Proportionality or Discrimination?
The Political Economy of Humanitarian Assistance

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by

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### Acronyms

<table>
<thead>
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<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>CAP</td>
<td>Consolidated Appeals Process</td>
</tr>
<tr>
<td>CEPII</td>
<td>Centre d’Etudes Prospectives et d’Informations Internationales, Paris, France</td>
</tr>
<tr>
<td>COW</td>
<td>Correlates of War Project</td>
</tr>
<tr>
<td>CRED</td>
<td>Centre for Research on the Epidemiology of Disasters, Université Catholique de Louvain, Brussels, Belgium</td>
</tr>
<tr>
<td>DAC</td>
<td>Development Assistance Committee of the OECD</td>
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<tr>
<td>DFID</td>
<td>Department for International Development, United Kingdom</td>
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<tr>
<td>DHA</td>
<td>United Nations Department of Humanitarian Affairs (later OCHA)</td>
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<tr>
<td>DI</td>
<td>Development Initiatives</td>
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<tr>
<td>ECHO</td>
<td>European Commission’s Humanitarian Aid Office</td>
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<tr>
<td>EM-DAT</td>
<td>OFDA/CRED International Disaster Database</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>FDI</td>
<td>Foreign Direct Investment</td>
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<tr>
<td>FTS</td>
<td>Financial Tracking System</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GNI</td>
<td>Gross National Income</td>
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<tr>
<td>HFWP</td>
<td>Humanitarian Financing Work Programme</td>
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<tr>
<td>IASC</td>
<td>Inter-Agency Standing Committee</td>
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<tr>
<td>ICRC</td>
<td>International Committee of the Red Cross</td>
</tr>
<tr>
<td>IFRC</td>
<td>International Federation of Red Cross and Red Crescent Societies</td>
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<tr>
<td>IGO</td>
<td>Intergovernmental Organisation</td>
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<tr>
<td>ISO</td>
<td>International Organization for Standardization, Geneva, Switzerland</td>
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<tr>
<td>NGO</td>
<td>Non-Governmental Organisation</td>
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<tr>
<td>OCHA</td>
<td>UN Office for the Coordination of Humanitarian Affairs</td>
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<tr>
<td>ODA</td>
<td>Official Development Assistance</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<tr>
<td>OFDA</td>
<td>Office of U.S. Foreign Disaster Assistance</td>
</tr>
<tr>
<td>OLS</td>
<td>Ordinary Least Squares</td>
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<td>UN</td>
<td>United Nations</td>
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CHAPTER I:

INTRODUCTION
Impartiality, one of the guiding principles of humanitarianism\(^1\), demands that the only criterion in setting priorities for humanitarian assistance be the needs of the persons affected by a humanitarian emergency. For the principle of impartiality to be met, humanitarian assistance would have to be allocated proportional to the needs of those affected, as well as it would have to follow the principle of non-discrimination. However, it is largely suspected that the donors’ pursuit of political and economic interests leads to a disproportional and discriminating allocation of humanitarian assistance. This study analyses whether the overall assistance to populations affected by natural disasters is proportional to need, as well as which factors determine the donors’ funding decisions.

In order to assess the causal relationship between funding in the aftermath of a natural disaster\(^2\) and donors’ interests, this study suggests a political economic model of humanitarian assistance. It relates the aggregate financing outcome to the individual donor government’s decision on the amount of contribution it is willing to make to a specific relief operation. The model starts from the basic assumption that donor governments seek to maximise their domestic political support by enhancing the constituents’ utility. It then hypothesises the constituents’ political, economic and strategic interests. Subsequently, the model’s explanatory power is tested empirically.

Although the donors’ pursuit of political and economic interests is frequently blamed for the perceived disproportional allocation of humanitarian assistance, prior research on donor motivations has largely focused on the determinants of development assistance. Only recently, some studies have assessed donor behaviour in humanitarian financing (Smillie and Minear, 2003a; Randel and German, 2003a; Darcy and Hofmann, 2003).

Existing research has repeatedly regretted the lack of consistent data on the basis of which donor contributions could be assessed relative to recipients’ needs. This may partly be due to the fact that the focus of existing research has been on global humanitarian assistance, which includes humanitarian aid flows to populations affected by complex emergencies\(^3\), as well as contributions to disaster relief operations.

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\(^1\) The acknowledged principles of humanitarianism include humanity, impartiality, neutrality and independence. (As endorsed by the major bilateral and multilateral donors at their ‘Meeting on Good Humanitarian Donorship’ in Stockholm, 16-17 June 2003. Meeting conclusions are available at https://www.reliefweb.int/cap/ToT Binder/Hum_Financing_Studies/imgd.pdf; last access 24.09.2003).

\(^2\) A natural disaster may be defined as “the impact of a natural hazard upon a population or area, which is vulnerable to such impacts and where the impacts result in substantial damage, disruption and casualties” (OECD, 1994).

\(^3\) A complex emergency is “a humanitarian crisis which requires an international response that goes beyond the mandate or capacity of any single agency. Complex emergencies are typically characterised by extensive violence and loss of life, massive displacements of people, widespread damage to societies and economies, need for large-scale, multi-faceted humanitarian assistance, hindrance or prevention of humanitarian assistance by political and military constraints and significant security risks for humanitarian relief workers in some areas” (http://www.reliefweb.int/tis/).
Restricting the scope of analysis to relief operations in the wake of natural disasters, however, the problem of lacking data was solved by the construction of a new dataset including humanitarian financing data, data on the severity of disasters, as well as political and economic indicators for donor and recipient countries. As to my knowledge, this study is therefore the first to pursue an inductive analysis of donor behaviour and proportionality to need in financing of disaster relief.

The empirical analysis is divided into two parts. The first set of analyses on the overall contribution’s proportionality to need includes all reported contributions by bilateral, multilateral as well as private donors to those affected by a natural disaster between 1992 and 2002. For the second set of analyses on individual donors’ behaviour in disaster relief, I choose the top ten bilateral donors being a member of the OECD. The universe of recipients is limited to recipients not being a member of the OECD.

The subsequent Chapter II first discusses the relevant literature and identifies the contribution this study aims at making.

In Chapter III, I specify the underlying assumptions for the political economic model of humanitarian assistance and then deduct the hypotheses. Subsequently, the intermediate causal relationships of the model, which in the logic of methodological individualism explain the transitions from macro- to micro-level and reverse, are formulated.

Chapter IV will first give the reasons for the selection of cases for analysis and operationalise the variables prior to empirical analysis. Then, the proportionality of total assistance to need, as well as individual donor behaviour will be assessed by means of descriptive as well as inductive analysis.

Chapter V concludes with the most prominent results of the analysis.

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4 Please note that lending is not included in the analysis.
CHAPTER II:

THEORETICAL FRAMEWORK
This chapter briefly discusses the main arguments in the scientific debate on the motivations leading to the provision of aid, as well as on the determinants of aid allocation. Most of the research dealing with aid allocation has focused on development assistance so far. As the argument is similar to the one to be made for humanitarian assistance, I will outline the debate on the allocation of development aid in the first part of this chapter.

In the second part of the chapter, the focus will be on recent publications on donor behaviour in humanitarian financing. Having identified the theoretical framework for this study, I will then conclude by identifying the contribution this study aims at making.

### 2.1 The Debate on the Allocation of Development Aid

The two major focuses in the research on allocation of development aid deal with the efficiency of aid allocation in the presence of donor motivations on the one hand, and with the identification of factors influencing funding decisions on the other. A third aspect of interest to researchers is whether bilateral and multilateral aid differ systematically in their patterns of aid allocation. In the following, I will briefly outline the relevant literature and then assess the applicability of the argument to the policy field of humanitarian financing.

#### 2.1.1 Efficiency

Assessing the efficiency of aid allocation, the crucial question to be answered is whether or not the presence of individual donors’ interests in aggregate leads to an allocation of aid that meets development objectives, i.e. that satisfies recipient needs. In a quantitative analysis, Schraeder, Hook and Taylor (1998) show for the donors France, Japan, Sweden, and the United States, that they give more aid to poorer countries, but that indicators for humanitarian needs such as caloric intake and life expectancy test insignificantly. In her study on political conditionality in European aid, Zanger (2000: 309) concludes that recipients’ needs only have a moderate impact on aid allocation. It is therefore questionable whether development goals are reached. However, the factors determining the donors’ funding decisions are usually elaborated on in more detail.
2.1.2 Factors Influencing Individual Donors’ Funding Decisions

The more prominent discussion concentrates on identifying and estimating factors influencing individual funding decisions. Those factors can usefully be classified in three major categories: political interests, economic interests and strategic considerations.

In earlier studies on the determinants of aid allocation, the donors’ political and economic interests were suggested to have the biggest impact on allocation decisions. Later, reflections on strategic considerations and the recipients’ policy performance added to the explanation of donor motivations.

