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Determinants of International Emergency Aid

Humanitarian Need Only?

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Abstract

The authors use an original data set covering more than 400 recent natural disasters to analyze the determinants of international emergency aid. Although humanitarian need is a major determinant of emergency relief payments, the results imply that political and strategic factors play a crucial role in the emergency aid allocation. On average, donor governments favor smaller, geographically closer, and oil exporting countries, and display significant biases in favor of politically less aligned countries as well as toward their former colonies. The authors also test and reject the independence of donors' aid decisions, finding strong evidence for bandwagon effects in humanitarian assistance.

This paper—a product of the Social Protection Division, East Asia Human Development Department—is part of a larger effort in the department to understand aid response to natural disasters. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at sredaelli@worldbank.org.

Determinants of International Emergency Aid – Humanitarian Need Only?*

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1. Introduction

The magnitude and impact of recent disasters like Hurricane Katrina and the December 2004 Tsunami have brought natural emergencies into the international spotlight. Rapid population growth, urbanization, environmental degradation and climate variability have increased the vulnerability to, and impact of, natural hazards, especially in less developed countries (Abramovitz, 2001). As a result, natural disasters have caused an average loss of 63,500 human lives annually, and affected more than 212 million people per year in the period from 1990 and 2005.[1]

Despite several initiatives towards disaster prevention[2], humanitarian relief remains the principal channel of support for countries hit by natural disasters. With a growing range of issues falling into the humanitarian agenda, and rising attention from national governments, total bilateral emergency aid has increased from US$ 3.2 billion to US$ 8.5 billion between 1995 and 2005 (OECD, 2007). The increasing importance of emergency aid is also apparent in the size of emergency aid relative to total official development assistance (ODA), which has shifted from 5% in 1989 to 10.5% in 2000 (Macrae, 2002).

From a theoretical perspective, the objectives and criteria of humanitarian aid are well defined. The United Nations General Assembly resolution 46/182 states that emergency assistance shall "..be provided in accordance with the principles of humanity, neutrality, impartiality and independence" (United Nations RES/46/182, 1991, page 1).

Humanitarian assistance is designed to alleviate human suffering in emergency situations, independent of race, citizenship and other political considerations. Despite these principles, concerns regarding the allocation of emergency aid have mounted over the last years, and international aid policies increasingly been exposed to criticism from both private aid organizations and the popular press (Darcy and Hofmann, 2003; IFRC, 2003; Olsen et al., 2003; Walker et al., 2005). In particular, humanitarian agencies engaged in relief operations have denounced the existence of "forgotten" or "silent" emergencies receiving little or no help from the international community, while other emergencies receive disproportionate amounts. With emergency aid determining not only the immediate fate of affected populations, but likely also affecting the medium to long run development of countries, these concerns are serious, and demand a closer analysis of international humanitarian aid.

In this paper, we provide the first large scale analysis of emergency aid. Using a sample of more than 400 calamities occurring worldwide over the last 15 years, we analyze how the international community responds to humanitarian crises triggered by natural disasters, and evaluate the degree to which international aid flows reflect the humanitarian principles they are officially based upon. Narrowing the scope of our analysis to rapid onset natural emergencies[3], we take advantage of natural disasters as exogenous shocks allowing us to clearly distinguish humanitarian from politically or strategically based motivations. Once we control for disaster impact as measured by the number of people killed and affected, it becomes straightforward to test whether political and strategic factors affect the allocation of emergency aid. Since disaster related needs may depend on country specific conditions, we allow for a large set of socioeconomic factors in all of our empirical specifications. Our empirical work is divided into three parts. In the first part, we pool all donors to assess the average performance of donor governments. We find that a one standard deviation increase in the number of people affected increases the likelihood of receiving aid by 10 to 13 percentage points, while a one standard deviation increase in the number of people killed by a calamity increases the likelihood to receive aid by about 25 percentage points. Our results indicate that bilateral and strategic factors play a crucial role in the allocation of emergency aid. On average, donor governments provide significantly more aid to oil exporting countries, and give disproportionately more to geographically closer and politically less affine countries, as well as to their former colonies.

In a second step, we take a closer look at the five most active donors in emergency aid, namely the US, Japan, Germany, the UK and Norway, and compare the aid patterns of these donors to private, non-governmental aid flows. We find that the factors driving the participation decision (selection) and the actual amounts of aid provided (allocation) vary substantially across donors. The US and the UK provide significantly more aid to oil exporting countries, a bias that cannot be detected in private emergency aid flows. Germany displays a significant "home bias", preferring closer emergencies to more distant ones. All of the five major donors except Japan seem to be more generous towards countries less politically aligned in their recent UN voting history, suggesting that emergency aid is used by donors for bridging the gap to countries with diverging foreign policy objectives.

As a last step, we use our data set to analyze the degree of strategic interaction among donors. Instrumenting other donors' aid responses with bilateral distance variables, we find strong evidence of bandwagon effects in the international allocation of emergency aid. On average, the likelihood to provide aid after a natural emergency increases by 15-30 percentage points when any other major donor participates in the aid process. The work presented in this paper naturally complements and builds on the existing literature on the allocation of development aid. Starting with the pioneering works by McKinlay and Little (1977), a large number of studies have attempted to separate recipient needs (RN) from donors interests (DI) in the allocation of development aid. Alesina and Dollar (2000) find strong evidence for strategic biases towards former colonies and political allies, while Neumayer (2003) finds civil and political rights to be a major factor in aid allocation. Neumayer (2003a) analyzes the aid allocation of development banks and United Nations agencies and finds that most regional development banks focus exclusively on economic need of the recipient, while UN agencies also take human development aspects into account. Berthélemy and Tichit (2004) use a three-dimensional panel to test and reject the equality of aid criteria across donors, and stress the increasing importance of trade connections in the allocation of aid. Tarp et al. (1999) and Berthélemy and Tichit (2004) also estimate interactions among donors using total (per capita) commitments provided by other bilateral donors in their empirical specifications. While the first study points towards aid coordination among donors, Berthélemy and

Tichit (2004) find that these results are not very robust to model specification[4]. Round and Odedokun (2004) measure "peer pressure" as the total aid effort of all other donors as a fraction of their total GDP, and find peer pressure to have a positive and significant impact on the aid given by each donor.

Closely related to this paper is also recent work by Eisensee and Strömberg (2007) on US disaster relief payments. The authors show that disaster types differ in terms of their news coverage or "newsworthiness", and highlight the significant and large effects of this media channel on the disaster aid allocation by US government agencies.

The rest of the paper is structured as follows. In section two, we briefly discuss the role and size of emergency aid in the domain of international aid. We present the data in section three, our main empirical results in section four, and conclude with a short discussion and a summary.

2 Emergency Aid vs. Development Assistance

International aid is broadly divided into two categories: Official Development Assistance (ODA) and Humanitarian Assistance, commonly referred to as emergency aid. ODA consists of financial flows to developing countries aimed at the promotion of their economic development and welfare. To qualify for receiving this kind of assistance - which is by definition concessional and has a grant element of at least 25% - countries have to be classified as potential recipients by the Development Assistance Committee (DAC).[5] The main objective of ODA is the elimination of poverty and its principal causes, which implies considerable involvement of recipient countries in the negotiation and implementation of intermediate to long term programs. Humanitarian assistance, on the other hand, is meant to provide rapid assistance and distress relief to populations temporarily needing support after natural disasters, technological catastrophes or conflicts, generally classified as "complex emergencies"[6]. Historically, humanitarian assistance has been considered a distinct form of aid mostly due to its ethic foundations in humanitarian law. The principles governing humanitarian assistance were to be reflected in the fact that donor governments perceive emergency aid as politically unconditional, while development assistance has always been conditional. Humanitarian aid does not target nations or states and their development, but individuals, independent of race, country or citizenship.

In practice, the distinction between humanitarian and development aid is not always straightforward. Frequently, emergencies like civil wars or droughts spread over months, if not years; it is not clear, how medical facilities established during these kinds of events can be distinguished from generic investment into health infrastructure typically part of ODA programs. In the case of natural disasters, this distinction is generally less of an issue. As we will show in the following section, the vast majority of natural disasters are classified as "rapid onset", i.e. emergencies triggered by short lived causal phenomena requiring immediate and only temporary assistance. The short time horizon in which aid has to be delivered limits the room for negotiations between recipient and donor countries, and requires a serious (humanitarian) commitment of donors, who are generally also directly responsible for the coordination of the aid interventions.

3 The Data

3.1 Data Sources

The main source of emergency data is the Emergency-Events Database (EM-DAT) maintained by the Centre for Research on the Epidemiology of Disasters (CRED)[7]. The EM-DAT database covers over 15,900 natural and technological disasters since the beginning of the twentieth century. A disaster is defined as "a situation or event which overwhelms local capacity, necessitating a request to the national or international level for external assistance, or is recognized as such by a multilateral agency or by at least two sources, such as national, regional or international assistance groups and the media".[8] The entry criterion for an event to be classified as natural disaster is to either have caused at least 10 fatalities, affected at least 100 people, to have triggered a declaration of state of emergency, to have led to an appeal for international assistance, or a combination of any of the above criteria. EM-DAT draws from a variety of public sources, including reports by governments, insurance companies, press and aid agencies. In 2003, about 27.9% of the data came from various US Government disaster agencies, 27% from insurance companies, 20% from UN organizations, 13.1% from press agencies, and the remaining 7% from various humanitarian organizations (Guha-Sapir et al., 2004). The EM-DAT database contains information on the severity of each disaster in terms of the total number of people killed (persons confirmed dead or missing and presumed dead) and affected (people requiring immediate assistance during the emergency period, including displaced or evacuated people).[9] From the EM-DAT we also get information on disaster type, country of occurrence and the timing of each emergency, which we use to merge disaster characteristics with funding records. The funding data we use in this paper, together with donors breakdown, come from the UN’s Office for the Coordination of Humanitarian Affairs (OCHA) Financial Tracking System (FTS)[10]. FTS data on natural disaster funding start in 1992 and include governments’, together with private, NGOs’ and international agencies’ responses to Consolidated Appeals.[11] These data are quite different from the ones in the OECD’s DAC system commonly used in the ODA literature.

