increasing number of papers have argued for accounting for the heterogeneity of aid channels donors may use when estimating drivers of foreign aid (Nunnenkamp and Öhler, 2011; Buthe and Cheng, 2013; Dietrich, 2013). For our paper, we choose to focus solely on bilateral aid in order to maintain greater comparability with previous studies.

Strategic Interest

As previously stated, for our measure of political strategic relationships, we conducted a PCA on the latent distances for alliances, UN voting and joint IGO membership. Data for alliances was retrieved from the Correlates of War (COW) Formal Alliance dataset (Gibler, 2009). Following (Bueno de Mesquita, 1975) and (Signorino and Ritter, 1999), we distinguish between different types of alliances with the following weighting scheme: 0 = no alliance, 1 = entente, 2 = neutrality or nonaggression pact, 3 = mutual defense pact.

UN voting data was obtained from the United Nations General Assembly Data set (Strezhnev and Voeten, 2012). Here we calculate the proportion of times two states agree out of the total number of votes they both voted on. Agreement means either both vote yes, both vote no, or both abstain. This measure is similar to the 'voting similarity index' readily available from the dataset except the voting similarity index does not account for mutual abstentions.

Meanwhile IGO ~~voting~~ data was obtained from the Correlates of War International Governmental Organizations Data Set. (Pevehouse et al., 2010). Dyads were coded as 1 if they belonged to the same IGO as a full member or an associate member and coded as 0 if one or both of them was an observer, had no membership, was not yet a state or was missing data.⁴³

⁴³Note we had attempted to make distinctions between different types of membership much like for alliances but found that very few states were noted to be Associate Members or Observers of an IGO for the time period that we are conducting our analysis. Thus we chose to use the simpler coding scheme.

Natural Disasters

Almost all the empirical work on natural disasters relies on the publicly available Emergency Events Database (EM-DAT) maintained by the Center for Research on the Epidemiology of Disasters (CRED) at the Catholic University of Louvain, Belgium⁴⁴. EM-DAT defines a disaster as a natural situation or event which overwhelms local capacity and/or necessitates a request for external assistance. For a disaster to be entered into the EM-DAT database, at least one of the following criteria must be met: i) 10 or more people are reported killed; ii) 100 people are reported affected; iii) a state of emergency is declared; or iv) a call for international assistance is issued. We use a count of the number of natural disasters a country has experienced a year as our measure of natural disaster severity. Disasters can be hydro-meteorological, including floods, wave surges, storms, droughts, landslides and avalanches; geophysical, including earthquakes, tsunamis and volcanic eruptions; and biological, covering epidemics and insect infestations (the latter are less frequent)...but interesting! I'd like to know who suffered from an insect infestation natural disaster. Locusts?

Developmental Need

In addition to our dyadic strategic relationship measures, we include a number of covariates to capture characteristics of the countries receiving aid.

For our measures of developmental need, we use (1) Log GDP per capita and (2) life expectancy at birth. This measure “indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.” Both of these measures are extracted from the World Bank (2013).

⁴⁴<http://www.emdat.be/>

Additional Covariates

We also include a number of covariates in our model, including macroeconomic variables and measures for political institutions. For our macroeconomic indicators, we use GDP per capita, available from the World Bank (Bank, 2013). For our measure of political institutions, we use Polity IV data available from the Center for Systemic Peace (Gurr et al., 2010). Polity IV captures differences in regime characteristics on a 21 point scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy). Note we rescale Polity IV to range from 1 to 21 for greater ease of interpretation.

We also control for the incidence of civil war as incidence of civil war in a recipient country certainly informs the ability for a donor country to dispense aid. We do so with data retrieved from the Uppsala Conflict Data Program (UCDP)/International Peace Research Institute (PRIO) Armed Conflict Database. (Gleditsch et al., 2002). We code as civil war any armed conflict which either (a) “Internal armed conflict occurs between the government of a state and one or more internal opposition group(s) without intervention from other states” or (b) “Internationalized internal armed conflict occurs between the government of a state and one or more internal opposition group(s) with intervention from other states (secondary parties) on one or both sides.”

Finally for our data on former colonies, we used the Colonial History Data Set from the Issue Correlates of War (ICOW) Project (Hensel, 2009). This variable is coded as a one when the receiver in a sender-receiver dyad is a former colony of the sender and zero otherwise.