- **Political and Economic Interests**
  
  In one of the earlier studies on the political economy of development assistance, Frey (1984: 86) states that ‘everyone knows that the economic aid given by the governments of industrialized countries to less developed countries is scarcely given for philanthropic and humanitarian reasons’. He suggests the donor countries to act from selfish motives, expecting an economic and/or political benefit from providing aid.

- **Good Governance Criteria**
  
  From the beginning of the 1990s on, more and more emphasis was put on political conditionality for development aid. Western industrialized countries came to the common understanding that ‘good governance’ was essential for their development aid to be fruitful and sustainable. Therefore, they started to make the compliance with good governance criteria a precondition for their assistance.

  Thus researchers introduced the more specialised category of donors’ political interests in the recipients’ policy performance. Critics have argued that good governance criteria, which were thought to further sustainable development, have caused selectivity due to their application as *ex ante* criteria. They argue that better governance should not only be

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5 On the evolution of political conditionality, see Stokke (1995).
6 The core of good governance criteria differs slightly among various definitions by multilateral agencies. For an analysis of similarities and differences in the ‘good governance’ definitions of the World Bank, the International Monetary Fund, the UNDP etc., see Engels (2000). The core area of good governance as laid down by the Organisation for Economic Co-operation and Development (OECD) consists of: the rule of law, public sector management, controlling corruption and reducing excessive military expenditures. Rule of law is defined as the protection of human rights, the existence of independent court systems, equality before the law and supervision of the exercise of administrative powers. Public sector management should be characterised by systems of accountability and information, realistic salaries and benefits for government employees, independent audit systems, decentralisation, legal framework and active institutions, as well as by interest groups outside the government (Engels, 2000: 38).
regarded a pre-condition for development aid, but also as development objective itself (Hout, 2002).

Since the establishment of good governance criteria as preconditions for development aid and loans by international lending institutions, there have been numerous investigations into the reality of political conditionality and good governance criteria as determinants aid. For example Zanger (2000) analysed Official Development Assistance (ODA) of Germany, France, the United Kingdom and the European Community / Union between 1980 and 1985 and concluded that good governance criteria did not play a consistent or prominent role in European aid.

- **Strategic Considerations**
  Taking into account strategic considerations, Alesina and Dollar (2000) found evidence for political and strategic considerations to exert as much of an impact on funding decisions as the economic needs and policy performance of the recipients. They state that most donors give more aid to recipient countries that have a long experience as their or another donor’s colonies. Also, they argue that countries sharing political positions with Western countries, as measured by their voting behaviour in the United Nations, receive more generous assistance. Neumayer (2003b) confirms the finding that more development aid is given to former colonies and finds that geographical proximity also has a significant impact on aid allocation.
  Zanger (2000) also found that strategic and economic factors influence ODA distribution, and that France and the UK favoured their former colonies, while the EC/EU was especially generous to ACP countries and recipient needs received only limited attention.

2.1.3 Bilateral versus Multilateral Aid

Another focus of research looks into whether patterns of aid allocation differ between bilateral aid and multilateral aid.

In the case of bilateral donors, there is hardly any disagreement on the finding that for practically all donors economic, political and military-strategic interests play a significant, if not dominating role (Neumayer, 2003a: 102).

Concerning aid allocation by multilateral donors, there is no agreement as to whether recipients’ needs influence multilateral aid to a greater extent. Only two examples for the
different arguments shall be cited here. In one of the earlier studies on multilateral aid allocation, Maizels and Nissanke (1984) conclude that recipients’ needs were relatively more decisive for the allocation of aggregate multilateral than for the distribution of bilateral aid. To the contrary, Neumayer (2003a) shows that the four regional development banks and the three United Nations agencies under investigation show a similar bias to the one apparent in bilateral aid allocation. The tendency to favour less populous countries prevails for some of the multilateral institutions, and they also give more aid to former colonies. He finds, however, that the three United Nations agencies actually give more aid to countries, which are geographically more distant from Western donors. Therefore, the third bias present in bilateral aid is contravened in multilateral aid.

Having sketched the main arguments on donor motivations in development assistance, I will now assess their applicability to the policy field of humanitarian assistance.

2.1.4 Applicability of the Argument to the Allocation of Humanitarian Assistance

One would like to expect that the allocation of humanitarian assistance be solely based on the needs of the affected population and therefore abide by the humanitarian principle of impartiality.

However, it will have to be assessed to what extent recipients’ needs indeed determine the direction and level of assistance and to what extent donors’ interests lead to disproportional funding of disaster relief operations. Therefore, the argument to be made is very similar to the one just sketched for development assistance.

A major difference between the provision of development aid and donors’ decisions on contributions to disaster relief operations is the time horizon. While donors’ decision-making on the allocation of development aid tends to imply long-term strategies, it may be expected that policy planning is absent in the case of disaster relief. In accordance with this expectation, Smillie and Minear (2003b) state that ‘only the exceptional donor government has clearly defined and binding policy regarding humanitarian financing that guide allocations according to country, sector, and implementing organisation’. Another indication pointing to such a lack of planning due to time constraints is the finding by Darcy and Hofmann (2003: 52) that decisions about intervention were ‘often made on the basis of very limited knowledge about the facts of a situation’ and that this was ‘especially true in rapid-onset natural disasters’.
Concerning donor motivations, however, it has often been suspected that the humanitarian principle of impartiality is jeopardised by donors’ interests. Also Smillie and Minear (2003a: 4) suggest that donors’ domestic and foreign policy interests are the major drivers of aid allocation.

As the basic question to be answered is whether the effect of political, economic and strategic donor interests can be substantiated in humanitarian funding, the role of donors’ interests will be assessed with the help of a political economic model, which I will develop in Chapter III in a similar style as the ones used in development aid allocation research.

In the following, I will map the field of prior research on humanitarian financing and identify the contribution this study aims at making.

2.2 The Debate on Donor Behaviour in Humanitarian Financing

Researchers have dedicated only little attention to the systematic study of humanitarian aid allocation up to now. Scholarly discussion has mainly been limited to only a few research institutes dealing with the issue of humanitarian financing: the Humanitarian Policy Group of the Overseas Development Institute (ODI) in London, Development Initiatives (DI), and the Humanitarianism and War Project, Tufts University, Massachusetts. These institutes have been involved in the Humanitarian Financing Work Programme (HFWP), which was initiated by a group of donors and the Inter-Agency Standing Committee (IASC) in early 2002. The aim of the commissioned research was to determine the extent to which the international community is meeting the basic needs of those affected by humanitarian crises (DFID, 2003). The results of these humanitarian financing studies have just recently been published (ODI: Darcy and Hofmann, 2003; DI: Randel and German, 2003a; Tufts University: Smillie and Minear, 2003a).

All of these studies focus on global humanitarian assistance, i.e. they include humanitarian financing of responses to needs in complex emergencies, as well as funding of relief operations in the wake of natural disasters. Of one voice, they regret that assessing the appropriateness and proportionality of humanitarian assistance to recipient needs is largely impossible due to the lack of consistent data on the affected persons’ needs.
Randel and German (2003b: 7) note that the number of beneficiaries quoted in the Consolidated Appeals Processes’ (CAPs) is the only denominator currently available for the number of people affected and that ‘without a more reliable denominator, the assessment of equity by looking at expenditure is of limited use’. Another limit to the assessment of need is that data on the number of beneficiaries is a narrower category than the people affected by a crisis, as well as that data on beneficiaries is only available for those complex emergencies, in which a Consolidated Appeals Process was launched.

For the scope of this study, namely donations by OECD donor countries to non-OECD recipients in the wake of natural disasters between 1992 and 2002, a new dataset was constructed. It includes data on the severity of disasters, the corresponding contributions by members of the OECD, as well as political and economic structural data for both donor and recipient countries. For the first time, it is now possible to pursue a quantitative analysis of a donor’s contributions to disaster relief operations relative to indicators for recipients’ needs and potential donors’ interests.

Facing the obstacles in the analysis of proportionality, Darcy and Hofmann (2003: 5) nevertheless conclude that international humanitarian financing is not equitable and that ‘amounts allocated across various contexts do not reflect comparative levels of need’. In the synthesis of the Humanitarian Financing Work Programme, the United Kingdom’s Department For International Development (DFID, 2003: 1) points out that ‘donors’ funding decisions are not solely – or sometimes not even primarily – based on need; rather domestic and foreign policies and politics dominate’. And Smillie and Minear (2003a: 5) state that ‘in response to the recurrent challenges of humanitarian action in the post-Cold War era, some donors are now seeking to connect their humanitarian work more closely with conflict prevention and resolution, peace making and peace building, democratisation and good governance’. This would strongly contradict the humanitarian principle of impartiality.