Humanitarian aid as defined in the DAC reporting scheme ("emergency and distress relief") contains "sudden natural or man made disasters, including war or severe civil unrest, food scarcity conditions arising from crop failure owing to drought, pest and diseases, as well as support for disaster preparedness" (OECD, 2007). The DAC data on emergency aid does thus not only contain large amounts of complex emergency aid as discussed in the previous section, but also expenses made for disaster prevention and refugee support. Using the FTS data has three main advantages: first, while the DAC system provides only annual totals for each donor-recipient pair, FTS records aid provided for each appeal separately, hence allowing to link directly aid flows to each individual disaster. Second, as opposed to the DAC system which primarily focuses on OECD donors, the FTS tracks aid flows of multilateral and private donors, providing an interesting alternative dimension to be explored in our empirical section. Third, FTS is not restricted to developing countries, so that the recipient pool covers a much broader spectrum of socioeconomic backgrounds. One potentially important shortcoming of FTS data is that donors' reporting to the OCHA system is on a voluntary basis. To evaluate the magnitude of potential under-reporting, we compare the FTS data used in this paper with DAC data in Figure 1 below. While the DAC numbers are significantly higher than the numbers from the FTS on aggregate, differences are only minor once we exclude complex emergencies.[12]

[Figure 1: FTS and DAC Data on Emergency Aid]

We complete the data set with socioeconomic information on recipient countries from the World Development Indicators (World Bank, 2006) and distance data from Gleditsch and Ward (2001). As proxy for the political ties between donors and recipient countries, we use the Gartzke index of similarity in states' voting patterns in the United Nations General Assembly (Gartzke, 2002). Complete summary statistics and a detailed description of the variables used are provided in Table A.1 in the Appendix.

3.2 Data Description

Total aid granted by the international community for the 491 emergencies in our sample amounts to US$ 3.06 billion dollars[13]. Total aid includes bilateral and multilateral aid, as well as donations from private sources. In Figure 2, we show a break down of total aid by state or institution, and rank donors in terms of the total amount granted and in terms of the number of emergencies assisted. The USA is the leading donor both in terms of the number of interventions and total aid provided, whereas the UK is second in terms of total aid provided, and Japan is second in terms of the percentage of emergencies assisted.

[Figure 2: Major Donor Countries and Institutions]

As shown in Tables 1a and 1b, the degree of coordination within the international community is rather small. The correlation of aid interventions is strictly below 0.5 (Table 1a) whereas the correlation of the actual amount given (Table 1b) ranges from 0.59 between Germany and Japan to only 0.18 between Norway and the United States. In Figure 3, we summarize total contributions by donor and year. Total contributions vary significantly across years, and do not show a clear time trend for any donor. The aggregate data show little evidence of fixed annual budgets, and the correlation between total expenditure per country and the number of calamities appears fairly low. Another important source of variation in our data set is the geographic distribution of disasters. On aggregate, Asia has the largest number of disasters, with South and South-East Asian countries accounting for 73% of disasters over the entire period. Of the 111 recipient countries in our sample, Indonesia is the most exposed one, with 25 natural disasters, followed by India (18), and the Philippines (16). Floods are the most frequent natural disaster type, representing 49% of the sample, followed by wind storms (21%) and earthquakes (15%).

[Table 1a: Correlation of Aid Interventions Among Major Donors]
[Table 1b: Correlation of Aid Amounts Among Major Donors]
[Figure 3: Total Emergency Aid by Year and Donor]
[Table 2: Impact by Disaster Type]

Strong differences in terms of human impact, measured by the number of people killed and affected[14], are also visible across disaster types. Natural emergencies can be broadly classified into rapid onset emergencies lasting only for short periods of time such as earthquakes or floods, and slow onset emergencies, such as droughts or epidemics, which affect populations for longer time periods, in some cases even years. As shown in Table 2, rapid onset emergencies are on average associated with a higher death toll, whereas slow onset disasters tend to affect larger shares of the population.

4 Empirical Strategy

The main goal of our analysis is to determine the factors driving donors' interventions, and to clearly distinguish the relative importance of disaster impact and aid need from factors reflecting donors' strategic and political considerations. As shown in the previous section, the US as the most "active" donor country provides aid for about half of the emergencies in our sample, and participation probabilities are significantly lower for all other donors. The median number of donors for each emergency is five, with one quarter of all emergencies being assisted by no more than three donors. Given the low average participation rates, we dedicate the first part of our analysis to estimating the initial selection equation only, and then jointly estimate selection and allocation in a second step.

We structure our empirical analysis into three parts. In the first part, we exploit our data set's multidimensionality by taking emergency-donor pairs as unit of analysis in a panel setup similar to previous work on ODA by Berthélemy and Tichit (2004). This approach allows us to estimate the importance of each of our explanatory variables for the average donor in our sample under the assumption that the factors driving aid decisions are the same across donors.

In the second part of our analysis, we loosen this restriction, and allow bilateral effects to differ across donors by switching our analysis to the individual donor level. We focus on the five major donors and separately estimate both selection (Probit model) and allocation (Tobit model) equations. In the last part of our empirical section, we allow for interactions between donors and test the degree to which each donor's participation probability depends on other donors' actions. To deal with the endogeneity concerns arising in the estimation of strategic interaction effects, we use bilateral controls to instrument for other donors' participation decision.

The set of explanatory variables used in our empirical analysis can be divided into five broad categories: measures of disaster impact (*DI*) measures of socioeconomic background (*SE*) policy performance variables (*PP*) measures of bilateral relations between donor and recipient (*BR*) and other additional controls (*OC*).

4.1 Disaster Impact Measures

Our main measures for humanitarian need and disaster impact are the number of people affected and the number of people killed in each emergency. In the EM-DAT system, a person is registered as killed if confirmed dead, missing or presumed dead. A person is counted as affected if she requires immediate assistance during the emergency period, which includes displaced or evacuated people. One potential empirical concern regards the exogeneity of humanitarian impact.

If international support was quickly and effectively disbursed, it could reduce emergencies' human impact, and thus induce a downward bias to our estimates. To minimize this problem, we restrict our sample to rapid onset emergencies (449 observations). Rapid onset emergencies usually last less than one day, so that the direct effect of aid on our disaster impact variables should be negligible. Finally, to control for potential differences in the measurement of impact, we use disaster type dummies (flood, windstorm, fire etc.) in all of our specifications.

4.2 Socioeconomic Background

The socioeconomic indicators included are GDP per capita, population (in logs), and population density. While higher per capita income reduces the risk to be affected by natural disasters ex-ante, it is likely to be the most important measure for the degree to which exposed countries can cope with the damage inflicted by natural disasters[15]. In general, as highlighted by the UNDP's report (United Nations, 2004), low levels of development of an economy can amplify the risk that a natural event translates into a disaster, as well as the extent of the severity of the losses incurred.

Larger countries are ex-ante more likely to have disasters, but should generally also be more able to deal with a shock of a given size. More densely populated areas may be prone to suffer more in the aftermath of natural disasters' as evacuation possibilities can be limited and the risk of infectious diseases may be higher. On the other hand, densely populated areas may have better local networks and thus be able to recover more easily after natural hazards.

4.3 Policy Performance Variables

To account for structural differences in recipients' ability to cope with natural disasters, we include a set of basic policy variables in our empirical specifications. Poor policy settings may increase local's population need for foreign assistance, but at the same time lower the effectiveness of financial flows and thus the potential to help from a foreign perspective.

The main policy performance indicators we use in our analysis are the Freedom House Index (Freedom House, 2007), trade openness (imports plus exports over GDP) and ethnic fractionalization (Fearon and Laitin, 2003). The Freedom House Index assigns an annual score for civil and political freedom on a scale from 1 (most free) to 7 (least free) to each country. We add both scores to get an overall democracy index.[16] High Freedom House scores are generally associated with "good" institutions such as property rights, individual liberties, free information flows and low corruption. Such institutions may increase the potential of affected countries to deal with disasters themselves, but may also facilitate and encourage the provision of foreign emergency aid.

Higher fractionalization is generally associated with higher risk of internal conflicts, lower provision of public goods and higher inequality levels (Easterly and Levine, 1997; Garcia-Montalvo and Reynal-Querol, 2005). Fractionalization likely decreases the population's capacity to deal with external shocks especially in the case of minority groups, but also limits the degree to which foreign aid can reach its targets. We also control for trade openness in our specifications, since open countries are generally more integrated into the international financial markets, and should thus be more able to smooth negative shocks relative to less open countries. On the other hand, open economies may have the better infrastructure for foreign aid transfers, making emergency aid particularly efficient in open economies.

4.4 Bilateral Relations and Strategic Factors

We define bilateral relations as broadly as possible to test the degree to which economic, historical and political ties shape the allocation of aid after natural disasters. The two most frequently used bilateral measures are distance and prior colonial status. The geographical distance variable we use measures the distance between the capital of the donor and the capital of the recipient (Gleditsch and Ward, 2001). Although distance is commonly used as a proxy for bilateral trade, distance may also capture the relative cost of providing help, especially if aid is provided in kind as it is often the case after natural disasters. We also add a control for oil exporting countries to capture the potential strategic relevance of recipients, and Gartzke's affinity index measuring bilateral political alignment as the correlation of historical voting patterns in the United Nations General Assembly (Gartzke, 2002).