Analysis

Estimation Method

To model aid flows using our directed-dyadic panel dataset, we utilize a hierarchical model. To implement this, we nest aid receivers within aid senders and aid senders

within years. We include random intercepts in our model for every sender and year. More concretely, we fit the following model:

$$\begin{aligned}
\text{Log}(\text{Aid})_{sr,t} = & \beta_1(\text{Pol. Strat. Distance}_{sr,t-1}) \\
& + \beta_2(\text{Colony}_{sr,t-1}) + \beta_3(\text{Polity}_{r,t-1}) \\
& + \beta_4\text{Log}(\text{GDP per capita}_{r,t-1}) + \beta_5(\text{Life Expect}_{r,t-1}) \\
& + \beta_6(\text{No. Disasters}_{r,t-1}) + \beta_7(\text{Civil War}_{r,t-1}) \\
& + \beta_8(\text{Pol. Strat. Interest}_{sr,t-1} \times \text{No. Disasters}_{r,t-1}) \\
& + \delta + \rho
\end{aligned}$$

Where δ and ρ are the sender and receiver random effects respectively.

The results of this analysis are shown below in a coefficient plot in Figure 3.⁴⁵ We test Hypothesis 1A and 1B using the model with ‘Humanitarian Aid’ as the dependent variable. The results show a positive and statistically significant relationship between the interaction of *Strategic Distance* and the *No. Disasters*. To interpret these results, we turn to Figure 4 (‘Humanitarian Aid’ panel) where we plot the substantive effect of this interaction term on humanitarian aid over the range of *Strategic Distance* for different levels of natural disaster severity. [This is the presence of humanitarian aid, right? Not how much is given?](#)

These results suggest that the greater the number of natural disasters a country experiences, the more likely it is to receive humanitarian aid from a strategic adversary. This is apparent in the rising slope of the relationship between strategic interest and humanitarian aid as the number of natural disasters increases. As such, these results are consistent with H1B, which suggests that donors may be more likely to disperse humanitarian aid to their strategic adversaries because such disasters humanize them. Conversely, these results do not support H1A, which hypothesizes that donors

⁴⁵Note, to examine the model results without the interaction effects, please see Figure 8 in Appendix A.1