It seems to be a common belief though that the individual donor’s rational behaviour in pursuing its interests leads to a suboptimal provision of humanitarian assistance, which turns out to be ‘less than the sum of its parts’ (Smillie and Minear, 2003a: 5). Even more so, it will be interesting to see, whether these perceived trends substantiate in a quantitative analysis of a political economic model, which I will now develop in Chapter III.

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7 Consolidated Appeals Process: ‘A programming process through which national, regional, and international relief systems mobilize to respond to selected major or complex emergencies that require a system-wide response to humanitarian crisis. CAP serves to promote a coordinated strategy, a common fund-raising platform, and to advocate for humanitarian principles.’ (http://www.reliefweb.int/txt/)
CHAPTER III:

A MODEL OF POLITICAL ECONOMY IN HUMANITARIAN ASSISTANCE
The argument put forward in this study suggests that the level of humanitarian response in the wake of a major natural disaster is not primarily determined by the need of those affected, but rather by political and economic interests, as well as by strategic considerations.

The basic assumption of the political economic model I develop in this chapter is that a potential donor country’s constituency derives utility from its government’s involvement in humanitarian action. The second basic assumption states that governments seek popularity with their electorate in order to remain in office. Starting from these two assumptions, it becomes clear that the government’s utility function to be formalised in Section 3.2.1 must be closely related with the constituents’ utility.

In the following section, I will clarify the underlying assumptions of the model. Starting from these assumptions, I will then derive the hypotheses on the donor government’s utility function. After having specified the intermediate causal relationships in Section 3.3, an argument will be made on the potential strategic interaction among donors.

### 3.1 Underlying Assumptions

#### Donor Country’s Government

- **A donor country’s government is a single actor.**
  
  For the sake of simplicity, bargaining between members of the government, as well as between government and opposition are excluded by definition.

- **Governments are opportunistic and aim at maximising their time in office.**
  
  In political economic theory, the basic assumption is the strategically rational government aiming to maximise its time in office due to the members’ of government deriving utility from being in office.\(^8\)

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\(^8\) In their contribution on democracy, government spending and economic growth, Plümper and Martin (2003) define the incumbent’s present utility function by the probability of being in office at subsequent periods of time and by the expected income in each term. At any given date \(t\) in period \(T\) the incumbent’s utility from holding office is

\[
    u_{i,t} = \sum_{s=t}^{T} p^{s-t} \delta^{s-t} M_{i,s};
\]

where \(M\) is income from being in office, \(\delta\) is the discount rate and \(p\) the probability of being re-elected for the subsequent period. Therefore, maximising the chances to be re-elected by the constituency figures prominently among the government’s aims.
• Governments aim at maximising their political support by the constituency in order to ensure re-election.

In a participative democracy, incumbents will seek to increase their popularity with the electorate in order to stay in office.

Therefore, a donor government’s action in a democracy will depend on the utility the constituents derive from the government’s actions. This is formulated in the following assumptions.

Donor Country’s Constituency

• The degree of political support depends on the utility the constituents derive from the incumbent’s decisions.

As constituents are also assumed to seek the maximisation of their utility, the political support they provide for the government will depend on the level of utility they derive from the government’s actions.

• Assistance to humanitarian emergency touches on constituents’ interests.

Intuitively, the distribution of emergency aid in cases of natural disasters will at the maximum only exert a marginal impact on the government’s popularity with the constituency, due to the low share on the government’s budget involved. According to my dataset based on Financial Tracking System (FTS) data, the average OECD member’s contribution to disaster relief amounted to around 114.000 US$ per year, with a maximum donor’s assistance of 3.182.689 US$. Average yearly assistance to disaster relief figured around $\frac{3}{10.000.000}$ of the GDP between 1992 and 2002.

While the distribution of the budget itself is unlikely to be closely related to public opinion, it is nevertheless probable that there be a link between government action in humanitarian emergencies and its popularity with the electorate.

In case the constituency has strong feelings about having to help in a humanitarian emergency, they will derive utility from knowing that their government takes action on their behalf and engages in disaster relief operations. Strong humanitarian feelings may only be aroused by the visibility of a crisis. Olsen (2000) argues on the basis of case
studies on media coverage and assistance level that the media may act as a link between
government action in humanitarian emergencies and its popularity with the electorate. It
arouses strong humanitarian sentiments in the public depending on the ‘framing’ and the
coverage and also gives the public an instrument at hand to monitor their government’s
action. In the case of European donors, Olsen (2000: 20) accepts a ‘bottom-up’ model for
humanitarian assistance due to the strong humanitarian sentiments reflected in opinion
polls, which seem to have caused stronger commitment in disaster relief by the respective
governments.

The importance of a recipient country to the constituents’ utility may further be increased
by their interest in maintaining good relations with a specific recipient country. The
following assumptions therefore centre around the utility constituents derive from
maintaining good relations with a specific recipient country.

International Relations

- Donor governments aim at improving bilateral relations with the recipient country
  through the provision of humanitarian assistance.
  It is assumed that the provision of assistance is conducive to establishing or maintaining
good relations with a recipient country. It is assumed to be in the constituents’ interest to
maintain cooperative relations with international partners.

While it is highly improbable that the provision of humanitarian assistance would have a
negative effect on bilateral relations between donor and recipient, multilateral relations
may also be affected by decisions on aid flows. In case of a major humanitarian crisis,
members of European Union, for example, would probably be slightly irritated if one of
their fellow countries did not contribute to relief operations while all of the others did. As
the relations to neighbouring countries and wealthy nations might even be of more
interest to the electorate, donor-donor relations might well also play a role in determining
levels of assistance. Therefore, the following assumption is made.

- Governments seek to maintain or improve good donor-donor relations and multilateral
  relations by not denying humanitarian assistance.
  The most effective way to achieve this aim would probably be to provide multilateral
  assistance. Providing multilateral assistance therefore may be especially attractive to donor
countries in case the advantages to be gained by bilateral relief operations do not
outweigh the benefits of strengthening multilateral cooperation in this policy field. I will recur to the topic of donor interaction in Section 3.4 on the rule for aggregation.

- There is diminishing marginal utility in the case of humanitarian assistance. Marginal utility for the constituents from humanitarian assistance is assumed to decrease with additional humanitarian financing. The diminishing marginal utility directly relates to the budget constraint to be assumed for humanitarian assistance.

**Donor Country’s Budget for Humanitarian Assistance**

- The donor’s overall budget for humanitarian assistance is constrained. Intuitively, there has to be a budget constraint, if marginal utility of humanitarian aid flows was not diminishing, payments would be expanding endlessly. However, this does not seem to reflect reality. Also, it is pragmatic to assume a budget constraint because all items in a government’s budget have to be fixed.

The budget for humanitarian assistance can be formalised as follows:

\[
G_{d,t} = \sum_{r=1}^{N} \alpha_r C_{d,t} + \sum_{r=1}^{N} \beta_r N_{d,t}
\]

The government’s budget \(G_{d,t}\) of donor country \(d\) at time \(t\) consists of the assistance given to recipients \(r\) affected by complex emergencies \((C_{d,t})\), and of the sum of assistance given to recipients \(r\) affected by natural disasters \((N_{d,t})\). The parameters \(\alpha_r\) and \(\beta_r\) denote the recipient’s share of the total assistance a donor contributes to relief in the respective type of emergency.

How much of the assistance will be spent on relief in complex emergencies and how much will be spent on natural disasters will depend on the incidences that year. For this study, the scope will be limited to humanitarian assistance for disaster relief \((N_{d,t})\) and the aim will be to explain how parameter \(\beta_r\) is determined.

In case there was a strong budget constraint, one could expect that there be a time effect in the level of assistance provided, events occurring in the last months of a calendar year could be less funded due to used up budgets.

If the budget constraint was weak, resources from other budgets could be rededicated into humanitarian funds. One could think that not-used-up budgets for development
assistance or other external spending budgets would be rededicated. This would presuppose that the utility the government derives from funding a particular relief operation is greater than the utility it derives from using the resources in the way determined in the budget.

Although it might seem probable that development assistance may be a resource from which extra-budgetary funding needs for humanitarian assistance could be financed, the picture looks quite different in reality. At least for some of the OECD donors, the budget for humanitarian assistance is located in the Ministry of Foreign Affairs and development activities are under the auspices of a different ministry. As budget mobility between two different resorts is virtually impossible, other funds are more probable to be used for extra-budgetary needs.9

As budget constraints seem to be weak, I will not expect to find a decreasing amount of assistance per affected towards the end of a year.

Interaction of Affected Country and Potential Donor Countries

- **Requests for international assistance are issued simultaneously to all potential donors.**

Recipient countries might favour some potential donor countries and issue a request to them first, or they might issue an earlier request to a potential donor, who seems most likely to make a substantial donation. Assuming that this is not the case is regarded necessary as the possible favouring by donor countries shall be assessed and controlling for an earlier issue will make the model more complicated.