A value of 1 of this index implies that the donor and the recipient always voted the same way, while a value of -1 implies that the two countries never agreed. Both of these measures are intended to capture donors' strategic and political objectives in the aid process.

4.5 Other Controls

To control for the total number of disasters in a given year and other exogenous shocks to donor's budget constraints, we include year fixed effects in all of our specifications. In the panel regressions, we also allow for donor fixed effects to control for differences in the average likelihoods of giving.

To limit concerns regarding potential feedback effects from aid to the explanatory variables, we use one year lags of all time-varying recipient specific and bilateral variables in all of our empirical specifications.

5 Empirical Results

5.1 Part I: Panel Estimation

Given that emergency aid is by definition left censored at zero the equation to be estimated can be stated as

$$aid_{ij} = \max(0, x_{ij}\beta + u_{ij}),$$

Where aid_{ij} s the amount of aid donor i provides for disaster j. x is the vector of explanatory variables and $u_{ij} \sim N(0,\sigma)$. Building on the independent variable groupings discussed in the previous section, we can state the model to be estimated as

$$aid_{ij} = \max(0, \alpha + \beta DI_j + \delta SE_j + \lambda PP_j + \vartheta BI_{ij} + \gamma\Gamma_j + u_{ij})$$
$$i = 1, \ldots, 20$$
$$j = 1, \ldots, 449$$

where i refers to the donor[17] and j to the emergency. DI are the disaster impact measures, and SE and PP are the socioeconomic and policy performance indicators of the country affected by disaster, BI is our vector of donor-recipient bilateral controls, and Γ is a vector containing donor, year, disaster type and regional fixed effects.

We start our analysis with the participation (selection) equation. Empirically, this involves estimating a binary response model, where the dependent variable is the probability that donor i provides positive amounts of aid $give_{ij} = 1$ in response to disaster j, which can be stated as

$$p(x) \equiv P(give = 1 \mid x) = P(x_{ij}\beta + u_{ij} > 0 \mid x).$$

Having estimated the initial selection process, we estimate the actual amounts of aid given in a Tobit model in a second step. While the Tobit estimates are likely to suffer from measurement error in the recorded aid amounts, estimating the aid allocation allows us to determine the actual magnitude of the detected effects under the assumption that the factors driving the probability of giving are identical to the factors driving the actual amount given (Wooldridge, 2002) [18].

The results from the Probit estimation of the selection equation are summarized in Table 3 below. In the first specification (Column1), we pool all donors and include year, regional and disaster type dummies only. In the second column, we add donor fixed effects, which appear highly significant, reflecting the pronounced differences in participation frequencies.[19]

Estimating the Probit model in the pooled sample corresponds to treating the full data set as cross-section, thus assuming independence across observations, i.e. that there is no correlation between donors' actions for a given emergency. As this assumption is likely violated in the presence of unobservable disaster specific effects, the estimates from the pooled Probit are consistent but not efficient.

To deal with this problem we fit a Random Effect Probit Model (column 3). The RE Probit model allows to control for unobservable omitted factors specific to each emergency. Disaster specific unobservable effects may include media coverage, physical damage and similar unobservable shocks. The key underlying assumption for the RE estimator to be consistent is the independence of the unobservable effects from the full set of regressors, an assumption which is not necessarily satisfied in our framework[20]. To deal with potential correlations of unobservable effects with the included covariates we apply a conditional Logit model in columns 4 of the table. The functional assumptions underlying the conditional maximum likelihood Logit model allow consistent estimation independent of the distribution of unobserved effects (Wooldridge, 2002).The results are highly consistent with the random effect model, implying that the correlation between unobservable effects and our main covariates seems to be of rather minor importance. As further robustness check, we also estimate a conditional Logit model with emergency specific fixed effects. This specification allows us to perfectly control for emergency specific unobservables, but restricts the estimates to bilateral factors and to those disasters where at least one donor provides aid and at least one donor does not. Since the incidental parameter problem may potentially bias the maximum likelihood Probit estimates, we also estimate the same set of models with ordinary least squares model - the results of the OLS estimation are shown in Appendix A.3 and are nearly identical to the maximum likelihood estimates.

Overall, the results emerging from the panel analysis are highly consistent across estimators and specifications. As expected, both the number of people affected and the number of people killed have a positive and highly significant effect on the aid decision. A one standard deviation increase in the number of people affected (22.9 Million people, 2.6 in logs) increases the likelihood of receiving aid by 10-13 percentage points[21]. The effect of the number of people killed is about twice as large: a one standard deviation increase in the number of people killed (3054 people in levels, 1.9 in logs) increases the likelihood to receive emergency aid by around 20 percentage points.

While density does not seem to play a major role in the aid decision, population size and GDP per capita show the expected negative sign. Larger and richer countries can cope with natural disasters more easily, and are thus less dependent on foreign assistance. In line with our mostly ambiguous priors, none of the policy variables appears to have a significant effect on the final aid allocation.

Most remarkable are the estimated coefficients on geographical distance, oil, former colony status and political affinity. Our point estimates imply that each 1000 km of distance between donor and recipient reduces the likelihood to receive aid by 1-2 percentage points, a magnitude likely too big to be explained by purely logistical issues. Also, former colonies and oil exporters appear to get significant preferential treatment in the international aid process; on average, being an oil exporter increases the likelihood to receive aid by 10-15 percentage points, while former colonies are 25-30 percentage points more likely to receive aid after natural disasters.

As opposed to previous results in the ODA literature (Alesina and Dollar, 2000), we find that donors are more likely to provide emergency aid to countries traditionally not aligned in their voting patterns. For the average donor, a one standard deviation decrease in the affinity index (0.25) increases the average likelihood to receive aid by 10-12 percentage points. Donors seem to use emergency aid to improve weak diplomatic relations rather than to reward countries with traditionally aligned political interests. If the acquisition of international consensus is on donors' political agenda, emergency aid may well be a more visible, cheaper and more flexible tool to reach such a consensus than traditional development assistance. Emergency donations are significantly smaller in size than typical ODA transfers, and are typically delivered directly by donors' officials providing increased visibility to the donor. The behavior of the US and Australia in the aftermath of the December 2004 Tsunami towards Indonesia is a good example of such behavior. Indonesia traditionally appears as not aligned to the US voting patterns in the UN General Assembly, with a deteriorating trend in affinity since the 1999 crisis in East Timor strongly condemned by the Clinton administration. Similarly, diplomatic relations with Australia have been very complicated in recent years. Despite this, both Australia and the US provided particularly generous support to Indonesia in the aftermath of the Tsunami. A related statement by the US Secretary of State Colin Powell nicely illustrates the underlying logic: "We'd be doing this regardless of religion, [...] but I think it does give the Muslim world an opportunity to see American generosity, American value in action [...] And I hope that, as a result of our helicopter pilots being seen by the citizens of Indonesia helping them, that value system of ours will be reinforced" (The Economist, 2005).

[Table 3: Panel: Probit Analysis]

Table 4 below shows the results for the Tobit estimates. The results are nearly identical with respect to sign and significance of the explanatory variables. A 10 percent increase in the number of agents killed increases the total amount of aid received by about 25 percent, while a 10 percent increase in population has exactly the opposite effect. More importantly, the Tobit estimates strongly underline the relative importance of bilateral factors. Every 1000 kilometers of distance between capitals decreases aid by around 50%. The effects of affinity and colonial origin are even larger. A one standard deviation in affinity (0.25) increases aid by a factor or 50, and the effect of being a former colony is still larger. Even when the marginal effects are calculated conditional on the non-censored range, these effects remain surprisingly large; conditional on non-censored outcomes, the marginal effects of affinity and colonial status are -3.9 and 1.79

respectively, which implies that a one standard deviation decrease in affinity raises aid by about 200 percent, while being a former colony implies aid flows about five times as big as observed for comparable disasters.

[Table 4 : Panel: Tobit Analysis]

5.2 Part II: Individual Donor Analysis

In the previous section, we implicitly assumed that the factors driving bilateral aid decisions were the same across donors. In this section, we determine the factors driving aid for each donor separately, and directly test the restrictions imposed in the panel analysis presented before. For expositional convenience, we limit our analysis to the five major donors in our sample - the US, Japan, Germany, the UK and Norway, which alone represent more than the 40% of total humanitarian aid - and confront their aid patterns to those of private donors. With scarce disaggregate data on private donations, total non-governmental donations is the only proxy for "private" donations generally available in the FTS data. While this variable is a useful benchmark for the country specific results, its aggregate nature makes the interpretation of the estimated coefficients rather difficult.

Table 5 below reports the coefficients for the Probit models estimated for each donor and, in the last column, the Wald test for the equality of coefficients across them. All donors are more likely to intervene in emergencies characterized by a higher death toll and a larger number of people affected, although these effects are only partially significant for Japan and private donors.

With respect to our socioeconomic controls, all donors are more likely to intervene in favor of less populated potential recipients, even though this effect is not significantly different from zero for the US. This effect is similar to what is found in the aid literature (Berthélemy and Tichit, 2004), and, as discussed in the previous section likely reflects donors' evaluations of the recipient's capacity to deal with the disaster.[22] While Japan seems marginally more likely to provide aid to more densely populated countries, the opposite is true for Norway. Only private donors and the UK are more likely to help poorer countries. The positive and highly significant coefficient on the oil indicator found in the panel regression applies only to the US the UK and Norway, who are 24, 35 and 39 percentage points more likely to help oil exporting than other countries, respectively.