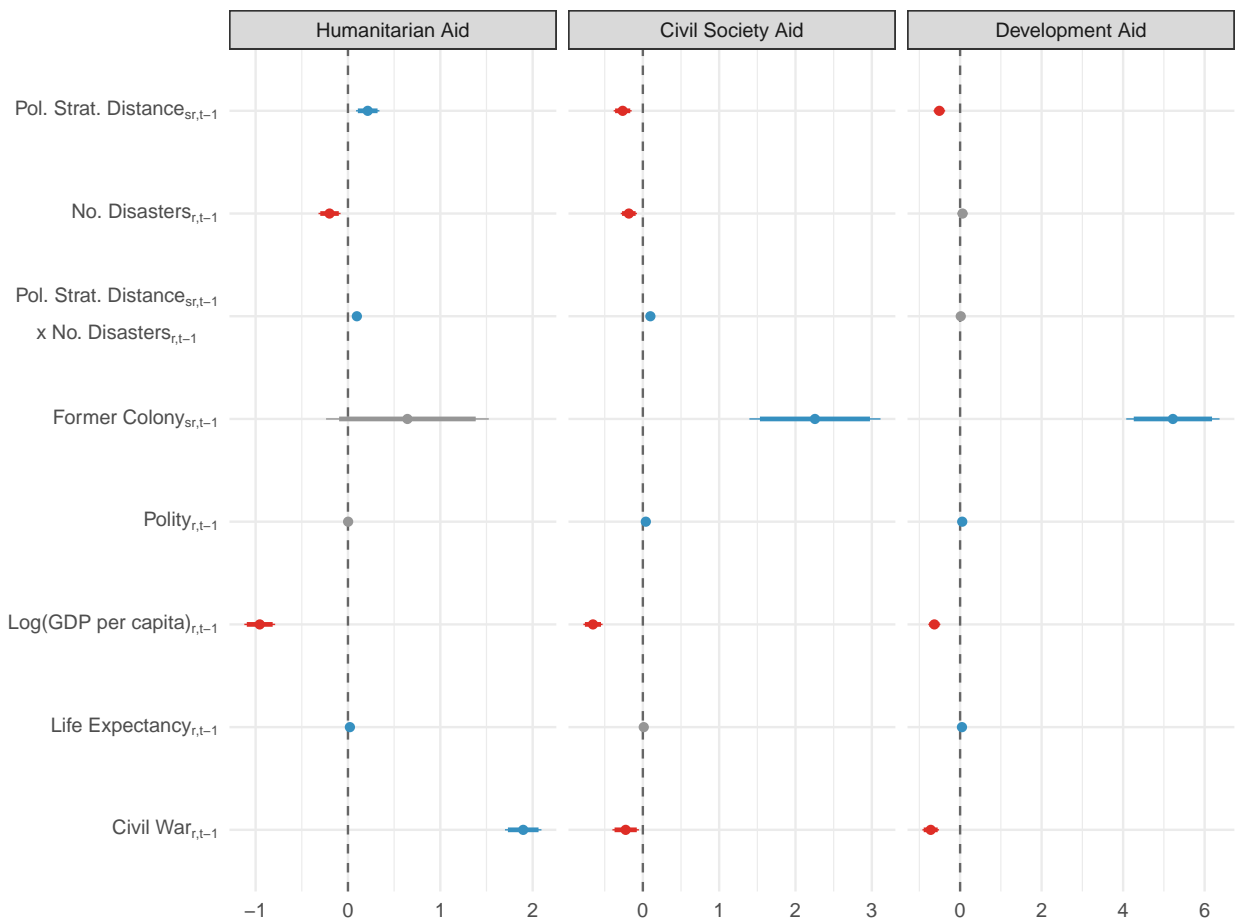


Figure 3: Coefficient plots for the main analyses with interaction terms across each dependent variable, humanitarian aid, civil society aid and development aid. Coefficients that are significant at the 5% level are shaded in blue if the coefficient is positive and red if the coefficient is negative. Coefficients that are not significant at the 5% level are shaded in gray.

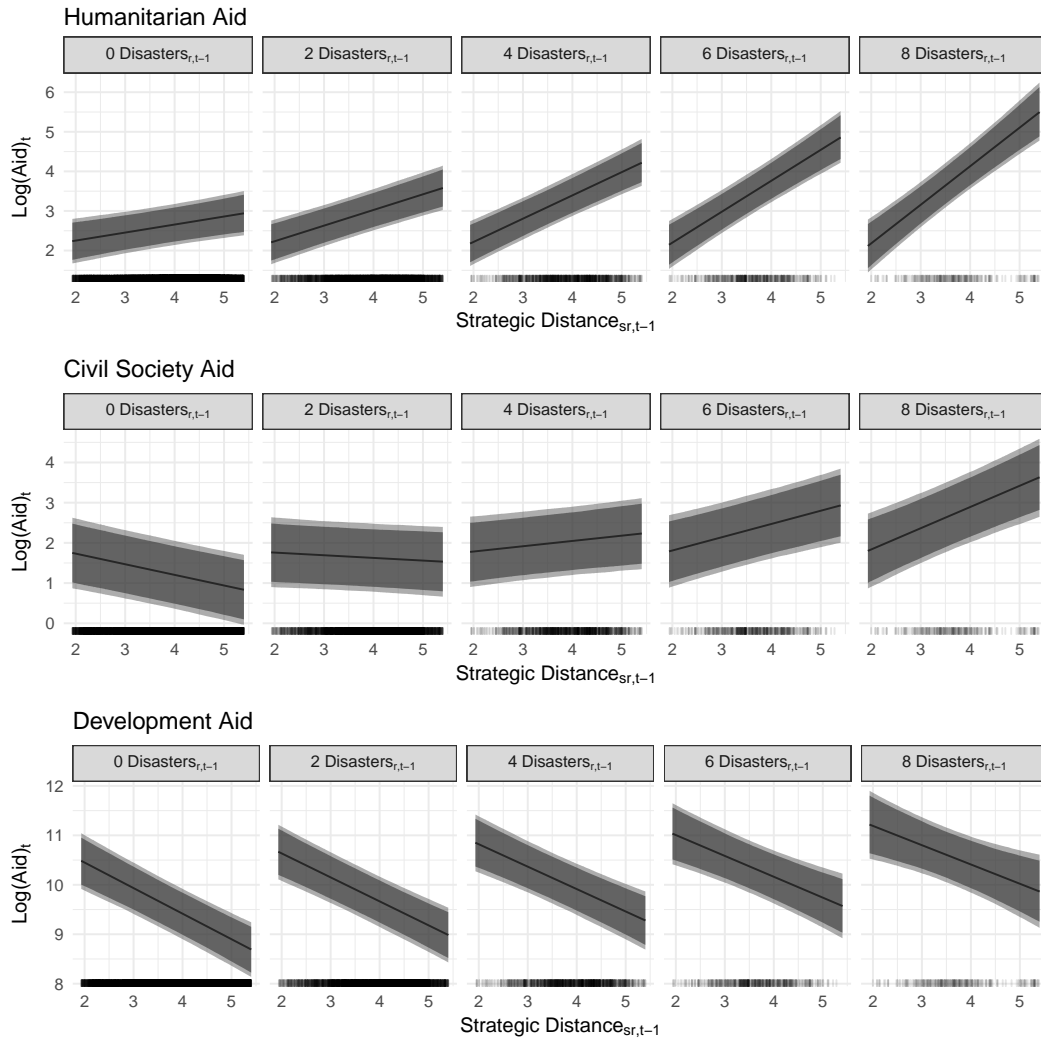



Figure 4: Simulated substantive effect plots for each dependent variable (humanitarian aid, civil society aid, and development aid) for different levels of natural disaster severity across the range of the strategic distance measure.

are more likely to give to their strategic allies in the wake of a natural disaster to further their own self-interest. This result suggests that donors do not always act in their self interest when dispensing foreign aid under some circumstances. Notably when natural disasters are particularly severe, they may have, at least in the short term, a humanizing effect on strategic adversaries. 