- **The decision about how much humanitarian assistance is given for a specific disaster is not subject to bargaining with the affected country.**

In order to keep the model rather simple, it is assumed that needs assessment by the recipient country is not the sole basis on which funding decisions are made and that there is no bargaining between donor and recipient.

---

9 In the case of Germany for example, the budget for humanitarian assistance is subordinate to the Federal Foreign Office (Auswärtiges Amt), whereas the funds for development assistance fall in the responsibility of the Federal Ministry for Economic Cooperation and Development (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung), food aid for humanitarian emergencies, however, also falls in its responsibility. In case there were extra-budgetary needs for humanitarian financing, a rededication of budget items, which had not been used up by then, would be possible within the Federal Foreign Office given the consent of the Minister of Finance. However, extra-budgetary spending hardly ever seems to occur. The humanitarian budget increases yearly. (I am grateful to Eberhardt von Schubert, Head of Economic Section, Permanent Mission of the Federal Republic of Germany to the UN and the International Organisations to Geneva, for this information.)
Another relevant question is whether constituents can derive utility from other than their government’s actions. This will be discussed in detail in Section 3.4 dealing with the question of whether disaster relief can be regarded a public good.

## 3.2 Hypotheses on Individual Donor Behaviour

On the basis of the underlying assumptions just mentioned, I will now derive the hypotheses on the donor government’s utility function, which will hereafter be referred to as the donor’s utility function for the sake of simplicity.

### 3.2.1 $H_1$: The Discrimination Hypothesis

The main hypothesis to be tested in my political economic model of disaster relief identifies the motivations for discriminative behaviour towards recipient countries. It suggests that the pursuit of political, economic and strategic interests determines the level of assistance a recipient is granted.

$H_1$: The more a donor’s political, economic and strategic interests are affected by the humanitarian crisis in a recipient country, the higher the level of funding.

According to the assumption of a utility maximising government seeking political support from the electorate, the government will try to enhance the constituents’ utility by the decisions it takes in domestic and foreign politics. The constituents’ utility it derives from good relations with a recipient country will determine the importance that is attached to assisting it in a humanitarian emergency. The importance attached to the recipient country will be reflected in the level of funding.

The potential donor country’s constituency is hypothesised to hold the following political, economic and strategic interests in respect to funding disaster relief:

### Political Interests

- **Political Closeness**

  The constituency derives utility from the cooperation with other countries in international relations, because it enables the electorate to most efficiently pursue its interests in the international sphere. Therefore, political closeness between a potential donor and a
recipient is assumed to be essential for the importance a constituency attaches to assisting a country, which is affected by a natural disaster.

Similar interests and opinions on salient issues may form alliances among governments, which will enhance assistance in times of crisis. In return, donors may expect future cooperation to be facilitated by the assistance it provided. Therefore, I formulate $H_{1.1}$ for the political closeness argument:

$H_{1.1}$: The closer recipient and donor government are to each other politically, the more probable will be a higher level of funding for humanitarian assistance.

- **Good Governance**

  All of the ten biggest spenders of the OECD are democracies. Therefore it might be that good governance criteria, which are set as political conditionality in development assistance, also partly apply to humanitarian assistance. Although there is no official political conditionality to humanitarian assistance and it would strongly contradict humanitarian principles, Smillie and Minear (2003a: 5) state that some donor countries seem to reflect on connecting humanitarian involvement with other aims such as democratisation and compliance with good governance criteria in the recipient country.

  In order to empirically assess the influence of good governance criteria in humanitarian assistance, I include $H_{1.2}$ in my model.

$H_{1.2}$: The more compliant recipient governments are to good governance criteria, the more probably donor governments will reward the recipient with higher funding than proportionality would predict.

- **Historical Ties**

  Historical ties, especially former colonial experience may have formed special feelings of attachment to a recipient country and close interactions may exist. Historical ties may also make it easier for governments to gain in popularity due to their humanitarian assistance measures. Thus, the following causal relationship is hypothesised:

$H_{1.3}$: The stronger the historical ties, the more probable will be greater humanitarian assistance.
In addition to the political motivations just mentioned, the constituency is hypothesised to hold the following economic interests.

**Economic Interests**

- **Trade Relations**
  In case a donor has tight economic relations with a recipient being affected by a natural disaster, the donor country might want to protect its domestic economy from the adverse effects caused by less economic activity resulting from the disaster situation. Also, a donor country might hope for enhanced economic cooperation after humanitarian assistance was granted. Thus $H_{1.4}$ is suggested.

  $H_{1.4}$: The tighter the economic relations with the recipient country, the more probable will be a more generous funding by the donor country.

  There may even be a bias in aid allocation, which is contradictory to the relative need for humanitarian assistance. Donors could favour economically sounder recipient countries because they expect higher gains from potentially increased trade relations. Therefore, the following hypothesis will be tested:

  $H_{1.5}$: The stronger the receiving country’s national economy, the more probable will be a more generous humanitarian assistance.

- **Official Development Assistance**
  Applying the logic of utility maximisation, a donor country that provides a higher level of ODA to a recipient country will do so due to the utility it derives from maintaining or improving good relations with that country. Therefore, I hypothesise:

  $H_{1.6}$: The more ODA a recipient country receives from a donor country, the more it is likely to receive from this donor country in humanitarian financing.

- **Geographical Closeness**
  Geographical closeness might have an impact on the willingness to provide humanitarian assistance. The economy of an entire region may be affected by the reduced economic activity of a population suffering from the incidence of a natural disaster.
Also, there may be implications for the security and stability of the region. Humanitarian assistance might be granted in order to prevent potential migration to a donor country. Also there might be ethnic minorities of the donor country’s population in the neighbouring country that create special interests in the recipient country. Therefore, I suggest H1.7.

H1.7: The closer recipient and donor country are to each other geographically, the more probable will be high level of humanitarian assistance.

In addition, the government is hypothesised to follow strategic considerations, in order to boost the positive effect its funding decisions have on its popularity in the domestic arena.

**Strategic Considerations**

- **Visibility**
  The most effective way for a government to allocate its resources for emergency relief operations will be the one that ensures the greatest visibility with its constituency. Probably the most decisive factor for visibility with the electorate is media coverage. The coverage of a humanitarian crisis in a potential donor country may produce what has often been termed the ‘CNN effect’. A crisis that receives high media coverage, may receive relatively more assistance (e.g. see Olson, 2000). Especially TV coverage may arouse strong humanitarian feelings in the population and create the expectation for the government to act. With the own relief operations also being transmitted to the population in a visible crisis, the government will then derive more utility from becoming active in a relief operation. Therefore, H1.8 is hypothesised.

H1.8: The higher the media coverage of a humanitarian crisis, the more likely will be a substantial donor’s contribution.

- **Common Language**
  In the special case of recipient countries using the same official language as the potential donor country, it is assumed that this fact may also increase visibility with the constituency due to especially close relations, as for example in the francophone world.

H1.9: When a recipient country uses the same official language as the donor country, it will be more likely to receive a higher level of assistance.
As the government’s utility is mainly determined by the constituents’ interests plus strategic considerations concerning the visibility of its actions with the electorate, a donor government’s utility function $u_d$ from giving humanitarian assistance can be formalised in the following utility function:

$$u_d = l_r \times G$$

where $u_d$ is the donor government’s utility from the gain $G$ from improved relations to the recipient country $r$. The parameter $l_r$ signifies the importance attached to the specific recipient country by the donor’s constituency. $l_r$ is a weighted additive index of the spheres of interest mentioned above.

$$l_r = \beta_1 \times pc + \beta_2 \times gg + \beta_3 \times ht + \beta_4 \times tr + \beta_5 \times es + \beta_6 \times oda + \beta_7 \times gc + \beta_8 \times vi + \beta_9 \times cl$$

The parameters $\beta_1$ to $\beta_9$ are the ones to be estimated in the inductive analysis of individual donor behaviour.

As the discrimination hypothesis (H1) of aid allocation is to be tested, the corresponding null hypothesis is the hypothesis of proportionality in the allocation of humanitarian assistance to natural disasters (H0).

### 3.2.2 H0: The Proportionality Hypothesis

In case the humanitarian principle of impartiality prevailed in donors’ decision-making, the following null hypothesis should apply:

$$H_0: \quad \text{The higher the needs of the people affected by a humanitarian emergency, the higher will be the level of funding.}$$

Having specified the potential donor’s utility function, I will now hypothesise the intermediary causal relationships that I assume in my model, following the logic of methodological individualism.
3.3 Intermediary Causal Relationships

The allocation of assistance by the international humanitarian community is a phenomenon to be observed on the systemic level. Accordingly, the distributional outcome might not be fully explained by trying to formulate cause and effects relationships staying on the macro level (Schnell, Hill, Esser, 1999: 105). In order to enhance the completeness of the explanation, I follow the logic of methodological individualism (Coleman, 1990: 1-23; Schnell, Hill, Esser, 1999: 104-7). Therefore, the distributional outcome is traced back to actions by strategically rational individuals trying to maximise their utility.