Among the five major donors analyzed, Norway is the one showing the highest responsiveness to policy performance indicators. In particular, one standard deviation change in trade openness, as measured by total trade value over GDP, reduces Norway's likelihood to provide aid by 14 percentage points. The same negative response is displayed by private donors (16% decrease). Norway also appears to be hesitant to donate to ethnically fractionalized countries.

Moving from the least to the most ethnically fractionalized background reduces the likelihood to receive aid from Norway's by a remarkable 38 percentage points[23].

[Table 5: Individual Donors: Probit Analysis]

As to the Gastil index, the US is more likely to help more free and democratic countries whereas for Norway the opposite holds. In particular a 3 point increase in the freedom index (i.e. if the recipient is three points less "free") decreases the US giving probability by 10%, while increases Norway's one by 14 percentage points. Similarly diverging patterns emerge from donors' response to (bilateral) geographical distance. Germany is 66 percentage points more likely to give to the closest recipient with respect to the most remote one, whereas the US are 70 percentage points more likely to give to the most distant as compared to the least distant recipient. However, the interpretation of these coefficients is to be taken with caution as all the specifications contain region fixed effects. On the other hand, all donors are more likely to give to less aligned countries, confirming previous results from the panel analysis. The test for equal coefficients among donors cannot be rejected.

In Figure 4 we plot the predicted probability of each donor's giving against the respective values for the bilateral affinity index[24]. The variation in bilateral affinity index varies considerably between donors. When computing differences in fully standardized coefficients, it turns out that one standard deviation increase in affinity index lowers the probability of providing aid by 0.15 standard deviations for the US and by 0.36 standard deviations for Norway.

[Figure 4: Donors' Responsiveness and Bilateral Affinity]

Last, formal colonial ties increase the UK's intervention probability by 29 percentage points. The patterns emerging from the aid allocation (Tobit) estimation are nearly identical as shown in Table 6 below. All donors respond strongly to the humanitarian need generated by emergencies, even though the estimated coefficients on the death toll vary significantly across donors. As discussed before in the panel regressions, the magnitude of bilateral considerations is considerable.

[Table 6: Individual Donors: Tobit Analysis]

5.3 Part III: Strategic Interaction

The last question we address in this paper is the interaction between donors in the international aid process. The literature on ODA allocation has treated other donors' actions as exogenous, finding mixed results on the direction of such interactions (Tarp et. al., 1999, Berthélemy and Tichit, 2004, Round and Odedokun, 2004). While it is conceivable that governments may be exposed to international "peer pressure" or may want to profit from economies of scale in the provision of aid, donor governments may also view other donors' donations as substitutes for their own aid and thus reduce their contributions with increasing aid from others.

[Figure 5: Donor Participation Patterns]

In our analysis we focus on the interactions between the most active donors analyzed in the previous section: the US, Japan, Germany, the UK and Norway. These five donors are not only the most active ones, but also fairly good predictors of the international aid response as summarized in Figure 5. The average number of other OECD donors responding to each emergency increases from 0.47 when none of the major donors intervenes to 7.07 when all of them respond. The main advantage of focusing only on the five principal donors is that we can build on the results presented in the previous section and use the bilateral variables relevant for each individual donor as instruments in a Two-Stage Least Squares (2SLS) setup.

The results of the 2SLS estimation are summarized in Table 7 below. In addition to the full set of covariates used in the previous section, we now include the number of other main donors providing aid for a given emergency, which we instrument with bilateral distance in the first stage regressions. We test the validity of our instruments with the Sargan/Hansen overidentification test; p-values between 0.14 (Germany) and 0.98 (UK) imply that the null of instrument validity cannot be rejected. Given the large set of controls included in our specification, the predictive power of our instruments is limited. As shown at the bottom of Table 7, the Cragg-Donald F-statistics ranges between 4.56 (Germany) and 7.21 (US); as a result, our estimates are likely to display some of the upward bias expected for basic OLS estimates in our setup. A Cragg-Donald statistic of 6.4 implies a maximum relative IV bias of 20 percent in our setup (Stock and Yogo, 2005). Even though this implies that our point estimates are likely to be upward biased at the margin, our results provide evidence for positive and highly significant interaction among donors. Our point estimates imply that the likelihood to provide aid for a given disaster increases between 19.2 (US) and 33.6 (Germany) percentage points with each other major donor committing to provide help for a given disaster.

[Table 7: Donor Interaction. IV Estimates]

6 Summary and Conclusions

In this paper we have used a sample of more than 400 recent natural disasters to systematically evaluate the degree to which humanitarian need is reflected in international humanitarian aid flows. We have shown that donor governments are on average significantly more generous towards geographically closer, politically less affine and oil exporting countries. We also find significant biases in favor of former colonies, and evidence for herding in the international aid process. While the extent of the various biases varies significantly across countries, the correlation between the current allocation of aid and the actual humanitarian losses associated with natural disasters is surprisingly low. While we have presented some evidence on private donations in this paper, data limitations have prevented us from going further into the details of private aid and its determinants. Given the growing role of the private sector in the humanitarian field, more studies on the interaction of private contributions in general, and the interaction of private preferences with domestic media in particular, appear desirable.

From a policy perspective, our findings do not necessarily imply that government agencies behave suboptimally. Even though the aid patterns detected in this paper stand in stark contrast to the official international commitment to a purely humanitarian use of emergency aid, discretionary choice in the allocation of aid may well reflect the preferences or interests of underlying populations and electorates. Nevertheless, recent developments in the international political sphere indicate that at least some countries have recognized the need for improvements in the allocation of humanitarian aid. In a first meeting in 2003, sixteen of the major donors joined forces in the Good Humanitarian Donorship Initiative working towards more efficiency and higher degrees of accountability within humanitarian assistance. In a related effort, former UN Secretary-General Kofi Annan officially launched the Central Emergency Response Fund (CERF) as central tool to provide immediate and impartial humanitarian aid to regions experiencing humanitarian crisis in March of 2006. Both initiatives appear steps into the right direction from a humanitarian policy perspective.

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Figure 1: FTS and DAC Data on Emergency Aid