Meanwhile, we test H2A by examining the effect of the interaction between strategic interest and natural disasters on civil society aid. In Figure 3 we similarly find a positive and significant relationship between this interaction and civil society aid. The substantive effects plot (in the ‘Civil Society Aid’ panel in Figure 4) meanwhile also suggests that donors are more likely to target aid to civil society in their strategic adversaries the more natural disasters that country experiences, supporting H2A. These results suggest that donors may not be completely abandoning their strategic interest but are also acting to take advantage of vulnerable recipients to mold the relationship to their interests.

Finally, we test H2B by analyzing how the interaction between strategic interest and natural disasters affects development aid allocation. From, Figure 3, we can see that this coefficient is not statistically significant. Examining the substantive significance in Figure 4 (‘Development Aid’ panel) we can see that while the level of development aid does increase as the number of natural disasters increases, the slope between strategic interest and development aid is only minimally affected, suggesting little support for H2B. These results suggest that whatever humanitarian impulse donors may have felt toward their strategic adversaries (which H1B suggests exists), this effect only applies to short-term humanitarian aid and not long-term development aid.

Persistence of foreign aid allocation over time

How persistent are these changes that we observe? To answer this question, we re-estimate the original models for different lag lengths for the main interaction terms⁴⁶. These models are estimated separately for each lag length (lags of 1 through 6 years).

⁴⁶The covariates are measured using a one-year lag throughout

The coefficient plots for the interaction term of interest and its constituent terms, number of natural disasters and strategic distance are shown in Figures 5, 6, and 7 for the outcome variables humanitarian aid, civil society aid and development aid respectively across each lag value.

From Figure 5, we can see that the interaction between strategic interest and natural disasters is rather persistent. This suggests that donors are more likely to allocate humanitarian aid to their strategic adversaries for some time following a natural disaster, suggesting some staying power for the ability of natural disasters to shift donors from acting in their own strategic interests to acting in the humanitarian interest of aid recipients (supporting H1B).



Figure 5

Meanwhile, Figure 6 shows that while the interaction between strategic interest and natural disasters positively affects the allocation of civil society aid, this effect is only consistently significant for the first three years following a natural disaster (supporting

H2A). One way to interpret these results is that donors recognize the difficulty of trying to influence domestic politics through civil society aid relatively quickly and waste relatively little time in abandoning such attempts. Another interpretation is that civil society aid is actually rather effective and as such, recipients governments are likely to push back against allowing it in fairly short order. Teasing out the exact mechanism would be a fruitful area for future research.

Finally, Figure 7 extends the earlier finding that the interaction between strategic interest and natural disasters has little effect on development aid across a variety of different lags. This result further suggests that there is little support for H2B, that is natural disasters do not seem to prompt donors to care concern themselves with recipient's long-term interests.