The individualist explanation of macro level observations requires the specification of a bridge hypothesis as macro-to-micro transition and a rule for aggregation as micro-to-macro transition. I will explain these hypothesised relationships in more detail with the help of Figure 1 that visualises the logic of the argument in an arrow diagram.

The intermediary causal relationships for my political economic model of humanitarian assistance in the wake of natural disasters are specified as follows:

1. The initial event: incidence of a major natural disaster resulting in a humanitarian emergency

The incidence of a major natural disaster resulting in a humanitarian emergency is the initial event that changes the status quo, i.e. the distribution of people in urgent need changes.

Figure 1: Arrow Diagram of the Model's Structure
2. The bridge hypothesis: affected country’s request for international assistance
The bridge hypothesis states the relationship between the new status and the situation in which the acting individual finds itself. In case the government of the affected country issues a request for international assistance, the potential donor’s government has to reassess the optimal allocation of resources.

With the assumption of a constraint on the national budget for humanitarian financing, the potential donor country’s government faces a problem of optimising the utility it derives from the distribution of its budget. The affected country’s change of need status due to the disaster may have rendered the distribution suboptimal; therefore the allocation of resources has to be reassessed.

3. The individual-level theory of action: maximising utility
The standard theory of action used in rational choice modelling contexts is the assumption of utility maximisation. The donor government maximises its utility in the decision on the allocation of resources from the budget for humanitarian assistance. The government’s utility function has been formalised in Section 3.2.

4. The rule for aggregation
The decisive question in the transition from micro to macro level is how to model the rule for aggregation. It is important to determine whether the collective action can be represented as the sum of the individual decisions, or whether donors strategically interact. This depends on the nature of humanitarian response to natural disasters. In case it was a public good, it would be strategically rational to hope for another donor to provide humanitarian assistance as one could enjoy the benefits without bearing the costs. In case it was not a public good, it might be individually rational for a government to join the crowd and contribute when other donors have already decided to do so. In order to keep the model simple, coordinative acts or negotiations among donors are not included in the model.

3.4 The Rule for Aggregation: Is the Provision of Humanitarian Assistance a Public Good?
A decisive question for understanding the nature of interaction in the provision of humanitarian assistance is whether the provision of assistance to people in need is a public good. If it were a public good, this would mean that potential donors who decide not to contribute to humanitarian financing would nevertheless profit from the provision of
assistance, but not bear any costs. The constituencies of those countries not taking part in relief operations would profit from the action taken by other countries’ government. This logic has been formalised in the ‘Prisoner’s Dilemma’ (see e.g. Sandler, 1997). In case actors in the humanitarian community were facing a social dilemma in the form of a Prisoner’s Dilemma, individually rational behaviour would lead to suboptimal outcomes for the participants in the game, as the dominant strategy would be defection.

A variant of the Prisoner’s Dilemma lacking a dominant strategy and probably closer to the strategic situation, in which actors in the field of humanitarian assistance may find themselves is the ‘Volunteer’s Dilemma’, which Diekmann (1985) defines as a game lacking a dominant strategy, but in which the pursuit of self-interest might lead to pareto-inferior results as well. In case one player bears costs, the other players will be able to ‘free ride’ and derive utility from the provision of the public good, whereas the volunteer only gains utility minus costs. Assuming that there is no communication among the actors, there is no simple answer to the question of rational behaviour in a volunteer’s dilemma (Diekmann, 1986: 189). Diekmann’s experimental results show a diminishing chance of cooperative actions with a growing size of the group. This means that the chances for a donor to be active in a specific relief operation would diminish with additional potential donors.

Therefore, if humanitarian funding followed the logic of a Volunteer’s Dilemma, one would expect only a few donors to be active in a specific case and other potential donors to free ride. Also, one would expect to have a fair share of multilateral assistance on total assistance as players in a social dilemma situation will try to improve the functioning of the system by enhancing control mechanisms that ensure contributions by all players in the game. Except for being able to decide more quickly in a bilateral way of cooperation, there would be no advantage of a bilateral strategy over multilateral action as the utility the actors derive stems from the provision of humanitarian assistance itself and gains are not reserved to a specific donor.

In order to tentatively assess, which rule for aggregation best describes the strategic situation of the provision of humanitarian responses to natural disasters, I will undertake a descriptive analysis on the number of donors active per case and on the share of multilateral assistance on total assistance.
Political Economy of Humanitarian Assistance

Number of Donors Active per Case

The question addressed is under which circumstances a donor becomes active. As we have seen, this decision is connected to the hypothesised rule for aggregation. Two different strategies could be followed in the strategic interaction of potential donors. Either a potential donor could refrain from making a contribution to disaster relief in case other donors have already become active. Or, in order to improve relations with close cooperation partners in international affairs, a potential donor could be encouraged to make a donation in case his fellow donors want to take part in a relief operation thus showing good will and ensuring cooperative behaviour by his counterparts.

Also, it might be interesting to look into whether a very close cooperation in several policy fields, like in the European Union, makes a change in strategic interaction. One could expect that with closer cooperation, it was to become more likely that a greater number of donors becomes active in a relief operation.

Figure 2 shows the number of OECD donors / EU donors active per case. The distribution looks very similar in overall OECD and EU donors’ participation.

Figure 2: Active Donors per Case, OECD Donors and EU Donors

Source: Author’s calculations on own dataset.

Unexpectedly, the European Union’s donors seem to be less active on a bilateral basis than OECD donors in general. Whereas no activity of any OECD donor was reported for 10% of the cases, inactivity amounted to 35% for EU donors. Having provided multilateral budgets
for assistance already, which were not included in the analysis may figure among the reasons for less donor activity within the European Union. Yet, to look into this matter lies beyond the scope of this study.

The shape of the distribution makes for the supposition that with the case of humanitarian assistance in the aftermath of natural disasters, donors are facing a Volunteer’s Dilemma.

The apparent existence of a Volunteer’s Dilemma indicates that for the inactive donors, extra utility to be derived from taking part in a relief operation minus the costs they would have to bear is lower than the utility they derive from the provision of the public good of humanitarian assistance without actively taking part in it.

Although a Volunteer’s Dilemma leads to a small number of active donors per case, this does not directly imply a lower level of humanitarian financing. However, it seems to be reasonable to expect this for most of the cases. Also, the existence of a Volunteer’s Dilemma strengthens the case against donor interests leading to a disproportionate allocation of aid flows. If humanitarian funding in the wake of a natural disaster was a public good, it would not be reasonable to assume special donor’s interests to distort the allocational pattern.

The Volunteer’s Dilemma situation does not seem to be solved through an institutionalisation, which could ensure the rotation of donor activity among the members of a board. This can make case for a low level of importance governments attach to their fellow donors’ activity in disaster relief, perhaps due to the relatively low share of the national budget spent on disaster relief operations.
CHAPTER IV:

EMPIRICAL ANALYSIS
In this chapter, two sets of analyses will be performed:

- The first set of analyses aims at finding out whether the total funding provided by the humanitarian community, the overall assistance to disaster relief operations, is proportionate to need. This basic model’s fit including only the independent and the control variables will be the yard stick for the explanatory power of the refined model tested in the second set of analyses.

- The aim of the second set of analyses is to identify the main factors determining the level of assistance a donor contributes to disaster relief. The refined model’s fit is tested for the top ten donors of the last decade, namely the United States of America, the United Kingdom, Japan, Germany, Sweden, the Netherlands, Spain, Italy, Canada and France. The refined model is constructed on the basis of the independent variables operationalised from the hypotheses formulated in Chapter III.

Before proceeding to the two different sets of analyses, I will present the selection of cases and control variables as well as the operationalisation of the control variables common to both sets.

### 4.1 Selection of Cases

The scope of analysis is limited to humanitarian assistance provided in the wake of natural disasters. On the one hand, this is due to the availability of data on the severity of a humanitarian crisis. In order to be able to test the impact of donors’ interests on the level of assistance, it is necessary to control for the need the affected populations faces. On the other hand, it is hard to make need comparable across countries and types of disasters\(^{10}\). It would have been even more complicated to compare across natural disasters and long-term humanitarian crises due to their typically very diverse needs. Therefore, restricting the scope of analysis to natural disasters may result in a more homogeneous picture of need.

The time frame of the analysis begins with the year 1992 and ends with 2002. An analysis of cases before that time was not possible due to a lack of data on contributions.