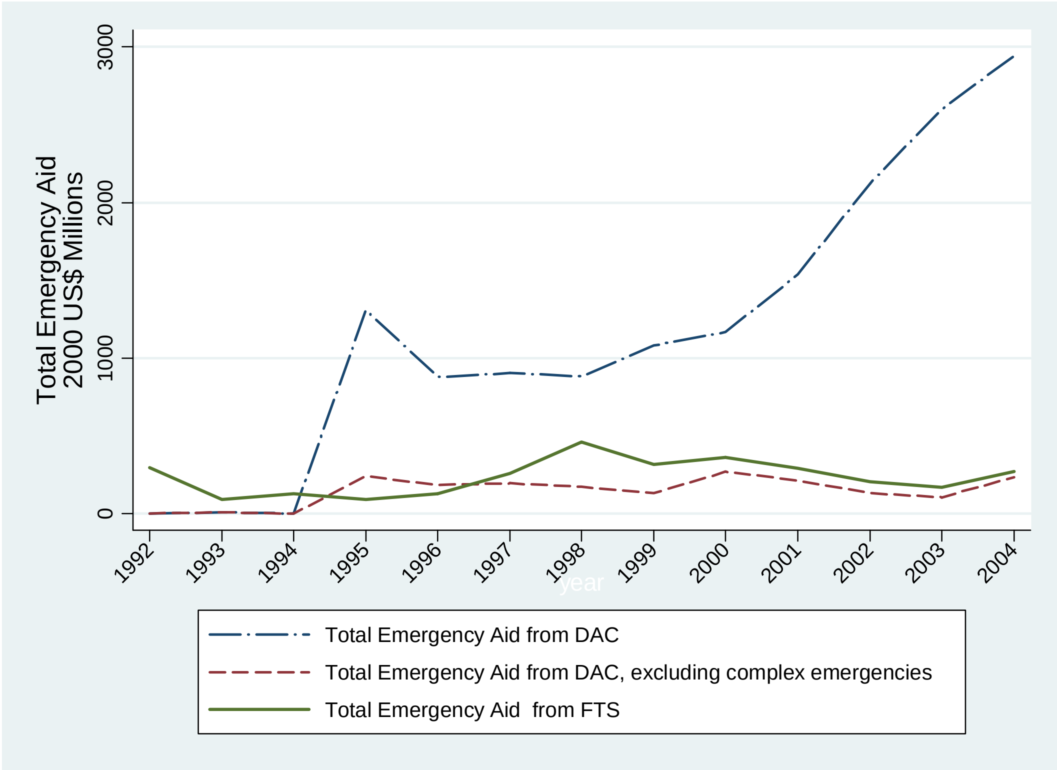

Figure 2: Major Donor Countries and Institutions

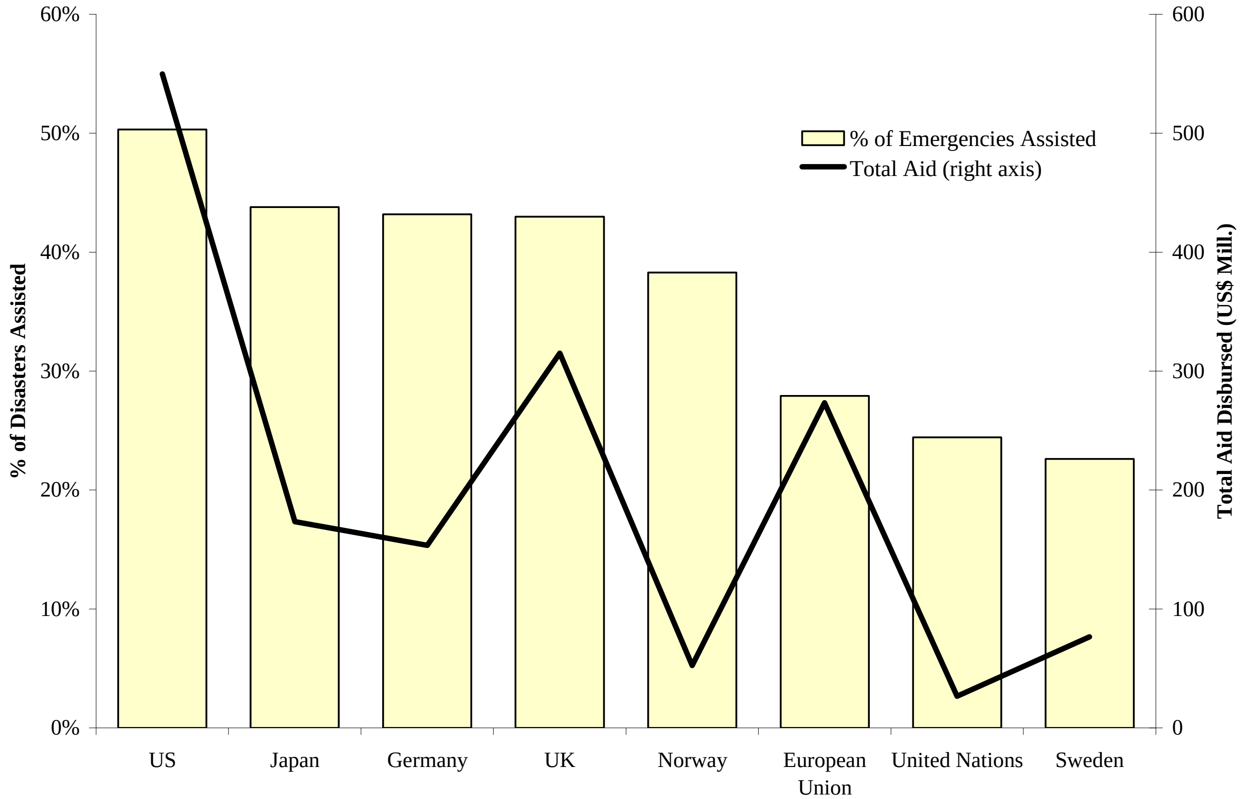

Figure 3: Total Emergency Aid by Year and Donor

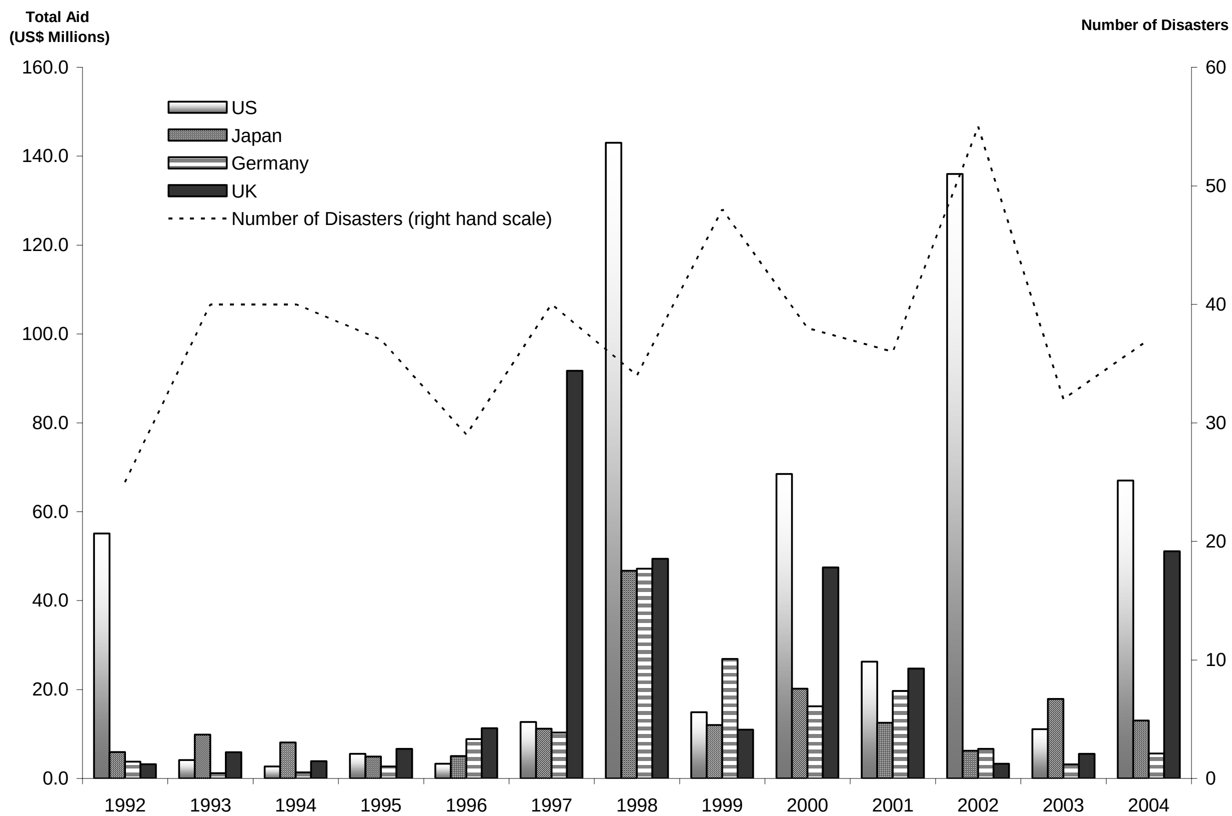

Figure 4: Donors' Responsiveness and Bilateral Affinity

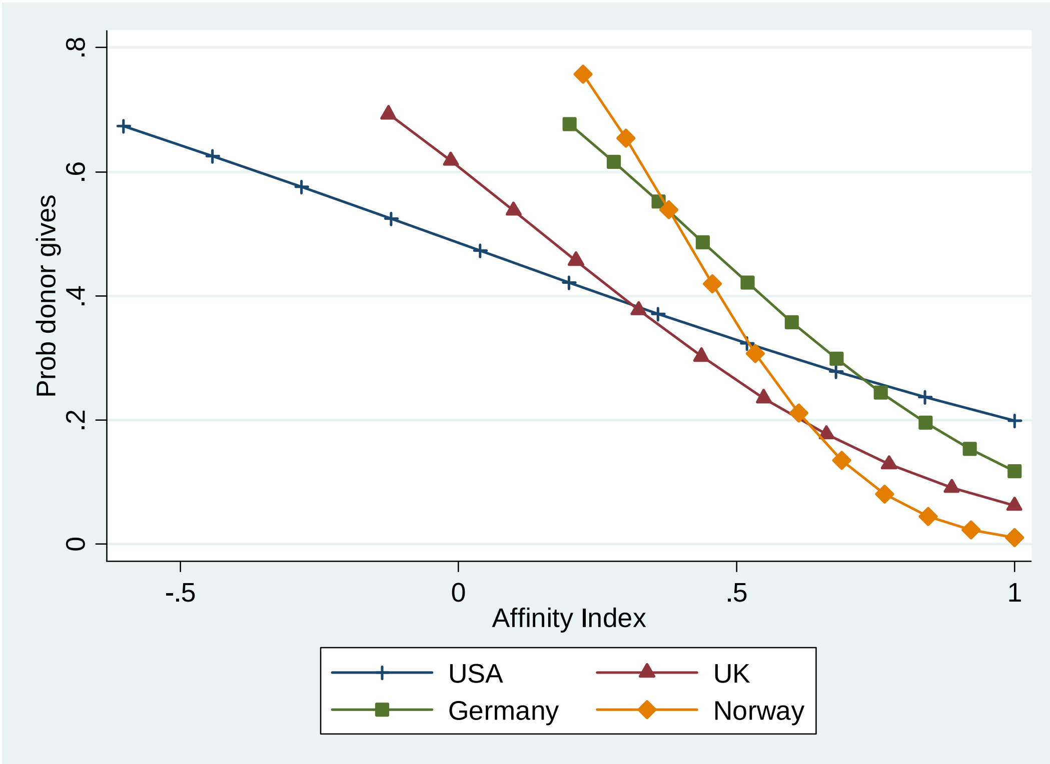

Figure 5: Donor Participation Patterns

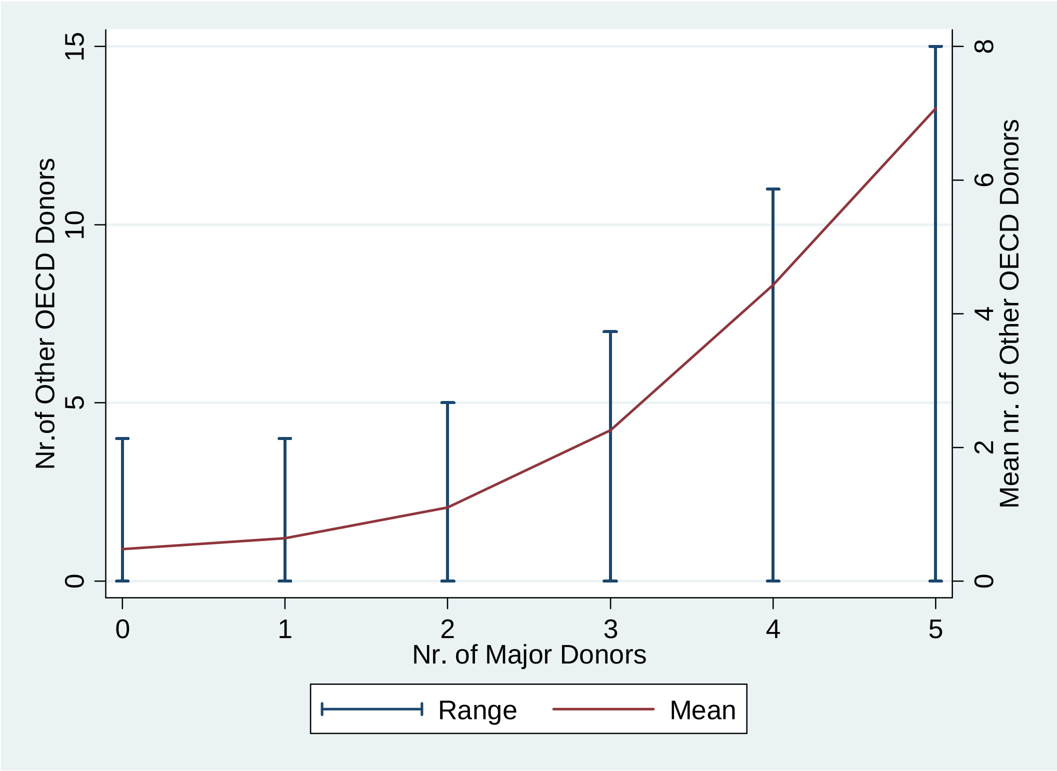

Table 1a: Correlations of Aid Interventions Among Major Donors

	US	Japan	Germany	UK	Norway
US	1.00				
Japan	0.31	1.00			
Germany	0.27	0.22	1.00		
UK	0.25	0.43	0.32	1.00	
Norway	0.26	0.27	0.23	0.29	1.00

Table 1b: Correlations of Aid Amounts Among Major Donors

	US	Japan	Germany	UK	Norway
US	1.00				
Japan	0.53	1.00			
Germany	0.52	0.59	1.00		
UK	0.29	0.36	0.29	1.00	
Norway	0.18	0.53	0.35	0.25	1.00

Table 2: Impact by Disaster Type

	Frequency	Average Number People killed	Average Number People Affected
Slow Onset Disasters			
Cold or Heat Waves	2	120	218,734
Drought	28	155	16,600,000
Epidemic	2	34	24,801
Wild Fires	9	12	34,083
Rapid Onset Disasters			
Earthquake	76	1,441	310,855
Flood	243	376	5,477,815
Slides	14	266	114,920
Volcano	14	44	38,557
Wind Storm	102	289	512,410

Table 3. Panel: Probit Analysis

Dependent variable: Pr(Donor *j* provides aid after disaster *i* =1)					
	(1) Pooled Probit	(2) Pooled Probit Donor FE	(3) RE-Probit Donor FE	(4) Conditional Logit Donor FE	(5) Conditional Logit Emergency FE
Impact measures					
Log(Nr.affected)	0.099***	0.116***	0.116***	0.215***	
	(0.014)	(0.015)	(0.013)	(0.024)	
Log(Nr. Killed)	0.199***	0.233***	0.233***	0.417***	
	(0.015)	(0.016)	(0.016)	(0.028)	
Socio economic indicators:					
Log(Population)	-0.204***	-0.221***	-0.221***	-0.423***	
	(0.026)	(0.030)	(0.029)	(0.052)	
Pop. density	0.000	-0.000	-0.000	0.000	
	(0.000)	(0.000)	(0.000)	(0.001)	
Log (GDP per capita)	-0.146***	-0.175***	-0.175***	-0.291***	
	(0.043)	(0.045)	(0.046)	(0.081)	
Oil dummy	0.324***	0.391***	0.391***	0.661***	
	(0.068)	(0.073)	(0.073)	(0.129)	
Policy performance indicators					
Trade openness	-0.001	-0.001	-0.001	-0.003	
	(0.001)	(0.002)	(0.002)	(0.003)	
ELF index	-0.044	-0.007	-0.007	0.003	
	(0.112)	(0.120)	(0.126)	(0.217)	
Gastil index	-0.000	-0.000	-0.000	-0.001	
	(0.010)	(0.011)	(0.011)	(0.019)	
Bilateral relation indicators					
Geograph. Distance	-0.018*	-0.036***	-0.036***	-0.056***	-0.086***
	(0.009)	(0.009)	(0.009)	(0.015)	(0.017)
Affinity index	-1.414***	-1.299***	-1.299***	-2.377***	-2.749***
	(0.101)	(0.259)	(0.263)	(0.469)	(0.820)
Former colony	0.519***	0.632***	0.632***	1.067***	1.354***
	(0.096)	(0.112)	(0.112)	(0.192)	(0.216)
Donor FE	NO	YES	YES	YES	YES
Disaster FE	NO	NO	NO	NO	YES
Observations	5153	5153	5153	5153	4754
Pseudo R-squared	0.16	0.28		0.18	0.31
Wald/LR Statistic	Wald chi2(38) 739.2	Wald chi2(57) 1157.2	Wald chi2(57) 1123.3	LR chi2(38) 903.8	LR chi2(22) 1117.9

Notes:
Coefficients reported; robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
All specifications include year, regional and disaster type fixed effects.
The donors included are.Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK and the US

Table 4: Panel: Tobit Analysis

Dependent variable: log(1+aid) donor *j* provides aid after disaster *i*				
	(1) Pooled-Tobit	(2) Pooled-Tobit FE	(3) RE-Tobit DOFE	(4) Tobit EMFE
Impact measures				
Log(Nr.affected)	1.269***	1.271***	1.271***	
	(0.153)	(0.140)	(0.140)	
Log(Nr. Killed)	2.497***	2.483***	2.483***	
	(0.179)	(0.163)	(0.163)	