Figure 6

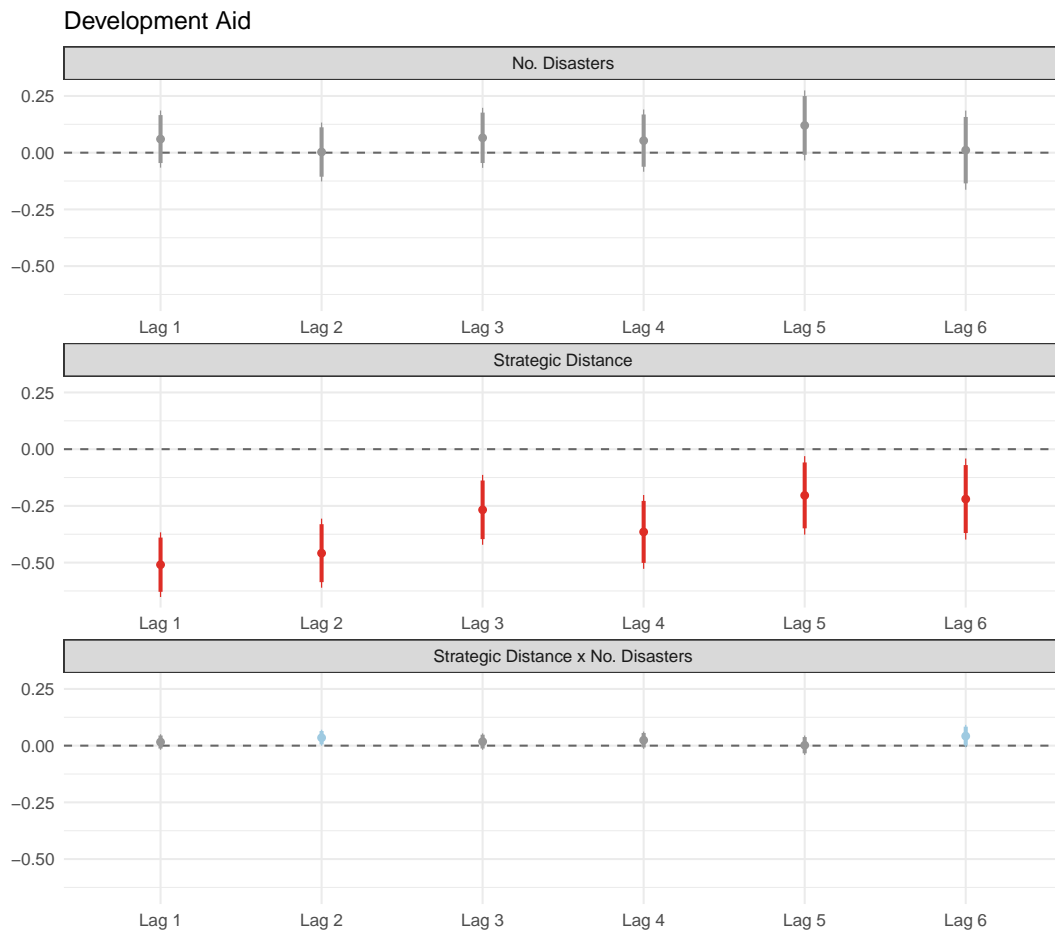


Figure 7

Conclusion

Our analysis suggests that a more nuanced understanding of the drivers of foreign aid is in order. In particular, we show that donors are not always driven by strategic interests. We find that donors are be driven to allocate humanitarian aid to strategic adversaries struck by natural disasters. We argue that one explanation for this finding is that the human suffering natural disasters induce can serve to humanize strategic adversaries, thus prompting greater aid from donors that have historically been hostile. As shown in our lag models, these findings are surprisingly persistent.

However, though natural disasters may increase short-term humanitarian aid, we find that strategic considerations still reign large when one considers the effect on the distribution of aid with longer-term targets. We find that strategic adversaries are more likely to distribute civil society aid in the more natural disasters a country experiences,

they are not more likely to distribute development aid. Because civil society aid inherently involves engagement and intervention in the domestic politics of a recipient country, an increase in civil society aid is indicative of a greater desire to increase donor influence over a recipient country, at least relative to development aid. Our analysis suggests however, that these results are rather short-term.

These results should be of particular interest as climate change continues to increase the incidence and the intensity of natural disasters. They suggest that while countries that experience natural disasters can expect humanitarian aid even from their strategic adversaries, they should also be on guard for efforts to influence domestic politics in favor of the the interests of donors who have historically been antagonistic. [Aren't they on guard for this regardless of who the donor is? More importantly, are they in a position to be on guard in situations of dire need?](#)

References

- Alesina, A., and Dollar, D. 2000. Who Gives Foreign Aid to whom and why? *Journal of economic growth*, **5**(1), 33–63.
- Bank, World. 2013. *World Development Indicators Online (WDI) database*.
- Bermeo, Sarah Blodgett. 2008. Aid Strategies of Bilateral Donors. *Unpublished Working Paper*.
- Berthélemy, Jean-Claude. 2006. Bilateral Donors? Interest Vs. Recipients? Development Motives in Aid Allocation: do all Donors Behave the same? *Review of Development Economics*, **10**(2), 179–194.
- Berthélemy, Jean-Claude, and Tichit, Ariane. 2004. Bilateral Donors' Aid Allocation Decisions? a Three-Dimensional Panel Analysis. *International Review of Economics & Finance*, **13**(3), 253–274.
- Bueno de Mesquita, Bruce. 1975. Measuring Systemic Polarity. *Journal of Conflict Resolution*, **19**(2), 187–216.
- Buthe, Tim, and Cheng, Cindy. 2013. *Private Transnational Governance of Economic Development: International Development Aid*.
- Collier, Paul, and Dollar, David. 2002. Aid Allocation and Poverty Reduction. *European Economic Review*, **46**(8), 1475–1500.
- David, Antonio C. 2011. How do International Financial Flows to Developing Countries Respond to Natural Disasters? *Global Economy Journal*, **11**(4).
- De Mesquita, Bruce Bueno, and Smith, Alastair. 2007. Foreign Aid and Policy Concessions. *Journal of Conflict Resolution*, **51**(2), 251–284.
- Dietrich, Simone. 2013. Bypass or Engage? Explaining Donor Delivery Tactics in Foreign Aid Allocation*. *International Studies Quarterly*, **57**(4), 698–712.