\(^{10}\) Transport costs for example are typically higher for e.g. Oceania; preventive evacuation measures may be reflected in the costs but not in the number of people affected and therefore distort the picture; the level of development may influence the estimation of material damage; damage figures might not reflect the need properly etc. Obviously the operationalisation of need is problematic, but nevertheless necessary for analysis.
Selected for analysis were all cases of natural disasters, in which there had been reported international assistance. This means that total assistance figures include the reported contributions by all donors active in a specific case, including bilateral, multilateral and private donors. Data on donor’s contributions, however, was only included for members of the OECD and for IGOs. Private donations, by NGOs for example, were excluded from the analysis.

Cases, in which there was no international assistance, were not included in the analysis. It is assumed that in these cases there was no appeal for international assistance. Without a request for international assistance, it is not possible for potential donors to become active due to legal reasons. Therefore, including those cases may have distorted the picture. Excluded were those cases, in which the recipient country was a member of the OECD, as this may have biased the parameters to be estimated due to especially close cooperation among OECD members.11 Further excluded were also those cases, in which an entire region was the recipient.12 This leaves a total of 486 cases of international humanitarian assistance in the wake of natural disasters between 1992 and 2002. Thus, for the first set of analyses on proportionality of total assistance, the total number of cases amounts to 486.

As in the second set of analyses on individual donors’ behaviour dyadic relations are of interest, the funding decision of each of the thirty OECD members has been assigned one dyadic case for each incidence. Therefore, the total number of cases in the dataset constructed for this study amounts to \( n=14,580 \) dyadic cases.

The analysis of donor’s assistance was limited to donor countries being members of the OECD.13 A special focus will be on the top ten donors.

### 4.2 Control Variables

In order to be able to interpret the estimated parameters for the impact of political, economic and strategic factors on donors’ decisions, it is necessary to control for those factors, which can also exercise considerable influence on funding decisions. In the case of humanitarian financing for disaster relief, the obvious factor, which probably influences the level of humanitarian assistance is the severity of the humanitarian crisis. The number of people

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12 Namely, these were incidences of hurricanes and droughts in the Caribbean and Central America in 1995, 1998, 1999, 2001 and 2002.

13 Please find a list of the OECD member states in Annex 2.
affected, as well as material damage estimated in US$ were chosen as indicators for the recipients’ needs.

4.3. Operationalisation of Control Variables

Having introduced the theoretical concepts included in the political economic model of humanitarian assistance in Chapter III, this section proceeds to the operationalisation of the control variables common to both sets of analyses.14

Recipients’ Needs

The operationalisation of the recipients’ needs is the most crucial to the analysis, as it is the touch-stone on the basis of which the proportionality of disaster relief is judged. However, it is also one of the most problematic to be assessed. Needs may vary across countries and types of disaster. In existing studies on global humanitarian assistance, it is noted that a possible indicator for need in complex emergencies, the amount of aid requested per capita, varies significantly ranging from 2$ to 413$ per head in the CAPs of the years 2000 and 2001 (Randel and German, 2003a: 6-7).

In the case of analysing the need of people affected by natural disasters, however, it is advantageous that there exists data on the severity of a disaster. There are mainly three datasets gathering disaster data: EM-DAT, which is maintained by the Centre for Research on the Epidemiology of Disasters (CRED), Université Catholique de Louvain, Brussels, and is a joint initiative with the Office of U.S. Foreign Disaster Assistance (OFDA); NatCat, which is maintained by the Munich Reinsurance Company; and Sigma, which is maintained by the Swiss Reinsurance Company. EM-DAT is the only one being available to the public and is the one, which focuses primarily on ensuring the completeness of human impact data (Guha-Sapir and Below, 2002).

Due to its focus on human impact data, I chose EM-DAT as the basic dataset for all my variables indicating the severity, type, location and human impact of natural disasters.

An overarching difficulty in disaster data is the lack of standard definitions by the data producing sources (Guha-Sapir and Below, 2002), which in the case of EM-DAT are, in

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14 For a more detailed description of the variables presented in this chapter, as well as for additional variables not included in the analysis presented in this paper, please see the ‘Codebook for the Combined Natural Disasters and Contributions to Disaster Relief Dataset, 1992-2002’, which you may find on the CD-R provided.
order of their priority: UN agencies, U.S. Government Agencies, official governmental sources, IFRC, research centres, Lloyd’s, Reinsurance sources, press, private.\footnote{A detailed priority list of the sources for EM-DAT is available at http://www.cred.be/emdat/Guide/srcelist.htm, last access 02.07.2003.}

Although the operationalisation of need may cause some difficulty, the closest one may get to a useful operationalisation of need is to choose the number of persons affected by a disaster as well as the material damage in US$.

- **Number of Persons Affected**
  The number of persons affected from EM-DAT is the sum of people having been injured, rendered homeless or otherwise affected by the natural disaster ($\text{totaff}$).

- **Estimated Damage in US$**
  The material damage is given as an estimate in US$ in EM-DAT ($\text{damage}$).

Having clarified the operationalisation of the control variables common to both sets of analyses, I will now turn to the first set of analyses, which assesses the proportionality of total assistance to the recipients’ needs.

### 4.4 First Set of Analyses: Assessing the Proportionality of Total Assistance

The aim of the first set of analyses is to assess the overall financing outcome of the international humanitarian community in the aftermath of natural disasters.

In this section, first the dependent variable for the analysis of total disaster relief operations is operationalised. In the descriptive analysis to follow, overall trends in the allocation of humanitarian assistance are identified and an estimation of need for the purposes of descriptive analysis is suggested. Finally, we proceed to the inductive analysis on the proportionality of total assistance.

#### 4.4.1 The Dependent Variable: Total Assistance

In the first set of analyses, the aim is to find out whether overall assistance produces an outcome proportional to need. Therefore, for the overall analysis of humanitarian assistance in the wake of natural disasters, total assistance ($\text{totalass}$) was chosen as the dependent variable. It includes those contributions by bilateral, multilateral and private donors to a
specific disaster relief operation, which were reported to the United Nations Office for the Coordination of Humanitarian Affairs’ (OCHA) Financial Tracking System (FTS) in current US$.\[^{16}\] In the vast majority of cases in-kind contributions were included with their estimated monetary value.\[^{17}\]

### 4.4.2 Descriptive Analysis

In this section, trends in the allocation of disaster relief financing over the last decade will be pointed out.\[^{18}\] After giving an overview of major recipients, an operationalisation of recipients’ needs for the purpose of descriptive analysis is proposed. Then, a first approximation to the question of whether humanitarian funding is appropriate and proportional to the needs of those affected will be undertaken. Concluding the descriptive analysis, I will give an overview of budget types and budget size in order to view humanitarian assistance in disaster relief in the broader context of assistance payments.

#### Recipients

A first means of approaching the question whether some recipients are treated more favourably in the allocation of humanitarian financing than others is the amount of assistance received per person affected. Figure 3 displays the ten recipients having received the highest amounts of total assistance per person affected.\[^{19}\]

Whereas mean total assistance per affected amounts to about 170 US$, the ten cases with the highest assistance per person affected represent the extreme outliers to the distribution of total assistance per affected. The volcanic eruption in Montserrat in 1997 received the highest amount of assistance per affected. In this case and in the case of wild fire in Indonesia in 1998 for example, the number of people affected was relatively low compared to material damage. Also, evacuation measures prior to the volcanic eruption in Montserrat prevented the amount of people affected to be higher. Therefore, having a closer look at material damage, costs of preventive measures and high transportation costs for relief items, as for example in the case of Vanuatu, the exclusive focus on people affected in order to estimate

\[^{16}\] While reporting to FTS by governmental donors is quite extensive, contributions by private donors are not nearly comprehensive. (I am grateful to Ms. Wendy Cue for this information, personal communication, 9\textsuperscript{th} May 2003, Geneva.) As the focus of my study is on governmental donors, this deficiency is of minor importance.

\[^{17}\] In 25 of the 486 disaster cases, therefore in 750 dyadic cases, the total assistance value was not specified. In FTS, total assistance was given in thousands, for _total_ FTS figures were multiplied by 1.000.

\[^{18}\] For details of the descriptive analysis, please consult the SPSS-Syntax file, which you may find on the CD-R provided with this paper.

\[^{19}\] As stated above, ‘total assistance’ referred to in this study includes all contributions made by bilateral donors, be they or be they not members of the OECD, as well as donations by private and multilateral donors.
the need of the affected population does not seem to suffice. Later in this section, the
difficulties of estimating need will be treated in more detail. Also, the potential effect of
disaster type on disproportional funding will be looked into.