Socio economic indicators:				
Log(Population)	-2.488***	-2.327***	-2.327***	
	(0.316)	(0.308)	(0.308)	
Pop. density	-0.000	-0.000	-0.000	
	(0.004)	(0.004)	(0.004)	
Log (GDP per capita)	-1.982***	-1.994***	-1.994***	
	(0.532)	(0.488)	(0.488)	
Oil dummy	4.023***	4.136***	4.136***	
	(0.850)	(0.777)	(0.777)	
Policy performance indicators				
Trade openness	-0.015	-0.013	-0.013	
	(0.017)	(0.016)	(0.016)	
ELF index	-0.423	0.077	0.077	
	(1.427)	(1.323)	(1.323)	
Gastil index	0.034	0.035	0.035	
	(0.123)	(0.115)	(0.115)	
Bilateral relation indicators				
Geograph. Distance				
	-0.235**	-0.384***	-0.384***	-0.451***
Affinity index	(0.099)	(0.089)	(0.089)	(0.078)
	-16.636***	-13.586***	-13.586***	-12.952***
Former colony	(1.152)	(2.729)	(2.729)	(3.579)
	6.600***	7.077***	7.077***	7.089***
	(1.180)	(1.172)	(1.172)	(0.983)
Donor FE	NO	YES	YES	YES
Disaster FE	NO	NO	NO	NO
Observations	5153	5153	5153	5153
Pseudo R-squared	0.07	0.12	0.12	0.20

Notes:
Coefficients reported; standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
All specifications include year, regional and disaster type fixed effects.
The donors included are.Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK and the US

Table 5: Individual Donors: Probit Analysis

Dependent variable: Prob(donor gives=1)

	US[(A)]	**Japan[(A)]**	**Germany[(A)]**	**UK[(A)]**	**Norway[(A)]**	**Private[(A)]**	**Test for equality of coefficients[(B)]**
Impact measures:							
Log(Nr.affected)	0.121***	0.040	0.112**	0.186**	0.181***	0.143***	6.99
	(0.049)	(0.049)	(0.053)	(0.056)	(0.054)	(0.049)	(0.221)
Log(Nr. Killed)	0.190***	0.307***	0.312***	0.307***	0.208***	0.020	18.89
	(0.063)	(0.067)	(0.069)	(0.069)	(0.067)	(0.060)	(0.002)
Socio economic indicators:							
Log(Population)	-0.115	-0.313**	-0.236**	-0.514***	-0.589***	-0.231**	13.67
	(0.107)	(0.123)	(0.120)	(0.125)	(0.134)	(0.097)	(0.018)
Pop. density	0.001	-0.003**	-0.000	-0.001	0.002*	0.000	11.02
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.051)
Log (GDP per capita)	-0.184	-0.052	-0.175	-0.340*	-0.226	-0.489***	5.51
	(0.171)	(0.188)	(0.181)	(0.193)	(0.189)	(0.174)	(0.357)
Oil dummy	0.621**	-0.398	0.367	0.896***	1.046***	0.438	25.52
	(0.278)	(0.275)	(0.290)	(0.330)	(0.324)	(0.282)	(0.000)
Policy performance indicators:							
Trade openness	0.002	0.000	-0.002	-0.012	-0.014**	-0.014***	12.34
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.005)	(0.031)
ELF index	-0.171	-0.030	-0.552	-0.050	-1.069**	0.283	5.48
	(0.486)	(0.510)	(0.495)	(0.562)	(0.526)	(0.435)	(0.360)
Gastil index	-0.083**	0.023	-0.017	0.009	0.112**	-0.005	12.44
	(0.041)	(0.045)	(0.045)	(0.048)	(0.046)	(0.039)	(0.029)
Bilateral relation indicators:							
Geogr. Distance	0.153**	0.016	-0.125*	0.103	0.097		9.33
	(0.077)	(0.108)	(0.064)	(0.095)	(0.108)		(0.053)
Affinity index	-0.809*	-1.653	-2.059*	-1.813**	-3.866**		7.43
	(0.584)	(1.312)	(1.272)	(1.070)	(1.473)		(0.115)
Former colony				0.746**			
				(0.341)			
Nr. Obs	270	269	270	270	270	270	
Pseudo R^2	0.182	0.228	0.260	0.385	0.304	0.251	
LR chi2	67.503	84.837	97.053	142.937	110.772	92.646	
p-value	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

Notes:
[(A)] Additional controls in all specifications: region, disaster type and year dummies. All models include a constant term. Robust standard errors in parentheses.
[(B)] Wald test of equal coefficients across donors. *p* -values in parentheses.
*significant at 10%; **significant at 5%; *** significant at 1%.