- Do, What Behavioral Economics Tries To. 2011. Behavioral Economics: Past, Present, Future. *Advances in behavioral economics*, 1.
- Dollar, David, and Levin, Victoria. 2006. The Increasing Selectivity of Foreign Aid, 1984-2003. *World Development*, **34**(12), 2034-2046.
- Dreher, Axel, and Fuchs, Andreas. Forthcoming. Rogue Aid? The Determinants of China's Aid Allocation. *Canadian Journal of Economics*.
- Dreher, Axel, Nunnenkamp, Peter, and Schmaljohann, Maya. 2015. The Allocation of German Aid: Self-Interest and Government Ideology. *Economics & Politics*, **27**(1), 160-184.
- Gibler, Douglas M. 2009. *International military alliances, 1648-2008*. CQ Press.
- Gitay, Habiba, Bettencourt, Sofia, Kull, Daniel, Reid, Robert, McCall, Kevin, Simpson, Alanna, Krausing, Jarl, Ambrosi, Philippe, Arnold, Margaret, Arsovski, Todor, et al. 2013. Building Resilience: Integrating Climate and Disaster Risk into Development-Lessons from World Bank Group Experience.
- Gleditsch, Nils Petter, Wallensteen, Peter, Eriksson, Mikael, Sollenberg, Margareta, and Strand, Håvard. 2002. Armed Conflict 1946-2001: A New Dataset. *Journal of peace research*, **39**(5), 615-637.
- Gurr, Ted, Marshall, Monty, and Jagers, Keith. 2010. *Polity IV Project: Political Regime Characteristics and Transitions, 1800-2009*.
- Hartberg, Martin, Proust, Aurelie, and Bailey, Michael. 2011. *From Relief to Recovery: Supporting good governance in post-earthquake Haiti*. Vol. 142. Oxfam.
- Hensel, Paul R. 2009. ICOW Colonial History Data Set, Version 1.0. *University of North Texas*. <http://www.paulhensel.org/icowcol.html>.
- Heradstveit, Daniel, and Bonham, Matthew G. 2007. What the Axis of Evil Metaphor did to Iran. *The Middle East Journal*, **61**(3), 421-440.

- Hoeffler, Anke, and Outram, Verity. 2011. Need, Merit, or Self-Interest? What Determines the Allocation of Aid? *Review of Development Economics*, **15**(2), 237–250.
- Hoff, P.D. 2005. Bilinear Mixed-Effects Models for Dyadic Data. *Journal of the American Statistical Association*, **100**(469), 286–295.
- Hoff, P.D., and Ward, M.D. 2004. Modeling Dependencies in International Relations Networks. *Political Analysis*, **12**(2), 160–175.
- Hoff, Peter D. 2007. Extending the Rank Likelihood for Semiparametric Copula Estimation. *The Annals of Applied Statistics*, 265–283.
- Hollenbach, Florian, Metternich, Nils W, Minhas, Shahryar, and Ward, Michael D. 2014. Fast & Easy Imputation of Missing Social Science Data. *arXiv preprint arXiv:1411.0647*.
- Kahneman, Daniel. 2003. Maps of Bounded Rationality: Psychology for Behavioral Economics. *The American economic review*, **93**(5), 1449–1475.
- Lancaster, Carol. 2008. *Foreign aid: Diplomacy, development, domestic politics*. University of Chicago Press.
- Leeds, Brett Ashley, and Savun, Burcu. 2007. Terminating Alliances: Why do States Abrogate Agreements? *Journal of Politics*, **69**(4), 1118–1132.
- Liska, George. 1960. *The new statecraft: foreign aid in American foreign policy*. Chicago U. of Chicago P.
- Maizels, Alfred, and Nissanke, Machiko K. 1984. Motivations for Aid to Developing Countries. *World Development*, **12**(9), 879–900.
- McKinlay, Robert D, and Little, Richard. 1977. A Foreign Policy Model of US Bilateral Aid Allocation. *World Politics*, **30**(01), 58–86.
- McKinlay, Robert D, and Little, Richard. 1978. A Foreign-Policy Model of the Distribution of British Bilateral Aid, 1960–70. *British Journal of Political Science*, **8**(03), 313–331.
- McKinlay, Robert D, and Little, Richard. 1979. The US AID Relationship: A Test of the Recipient Need and the Donor Interest Models. *Political Studies*, **27**(2), 236–250.