Figure 3: Top Ten Recipients of Total Assistance per Affected, 1992-2002

<table>
<thead>
<tr>
<th>ID</th>
<th>Year</th>
<th>Recipient</th>
<th>Disaster Type</th>
<th>Total assistance/affected (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>208</td>
<td>1997</td>
<td>Montserrat</td>
<td>Volcano</td>
<td>20,435,85</td>
</tr>
<tr>
<td>144</td>
<td>1995</td>
<td>Russia</td>
<td>Earthquake</td>
<td>6,658,98</td>
</tr>
<tr>
<td>253</td>
<td>1998</td>
<td>Indonesia</td>
<td>Wild fire</td>
<td>5,865,10</td>
</tr>
<tr>
<td>12</td>
<td>1992</td>
<td>Egypt</td>
<td>Earthquake</td>
<td>5,545,65</td>
</tr>
<tr>
<td>25</td>
<td>1992</td>
<td>Vanuatu</td>
<td>Wind storm</td>
<td>4,699,20</td>
</tr>
<tr>
<td>445</td>
<td>2002</td>
<td>Ghana</td>
<td>Flood</td>
<td>4,100,00</td>
</tr>
<tr>
<td>480</td>
<td>2002</td>
<td>Tajikistan</td>
<td>Flood</td>
<td>2,137,32</td>
</tr>
<tr>
<td>130</td>
<td>1995</td>
<td>Laos</td>
<td>Epidemic</td>
<td>1,710,82</td>
</tr>
<tr>
<td>448</td>
<td>2002</td>
<td>Honduras</td>
<td>Flood</td>
<td>1,687,72</td>
</tr>
<tr>
<td>218</td>
<td>1997</td>
<td>Seychelles</td>
<td>Flood</td>
<td>839,10</td>
</tr>
</tbody>
</table>

Source: Own dataset based on EM-DAT and FTS data.

Having identified the extreme outliers of funding per affected, whether or not the funding
per affected is proportional to need is still obscure. A useful operationalisation has to be
found in order to make need comparable across different types of disasters, across countries
and across time.

Recipients’ Needs

Previous studies fall short of a measurable definition of need. However, in order to assess
whether the aggregate of humanitarian aid flows is proportional and appropriate, need has to
be expressed in monetary value.

The difficulty prevailing in all studies on humanitarian financing is the difficulty to quantify
need per person affected. Studies on CAPs often refer to divergent appeal sums per person
affected (Randel and German, 2003b: 6). Although it is hard to tell whether these differing
appeal sums are due to inconsistent needs assessment (for details on needs assessment, see
Darcy and Hofmann, 2003) or to very heterogeneous needs, it seemed to me that comparing
need across cases of complex emergencies and cases of natural disasters may make the picture
much more heterogeneous than it is when focusing on solely natural disasters. Restricting the focus may thus make needs more comparable. Also, for natural disasters material damage is reported in the EM-DAT database for roughly fifty percent of the cases. Using data on people affected and damage opens up the possibility to roughly estimate need in the wake of natural disasters. With the dataset constructed for this study identifying the corresponding contributions, for the first time it will be possible to make a rough empirical assessment of need and corresponding assistance in cases of natural disaster.

Material damage, transportation costs and preventive measures are highly likely to have an impact on the need per person affected. As the focus of disaster relief in the aftermath of natural disasters is on the most urgent needs of the affected population such as need for water, nutrition, shelter and health services, especially restoration of infrastructure such as sanitation systems, water supply, roads etc. may figure prominently among the tasks to be accomplished. Therefore material damage seems to be decisive for the amount of humanitarian assistance needed although restoring total material damage is not the task for humanitarian assistance. In modification to Randel and German (2003a: 34), who suggest that an estimation of need would have to take into account the number of affected people and a figure for the average cost to meet one person’s needs, I assume that the variance in unit cost for meeting basic needs is best described by including a measure of material damage in an estimation equation to be constructed. 20

For descriptive analysis, I develop an estimation formula, which expresses the needs per person affected in US$.

**Constructing an Index for Need per Person Affected**

An additive weighted index is constructed that accounts for the number of people affected, an estimated constant amount of 50US$ per person needed to meet basic needs such as shelter, water and food, and for the estimated damage in US$, accounting for at least parts of the differences in costs to respond to the needs of the affected population:

\[
\text{Need(US$)} = \text{totaff} \times 50\text{US$} + 0.2 \times \text{damage (US$)}
\]

\[
\text{Need / affected} = \frac{\text{totaff} \times 50\text{US$} \times 0.2 \times \text{damage (US$)}}{\text{totaff}}
\]

20 For complex emergencies, it would possibly make sense to estimate a need per inhabitant, as the majority of the population will be affected by a complex emergency. For natural disasters, however, it seems reasonable to focus on people affected by the incidence.
The estimation of need produced 234 valid results for need and 229 valid results for need per affected out of 486 disaster cases.

**Appropriateness**

Whether assistance is appropriate to the needs of the affected population is hard to be assessed. When calculating the mean need per person affected with the help of the index presented above, it amounts to around 3640 US$, mean assistance per person affected amounts to around 170 US$. The huge difference between estimated need and assistance may be artificially created by the operationalisation of need. Also, the appropriateness of need expands to topics such as use of funds, good practices etc.

For the question of interest whether assistance is allocated proportionally, however, it is not that important whether the estimate of need exactly represents the scale of need per person affected, as long as it does not distort the proportions across recipients. It is important whether assistance is allocated proportional to estimated need, not whether need is represented in the right scale.

**Proportionality**

This section aims at identifying potential tendencies to allocate the aggregate total assistance disproportionally across continents, or across types of disasters. As we are talking about aggregate figures, we may identify tendencies in the output of the humanitarian community to favour some recipients over others. Individual behaviour of the ten major donors will be analysed in the inductive analysis to follow in Section 4.5.

- **Continents**

  Having a look at need per affected and assistance per affected across continents, Oceania, Africa and Europe seem to obtain disproportionally high levels of assistance, whereas Latin America seems to receive slightly less assistance than it would be proportional and Asia seems to receive aid flows proportional to need. The seemingly disproportional amounts for Oceania, however, could be an artefactual result due to the exclusion of transport costs, which are typically higher in Oceania, as everything will have to be transported by air. Also, the apparently disproportional amount of assistance to Africa may at least partly be explained by the account for material damage. Damage estimates largely focus on destroyed homes and infrastructure for which damage in US$ will typically be estimated lower in less developed regions. Therefore, the disproportionally high amount of assistance per affected to Europe is
even more telling. Damage estimates will probably tend to be higher in Europe and
nevertheless assistance per affected is relatively high. Therefore, we carefully suppose a
tendency to more favourably respond to disasters occurring in Europe.

Figure 4: Need per Affected and Assistance per Affected (in US$), by Continents

![Figure 4: Need per Affected and Assistance per Affected (in US$), by Continents](chart)

Source: Author’s calculations on own dataset based on EM-DAT and FTS data.

- **Type of Disaster**
Another potential source for discrimination could be the type of disaster. Especially due to
the visibility aspect presumed in Chapter II of this study, one could expect that those types of
disasters, which tend to be covered by the media to a greater extent, and therefore arouse
humanitarian sentiments more effectively, are more prone to receiving a disproportionally
high amount of assistance per person affected. Intuitively, media coverage is especially high
with earthquakes and volcanic eruptions due to their relatively low frequency of occurrence in
comparison to floods and storms, and may be also due to their exotic nature to the OECD
members’ populations, which live in regions where volcanic activity and seismic shocks are
relatively rare in occurrence.

Figure 5 displays the ratio of need met by the assistance per affected person. It reveals a very
diverse picture for different types of disasters. While assistance to people affected by
industrial accidents, slides, droughts and wild fires make up for less than 10% of the need per
person affected, the need of a person affected by floods, storms and other accidents is on
average funded by between 19% to 31%. For people affected by earthquakes the relief
operations account for 64% of the need per person, which is more than double the share of
needs resulting from storms, the next best funded disaster type. But the most striking result is
the one for humanitarian response in the wake of volcanic eruptions. The average assistance per person affected outbalances the person’s needs by providing about eight times the sum needed.

**Figure 5: Ratio of Need Met by Assistance per Affected**

![Bar chart showing the ratio of need met by assistance per affected person for different disaster types.]

Source: Author’s calculations on own dataset based on EM-DAT and FTS data.

This produces the impression that media coverage may indeed have a strong influence on levels of assistance and that disasters, which are more attractive to the media tend to be favoured by donors.

It has to be noted that outliers might have influenced the averages displayed in a way that distorts the effects. As this descriptive analysis is only a preliminary attempt to show trends and is followed by robust regression analysis weighing influential cases in order to control for their distorting effect on the overall picture, the reader is kindly advised to refer to the inductive analysis for more robust figures.
Budget Type

Dealing with aid allocation from national budgets for the largest part of the analysis, it seems to be helpful to make a comment on the proportions of spending from national versus multilateral budgets. OECD members out of their national budgets contribute more than three quarters of reported humanitarian assistance\(^{21}\). Roughly another quarter is allocated by Intergovernmental Organisations (IGOs) from their indigenous budgets. Figure 6 displays the proportions of assistance coming from national (OECD) budgets as well as from multilateral budgets (EU, IGOs, Regional IGOs).