Table 6: Individual Donors: Tobit Analysis

Dependent variable: Log(donor aid+1)	US$^{(A)}$	Japan$^{(A)}$	Germany$^{(A)}$	UK$^{(A)}$	Norway$^{(A)}$	Private$^{(A)}$	Test for equality of coefficients$^{(B)}$
Impact measures:							
Log(Nr.affected)	0.869***	0.330***	0.457***	1.274***	1.417***	0.632***	6.44
	(0.323)	(0.349)	(0.169)	(0.364)	(0.395)	(0.180)	(0.266)
Log(Nr. Killed)	1.498***	2.302***	1.187***	2.365***	1.394***	0.432**	34.91
	(0.391)	(0.437)	(0.209)	(0.437)	(0.463)	(0.220)	(0.000)
Socio economic indicators:							
Log(Population)	-0.795	-2.324***	-0.837**	-3.563***	-4.328***	-1.021***	19.73
	(0.711)	(0.863)	(0.400)	(0.829)	(0.975)	(0.339)	(0.001)
Pop. density	0.004	-0.023	-0.002	-0.006	0.020**	0.002	14.47
	(0.008)	(0.010)	(0.004)	(0.010)	(0.010)	(0.004)	(0.013)
Log (GDP per capita)	-1.412	-0.125	-0.858	-2.533**	-2.660*	-1.775***	5.00
	(1.146)	(1.332)	(0.617)	(1.273)	(1.385)	(0.596)	(0.416)
Oil dummy	4.242*	-3.237*	1.423	5.017**	8.209***	1.808*	25.71
	(1.833)	(2.000)	(0.997)	(2.109)	(2.409)	(1.033)	(0.000)
Policy performance indicators:							
Trade openness	0.010	0.001	-0.001	-0.076*	-0.107**	-0.052***	18.06
	(0.037)	(0.042)	(0.020)	(0.044)	(0.052)	(0.016)	(0.002)
ELF index	-1.778	0.372	-0.633	0.624	-9.084**	0.927	7.45
	(3.219)	3.533)	(1.699)	(3.460)	(3.906)	(1.609)	(0.189)
Gastil index	-0.530	0.234	-0.064	0.124	0.828**	0.027	10.63
	(0.277)	(0.314)	(0.152)	(0.306)	(0.340)	(0.141)	(0.059)
Bilateral relation indicators:							
Geogr. Distance	1.109**	-0.252	-0.287	0.475	0.890		7.70
	(0.525)	(0.779)	(0.211)	(0.586)	(0.798)		(0.103)
Affinity index	-6.217	-12.427*	-7.728*	-14.987**	-29.958***		10.56
	(3.982)	(10.393)	(4.157)	(7.067)	(11.059)		(0.032)
Former colony				5.712***			
				(2.161)			
Nr. Obs	270	269	270	270	270	270	
Log likelihood	-622.666	-592.350	-813.982	-502.114	-476.812	-832.104	
LR chi2	79.534	92.179	109.050	153.032	117.691	104.074	
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

Notes:
(A) Additional controls in all specifications: region, disaster type and year dummies. All models include a constant term. Robust standard errors in parentheses.
(B) Wald test of equal coefficients across donors. *p* -values in parentheses.
*significant at 10%; **significant at 5%; *** significant at 1%.

Table 7: Donor Interaction: IV Estimates

Dependent variable: Pr(Donor *j* provides aid after disaster *i* =1)					
	(1)	(2)	(3)	(4)	(5)
	US	Japan	Germany	UK	Norway
Number of major donors	0.192**	0.155**	0.336***	0.331***	0.254***
	(0.077)	(0.068)	(0.102)	(0.074)	(0.069)
Impact measures					
Log(Nr.affected)	0.013	-0.014	-0.015	0.001	0.016
	(0.019)	(0.016)	(0.021)	(0.016)	(0.016)
Log(Nr. Killed)	-0.006	0.052**	-0.014	-0.014	-0.023
	(0.027)	(0.026)	(0.035)	(0.026)	(0.029)
Socio economic indicators:					
Log(Population)	0.046	-0.042	0.065	-0.023	-0.076*
	(0.041)	(0.039)	(0.051)	(0.036)	(0.041)
Pop. density	0.000	-0.001***	0.000	0.000	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log (GDP per capita)	-0.003	0.037	0.008	-0.026	0.005
	(0.057)	(0.052)	(0.062)	(0.054)	(0.058)
Oil dummy	0.118	-0.273***	-0.080	0.043	0.149*
	(0.090)	(0.086)	(0.116)	(0.091)	(0.086)
Trade openness	0.002	0.001	0.000	-0.002	-0.003*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
ELF index	0.002	0.010	0.015	0.246	-0.231
	(0.145)	(0.146)	(0.171)	(0.160)	(0.166)
Gastil index	-0.036***	0.008	-0.011	-0.004	0.034**
	(0.013)	(0.011)	(0.014)	(0.011)	(0.014)
Bilateral Variables					
Geograph. Distance	0.032	0.006	-0.122***	0.009	-0.004
	(0.024)	(0.036)	(0.039)	(0.032)	(0.033)
Affinity index	-0.027	-0.091	0.079	-0.104	-0.359
	(0.166)	(0.432)	(0.394)	(0.226)	(0.429)
Former colony				0.043	
				(0.112)	
Observations	269	269	269	269	269
Centered R-squared	0.31	0.42	0.13	0.43	0.29
Hansen OID Test	0.14	0.39	0.42	0.98	0.36
Cragg-Donald F-Stat	7.21	8.20	4.56	5.47	5.66

Notes:
2SLS estimates. Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
All specifications include year, regional and disaster type fixed effects.

Appendix

Table A.1: Description of Variables and Sources

Dependent variable:	
Aid	Total aid per emergency (2000 US$-PPP) SOURCE: *FTS – own calculations*
Impact measures:	
Nr. affected	People requiring immediate assistance during an emergency situation. SOURCE: *EM-DAT*
Nr. Killed	Persons confirmed dead and persons missing and presumed dead SOURCE: *EM-DAT*
Socio-economic indicators:	
Population	Population (one year lag) SOURCE: *WDI*
Population density	Nr. of people per square km (one year lag) SOURCE: *WDI*
GDP per cap	Per capita GDP (one year lag; 2000 US$-PPP) SOURCE: *WDI – own calculations*
Oil Dummy	Dummy = 1 if oil exports exceeds 1/3 of total exports SOURCE: *WDI – own calculations*
Policy performance indicators:	
Trade openness	(Import + Exports) / GDP (one year lag; 2000 US$-PPP) SOURCE: *WDI – own calculations*
ELF index	Ethno-linguistic fractionalization index. Range from 0 (least fract.) to 1 (more fract.) SOURCE: *Fearon and Laitin, 2003*
Gastil index	Democratization index. Sum of *political rights* and *civil liberties* indexes. Both indexes range between 1 (most free) and 7 (least free) SOURCE: *Freedom House*
Bilateral relations indicators:	
Affinity index	Affinity index in UNGA recipient - donor voting. Ranges from -1 (least similar) to 1(more similar). (one year lag) SOURCE: *Gartzke, 2002*
Geogr. distance	Donor – recipient's capital cities distance SOURCE: *Gleditsch and Ward, 2001*
Former colony	Dummy = 1 if recipient was donor's colony SOURCE: *Fearon and Laitin, 2003*

Table A.2: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Give: USA	449	0.51	0.50	0	1
Give: Japan	449	0.46	0.50	0	1
Give: Germany	449	0.43	0.50	0	1
Give: UK	449	0.43	0.50	0	1
Give: Norway	449	0.37	0.48	0	1
Give: Private	449	0.57	0.50	0	1
(Log) Aid: USA	449	6.00	6.11	0	18.27
(Log) Aid: Japan	449	5.68	6.24	0	16.85
(Log) Aid: Germany	449	5.06	5.91	0	16.60
(Log) Aid: UK	449	5.24	6.09	0	18.26
(Log) Aid: Norway	449	4.28	5.61	0	15.50
(Log) Aid: Private	449	6.95	6.23	0	18.12
(Log) Nr. killed	386	4.05	1.98	0.00	10.31
(Log) Nr. affected	447	11.16	2.60	2.30	19.22
(Log) Population	435	16.87	2.04	11.24	20.97
Pop. density	432	128.26	172.94	1.39	1049.52
(Log) GDP per capita	424	8.02	0.78	6.04	10.09
Oil dummy	381	0.24	0.43	0.00	1.00
Trade as % of GDP	408	65.93	33.87	2.58	213.33
ELF index	354	0.47	0.28	0.00	0.93
Gastil	405	8.23	3.51	2.00	14.00
Affinity index: US	438	-0.22	0.30	-0.60	1
Affinity index: Japan	436	0.57	0.15	0.23	1
Affinity index: Germany	438	0.50	0.19	0.18	1
Affinity index: UK	438	0.34	0.21	-0.13	1
Affinity index: Norway	438	0.53	0.17	0.21	1
Distance: US ('000)	441	9.87	4.03	1.62	16.34
Distance: Japan ('000)	439	8.88	4.39	1.17	18.54
Distance: Germany ('000)	441	7.57	3.27	0.52	16.36
Distance: UK ('000)	441	7.75	3.16	1.02	16.33
Distance: Norway ('000)	441	7.60	3.08	1.02	15.33