- Montazeri, Ali, Baradaran, Hamid, Omidvari, Sepideh, Azin, Seyed Ali, Ebadi, Mehdi, Garmaroudi, Gholamreza, Harirchi, Amir Mahmood, and Shariati, Mohammad. 2005. Psychological Distress Among Bam Earthquake Survivors in Iran: a Population-Based Study. *BMC public health*, **5**(1), 4.
- Natsios, Andrew. 1999. The Politics of Famine in North Korea.
- Neumayer, Eric. 2005. *The pattern of aid giving: the impact of good governance on development assistance*. Routledge.
- Noland, Marcus. 2004. Famine and Reform in North Korea. *Asian Economic Papers*, **3**(2), 1–40.
- Nunnenkamp, Peter, and Öhler, Hannes. 2011. Aid Allocation through Various Official and Private Channels: Need, Merit, and Self-Interest as Motives of German Donors. *World Development*, **39**(3), 308–323.
- Nunnenkamp, Peter, and Thiele, Rainer. 2006. Targeting Aid to the Needy and Deserving: Nothing but Promises? *The World Economy*, **29**(9), 1177–1201.
- Olsen, Gorm Rye, Carstensen, Nils, and Høyen, Kristian. 2003. Humanitarian Crises: what Determines the Level of Emergency Assistance? Media Coverage, Donor Interests and the Aid Business. *Disasters*, **27**(2), 109–126.
- Pevehouse, Jon, Nordstrom, Timothy, and Warnke, Kevin. 2010. The Correlates of War 2 International Governmental Organizations Data Version 2.3.
- Poast, Paul. 2010. (Mis)Using Dyadic Data to Analyze Multilateral Events. *Political Analysis*, **18**(4), 403–425.
- Schraeder, Peter J, Hook, Steven W, and Taylor, Bruce. 1998. Clarifying the Foreign Aid Puzzle. *World Politics*, **50**(2), 294–323.
- Signorino, Curtis S, and Ritter, Jeffrey M. 1999. Tau-B or Not Tau-B: Measuring the Similarity of Foreign Policy Positions. *International Studies Quarterly*, **43**(1), 115–144.

- Stone, Randall W. 2006. Buying Influence: The Political Economy of International Aid. In: *Annual meeting of the Interanational Studies Association, San Diego, CA.*
- Strezhnev, Anton, and Voeten, Erik. 2012. United Nations General Assembly Voting Data. URL: <http://hdl.handle.net/1902.1/12379>.
- Strömberg, David. 2007. Natural Disasters, Economic Development, and Humanitarian Aid. *The Journal of Economic Perspectives*, **21**(3), 199–222.
- Thiele, Rainer, Nunnenkamp, Peter, and Dreher, Axel. 2007. Do Donors Target Aid in Line with the Millennium Development Goals? A Sector Perspective of Aid Allocation. *Review of World Economics*, **143**(4), 596–630.
- Tierney, Michael J, Nielson, Daniel L, Hawkins, Darren G, Roberts, J Timmons, Findley, Michael G, Powers, Ryan M, Parks, Bradley, Wilson, Sven E, and Hicks, Robert L. 2011. More Dollars than Sense: Refining our Knowledge of Development Finance Using AidData. *World Development*, **39**(11), 1891–1906.
- Trumbull, William N, and Wall, Howard J. 1994. Estimating Aid-Allocation Criteria with Panel Data. *The Economic Journal*, 876–882.
- Weder, Beatrice, and Alesina, Alberto. 2002. Do Corrupt Governments Receive Less Foreign Aid? *American Economic Association*, **92**(4), 1126–1137.
- Wieczorek, GF, Larsen, MC, Eaton, LS, Morgan, BA, and Blair, JL. 2001. *Debris-flow and flooding hazards associated with the December 1999 storm in coastal Venezuela and strategies for mitigation*. Tech. rept.
- Yang, Dean. 2008. Coping with Disaster: The Impact of Hurricanes on International Financial Flows, 1970-2002. *The BE Journal of Economic Analysis & Policy*, **8**(1).

A Appendix

Validating our measure of strategic interest

We further conduct a series of post-estimation validation tests for our resulting strategic variable. In particular, we (1) evaluate the relationship between our political strategic interest variable against S scores and Kendall's τ_b for alliances and (2) investigate how our measure of strategic interest describe well-known dyadic relationships.

First, we perform a simple bivariate OLS with and with year fixed effects to evaluate how our measures compare to S scores and Kendall's τ_b .⁴⁷ Note in order to make our strategic measures somewhat interpretable, for the validation we scale our strategic measures to be between 0 and 1 just as S scores and Kendall τ_b is scaled. The results are shown in Table 1.

Table 1: Validation of Political Strategic Interest Variable against S scores and Kendall's τ_b

	Unweighted S Scores	Unweighted S Scores	Weighted S Scores	Weighted S Scores	Tau-B	Tau-B
(Intercept)	0.97*** (0.00)	1.03*** (0.00)	1.01*** (0.00)	1.02*** (0.00)	0.29*** (0.00)	0.25*** (0.00)
Strategic Interest	-0.80*** (0.00)	-0.84*** (0.00)	-1.22*** (0.00)	-1.26*** (0.00)	-0.89*** (0.00)	-0.87*** (0.00)
Year FE?	No	Yes	No	Yes	No	Yes

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

In brief, we find that our political strategic measure performs well against S scores and Kendall's τ_b for alliances with and without fixed effects. Note that because the PCA is of latent distances between any two dyads, dyads that are closer in space will have smaller values and therefore represent a stronger strategic relationship. Therefore the negative relationship we find between the political strategic measure and S scores and τ_b are interpreted to mean the greater the foreign policy similarity as measured by the S score or Kendall's τ_b , the smaller the latent distance or the greater the political strategic relationship between a dyad.