Table A.3: Panel: OLS Regressions

Dependent variable: Pr(Donor *j* provides aid after disaster *i* =1)	(1) Pooled OLS	(2) Random Effects Panel	(3) Panel Fixed Effects	(4) Panel Disaster Fixed Effects
Impact measures				
Log(Nr.affected)	0.026***	0.026***	0.026***	
	(0.003)	(0.003)	(0.003)	
Log(Nr. Killed)	0.060***	0.060***	0.060***	
	(0.004)	(0.004)	(0.004)	
Socio economic indicators:				
Log(Population)	-0.058***	-0.058***	-0.052***	
	(0.007)	(0.007)	(0.007)	
Pop. density	-0.000	-0.000	-0.000	
	(0.000)	(0.000)	(0.000)	
Log (GDP per capita)	-0.034***	-0.034***	-0.035***	
	(0.011)	(0.011)	(0.010)	
Oil dummy	0.088***	0.088***	0.088***	
	(0.018)	(0.018)	(0.017)	
Policy performance indicators				
Trade openness	-0.000	-0.000	-0.000	
	(0.000)	(0.000)	(0.000)	
ELF index	-0.019	-0.019	-0.004	
	(0.032)	(0.032)	(0.030)	
Gastil index	-0.002	-0.002	-0.001	
	(0.003)	(0.003)	(0.003)	
Bilateral relation indicators				
Geograph. Distance	-0.004	-0.004	-0.008***	-0.011***
	(0.002)	(0.002)	(0.002)	(0.002)
Affinity index	-0.434***	-0.434***	-0.316***	-0.350***
	(0.031)	(0.031)	(0.053)	(0.087)
Former colony	0.154***	0.154***	0.162***	0.164***
	(0.032)	(0.032)	(0.033)	(0.026)
Donor FE	NO	NO	YES	YES
Disaster FE	NO	NO	NO	NO
Observations	5153	5153	5153	5153
R-squared	0.18	0.18	0.16	0.20

Notes:
Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
All specifications include year, regional and disaster type fixed effects.
The donors included are.Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK and the US

Table A.4: IV Estimation: First Stage Results

Dependent variable: Number of Other Main Donors Providing Aid to Disaster i	(1) US	(2) Japan	(3) Germany	(4) UK	(5) Norway
Instruments					
Distance US		0.750***	-0.270	0.619**	-0.300
		(0.267)	(0.375)	(0.260)	(0.359)
Distance Japan	0.330**		0.574***	0.353**	0.684***
	(0.165)		(0.178)	(0.151)	(0.178)
Distance Germany					-8.222***
					(2.116)
Distance UK	-9.411*	-11.988***	-1.403		-1.826
	(5.097)	(4.575)	(5.483)		(5.059)
Distance Norway	8.869*	11.387***	9.562**	10.065**	
	(4.854)	(4.361)	(4.681)	(4.148)	
Impact measures					
Log(Nr.affected)	0.138***	0.159***	0.114**	0.127***	0.095**
	(0.047)	(0.044)	(0.045)	(0.041)	(0.042)
Log(Nr. Killed)	0.330***	0.298***	0.327***	0.311***	0.355***
	(0.049)	(0.045)	(0.047)	(0.046)	(0.043)
Socio economic indicators:					
Log(Population)	-0.409***	-0.381***	-0.362***	-0.312***	-0.262***
	(0.096)	(0.094)	(0.096)	(0.090)	(0.093)
Pop. density	0.000	0.001	0.001	-0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log (GDP per capita)	-0.317*	-0.288*	-0.305*	-0.222	-0.355**
	(0.162)	(0.155)	(0.160)	(0.160)	(0.161)
Oil dummy	0.296	0.629***	0.387	0.386	0.215
	(0.238)	(0.233)	(0.258)	(0.245)	(0.249)
Trade openness	-0.004	-0.004	-0.002	-0.002	0.000
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
ELF index	-0.238	-0.308	-0.530	-0.477	-0.457
	(0.419)	(0.443)	(0.440)	(0.442)	(0.464)
Gastil index	0.048	0.002	-0.004	0.015	-0.044
	(0.038)	(0.038)	(0.038)	(0.036)	(0.039)
Geograph. Distance	0.644**	0.400***	-7.903***	-10.550**	10.236**
	(0.291)	(0.153)	(2.071)	(4.348)	(4.258)
Affinity index	-1.320***	-3.144***	-2.422***	-1.371**	-2.388***
	(0.431)	(1.049)	(0.794)	(0.693)	(0.886)
Former colony				0.211	
				(0.276)	
Observations	269	269	269	269	269
R-squared	0.44	0.41	0.41	0.38	0.41
Cragg-Donald F-Stat	7.21	8.20	4.56	5.47	5.66

Notes:
Robust standard errors in parentheses
*significant at 10%; ** significant at 5%; *** significant at 1%
All specifications include year, regional and disaster type fixed effects.

Endnotes

[1] Source: EM-DAT Emergency Disasters Data Base
[2] Among others, the UNDP's Disaster Risk Index Project (DRI) was designed to improve the understanding of the relationship between development and disaster risk, and to provide country vulnerability analysis during the International Panel on Climate Change (IPCC) in 2001. More recently, the international community has recognized disaster risk management as an integral part of the development agenda (2005 World Conference for Disaster Reduction, Kobe, Japan).
[3] As explained in Section 3 of the paper, rapid onset emergencies last only for very short periods of time, thus limiting potential feedback effects from aid on the actual impact of the hazard.
[4] The estimated coefficients on other donors' aid are positive in Tobit estimates, but negative when only the initial selection equation is estimated using Probit models.
[5] The DAC list is reviewed every three years. As of 2005, this list includes all low and middle income countries, except those that are members of the G8 or the European Union (or countries with a firm date for EU admission, i.e. Bulgaria and Romania).
[6] The official definition of a complex emergency is "a humanitarian crisis in a country, region or society where there is total or considerable breakdown of authority resulting from internal or external conflict and which requires an international response that goes beyond the mandate or capacity of any single agency and/ or the ongoing United Nations country program." (IASC, 1994).
[7] http://www.em-dat.net/.
[8] 8http://www.em-dat.net/glossary.htm
[9] The EM-DAT database includes figures on the "estimated damage" in US dollars. However, given the absence of a standard procedure to quantify the economic impact, and considering the number of missing values for this variable, we decided to rely exclusively on figures of emergencies' human impact.
[10] The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) is mandated to coordinate the international humanitarian response to a natural disaster or complex emergency acting on the basis of the United Nations General Assembly Resolution 46/182. (http://ocha.unog.ch/fts/index.aspx)
[11] Since its creation in 1998, the OCHA has the responsibility to issue an international appeal for aid when requested by affected governments. The Consolidated Appeal is the reference document on the humanitarian strategy and the funding requirements through which the OCHA coordinates and mobilize humanitarian aid in response to natural disasters and complex emergencies.
[12] As pointed out by Randel and German (2002), the bulk of humanitarian assistance has been spent on complex emergencies in recent years. For instance, in 2001, the 20 countries appealing for complex emergencies raised a total pledge of $2.1 bn as opposed to a total contribution of only $311.2m received by the 49 countries hit by natural disasters.
[13] The numbers are denominated in real 2000 US$ at PPP and do not include the December 2004 Indian Ocean Tsunami. The Tsunami has triggered unprecedented aid flows of over US$ 12 bn - about four times the amount of emergency aid provided to all of the disasters in our sample - and therefore is hardly comparable with the typical disaster in our sample.
[14] People affected are defined as those requiring immediate assistance during an emergency situation; people killed are persons confirmed dead and persons missing or presumed dead (source: EM-DAT). See Table A1 in the Appendix.
[15] The 2001 earthquakes in El Salvador and Seattle in the United States resulted in losses of around US$ 2 billion each. While these losses were easily absorbed by the U.S. economy, they represented 15 percent of El Salvador's GDP for that year (United Nations, 2004).

[16] The "political rights" index assesses the right to vote, election meaningfulness, multiple political parties, opposition power, and government independence from foreign or military control. The "civil liberties" index covers the freedoms of speech, assembly, and religion and freedom from terrorism or discrimination.

[17] For computational purposes we restrict the analysis to the sample of 20 OECD donors consisting of Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK and the US.
[18] An alternative to the Tobit would be an Heckman selection model. In the Heckman model, the inverse Mill's ratio estimated in a first stage Probit is used to correct for selection in the allocation equation (see

Berthélemy and Tichit (2004) for a detailed discussion). In the absence of obvious exclusion restrictions (factors that matter
in the selection, but not in the allocation equation) we opt for a Tobit specification of the allocation equation.

[19] We test the null of zero coefficients of all donor fixed effects and reject it at the 99% level. The Wald test for all coefficients equal to zero reports a chi-square statistic of 308.35.

[20] For example, if one assumes that the main unobservable is emergencies' media coverage, it is easy to imagine some positive correlation between the unobservable effect and our disaster impact measures.

[21] Note that Table 1 shows some Probit and some Logit coefficient estimates which are not directly comparable in terms of magnitude.

[22] Trumbull and Wall (1994) argue that smaller populations also imply a higher per capita impact of aid.

[23] The ethical fractionalization index (ELF) ranges from 0 (least fractionalized) to 1 (most fractionalized). See Appendix Table A.2.

[24] All other controls are kept to their mean value. Summary statistics in the Appendix (TableA2).