⁴⁷Note for comparison that the bivariate relationship of S scores on Kendall's τ_b is statistically significant with a coefficient of 0.62 while the bivariate relationship of Kendall's τ_b on S Scores is statistically significant with a coefficient of 0.31.

A.1 Analyses for models without interaction terms

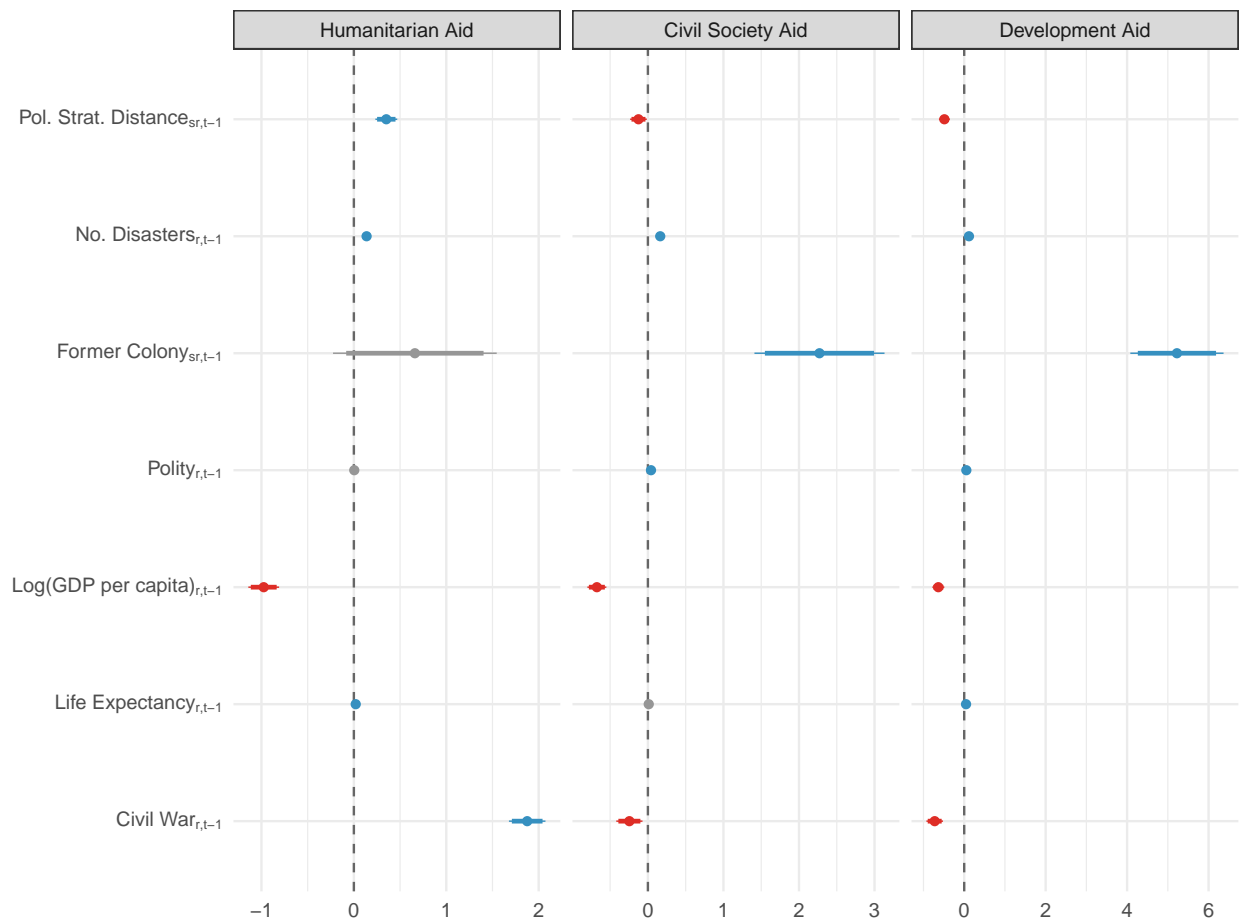


Figure 8: Coefficient plots for the analyses without interaction terms for each dependent variable, humanitarian aid, civil society aid and development aid. Coefficients that are significant at the 5% level are shaded in blue if the coefficient is positive and red if the coefficient is negative. Coefficients that are not significant at the 5% level are shaded in gray.