Figure 6: Reported Humanitarian Assistance as Response to Natural Disasters, by Donor Groups, 1992-2002

Source: Own dataset based on data from FTS
Contributions by NGOs and countries not being member of the OECD were not included.
Contributions by member states include those channelled via NGOs and IGOs.
Cases in which OECD members were recipients are not included. Cases, in which a region was given as recipient, were not included in the dataset.

However, these proportions of national and multilateral resources do not reflect the entire picture of bilateral versus multilateral financing, because a considerable share of funds originating from national budgets is channelled multilaterally, or the management is delegated to NGOs. It is important to take a look at the channelling of funds to the recipient country in order to be able to better estimate the amount of truly bilateral funding, i.e. that both funding and management of disaster relief operations are strictly bilateral. Table 1 displays the channels used by OECD members for payments made out of their budgets.

\(^{21}\) Excluding contributions by NGOs and other private donors as well as donations by non-OECD countries.
Table 1: Channels Used for Contributions out of OECD Members’ Budgets

<table>
<thead>
<tr>
<th>Channel</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Frequency including multichannel contributions</th>
<th>Percentage including multichannel contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN</td>
<td>500</td>
<td>23.6%</td>
<td>814</td>
<td>29.0%</td>
</tr>
<tr>
<td>NGO</td>
<td>184</td>
<td>8.7%</td>
<td>467</td>
<td>16.6%</td>
</tr>
<tr>
<td>Red Cross</td>
<td>268</td>
<td>12.7%</td>
<td>553</td>
<td>19.7%</td>
</tr>
<tr>
<td>Bilateral</td>
<td>603</td>
<td>28.5%</td>
<td>917</td>
<td>32.7%</td>
</tr>
<tr>
<td>IGO</td>
<td>0</td>
<td>0%</td>
<td>5</td>
<td>0.2%</td>
</tr>
<tr>
<td>Channel not specified</td>
<td>50</td>
<td>2.4%</td>
<td>50</td>
<td>1.8%</td>
</tr>
<tr>
<td>UN, NGO</td>
<td>51</td>
<td>2.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN, Red Cross</td>
<td>65</td>
<td>3.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN, Bilateral</td>
<td>87</td>
<td>4.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGO, Red Cross</td>
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<td>2.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGO, Bilateral</td>
<td>55</td>
<td>2.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red Cross, Bilateral</td>
<td>53</td>
<td>2.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bilateral, IGO</td>
<td>1</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN, NGO, Red Cross</td>
<td>25</td>
<td>1.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN, NGO, Bilateral</td>
<td>27</td>
<td>1.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN, NGO, IGO</td>
<td>1</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN, Red Cross, Bilateral</td>
<td>19</td>
<td>0.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN, Red Cross, IGO</td>
<td>1</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN, Bilateral, IGO</td>
<td>1</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGO, Red Cross, Bilateral</td>
<td>33</td>
<td>1.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGO, Bilateral, not specified</td>
<td>1</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN, NGO, Red Cross,</td>
<td>36</td>
<td>1.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bilateral</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UN, NGO, Bilateral, IGO</td>
<td>1</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
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<td>Valid</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>0.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2118</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Author’s calculations from own dataset, based on FTS data.

Acting on the assumption that donor countries most efficiently maximise their utility by managing their humanitarian assistance flows bilaterally, it comes as a surprise that in about one third of the cases the management of the funds is delegated to the United Nations, in about another third of the cases implementation was mandated to NGOs\(^{22}\), and only one third is spent on a purely bilateral basis. A two-thirds share\(^{23}\) of delegation to the management of national funding does not seem to fit with the individual theory of action proposed in Chapter III. In order to maximise visibility and in order to most directly influence relations with the recipient country, it seems to be rational for a government to arrange relief operations bilaterally.

\(^{22}\) The Red Cross (IFRC, ICRC, or national Red Cross) was assigned the management of national assistance funds in more than half of the cases, in which humanitarian financing was channelled through a NGO.

\(^{23}\) Please note that there is no data available on the share of funds being channelled in a certain way in case multiple channels were used; therefore we have to content ourselves with the share of cases.
Despite the apparently contradicting facts, the utility function assumed in Chapter III may still be instrumental to the government’s decision on whether and how much to donate in a specific case. Other donors’ involvement might well play a role for the individual funding decision. Visibility among international partners could have a significant impact that eclipses the impact of the donor’s utility function. Furthering a good image with close partners, e.g. among the members of the European Union may even exert a greater impact on a government’s decision in this particular policy field rather than fostering relations with the recipient country. The former might be more conducive to the voters’ utility.

Therefore, the rule for aggregation may distort the view on the individual theory of action. Depending on who else is active in a specific case, the preference a government has according to its utility function may change due to strategic interactions with other potential donors. Thus, it may be interesting to look into the channelling of assistance by bilateral donors acting in especially close cooperation.

Inside the European Union for example, one may expect that members channel their contributions multilaterally to a large extent. However, the multilateral budget for humanitarian assistance in disaster relief managed by the European Commission’s Humanitarian Aid Office (ECHO) only accounts for 22.5% (198,784,080 US$) of the total funding by members of the European Union between 1992 and 2002. The larger part (77.5% of the total budget, 684,130,940 US$) stems from the member states’ national budgets. As channelling is an important aspect in determining the degree of multilateral funding, we will deal with it more in detail. Table 2 reflects the channelling of humanitarian assistance to disaster relief by the members of the European Union and by the European Commission’s Humanitarian Aid Office.
<table>
<thead>
<tr>
<th></th>
<th>UN</th>
<th>UN</th>
<th>NGO</th>
<th>NGO</th>
<th>Red Cross</th>
<th>Red Cross</th>
<th>Bilateral</th>
<th>Bilateral</th>
<th>IGO</th>
<th>IGO</th>
<th>Channel not specified</th>
<th>Total (original number of cases)</th>
</tr>
</thead>
<tbody>
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<td>AUT</td>
<td>23</td>
<td>43.4%</td>
<td>9</td>
<td>17.0%</td>
<td>12</td>
<td>22.6%</td>
<td>9</td>
<td>17.0%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>53 (0%)</td>
</tr>
<tr>
<td>BEL</td>
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<td>23.3%</td>
<td>15</td>
<td>34.9%</td>
<td>8</td>
<td>18.6%</td>
<td>10</td>
<td>23.3%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>43 (0%)</td>
</tr>
<tr>
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<td>10.7%</td>
<td>76</td>
<td>27.0%</td>
<td>68</td>
<td>24.2%</td>
<td>103</td>
<td>36.7%</td>
<td>0</td>
<td>0%</td>
<td>4</td>
<td>281 (1.4%)</td>
</tr>
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<td>DNK</td>
<td>48</td>
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<td>21</td>
<td>17.1%</td>
<td>24</td>
<td>19.5%</td>
<td>29</td>
<td>23.6%</td>
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<td>123 (0.8%)</td>
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<td>21.7%</td>
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<td>52.8%</td>
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<td>106 (0.9%)</td>
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<td>1</td>
<td>37 (2.7%)</td>
</tr>
<tr>
<td>FRA</td>
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<td>11.6%</td>
<td>52</td>
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<td>0</td>
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<td>3</td>
<td>86 (3.5%)</td>
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<td>23.4%</td>
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<td>20.7%</td>
<td>66</td>
<td>22.1%</td>
<td>2</td>
<td>0.7%</td>
<td>5</td>
<td>299 (1.7%)</td>
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<td>GRC</td>
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<td>4</td>
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<td>1</td>
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<td>41.2%</td>
<td>17</td>
<td>33.3%</td>
<td>11</td>
<td>21.6%</td>
<td>2</td>
<td>3.9%</td>
<td>0</td>
<td>0%</td>
<td>1</td>
<td>51 (0%)</td>
</tr>
<tr>
<td>ITA</td>
<td>101</td>
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<td>0.8%</td>
<td>2</td>
<td>1.6%</td>
<td>24</td>
<td>18.8%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>128 (0%)</td>
</tr>
<tr>
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<td>6</td>
<td>9.7%</td>
<td>7</td>
<td>11.3%</td>
<td>3</td>
<td>4.8%</td>
<td>0</td>
<td>0%</td>
<td>1</td>
<td>62 (1.6%)</td>
</tr>
<tr>
<td>NLD</td>
<td>48</td>
<td>34.3%</td>
<td>20</td>
<td>14.3%</td>
<td>49</td>
<td>35.0%</td>
<td>22</td>
<td>15.7%</td>
<td>0</td>
<td>0%</td>
<td>1</td>
<td>140 (0.7%)</td>
</tr>
<tr>
<td>PRT</td>
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<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
<td>3</td>
<td>60.0%</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>5 (0%)</td>
</tr>
<tr>
<td>SWE</td>
<td>31</td>
<td>20.0%</td>
<td>43</td>
<td>27.7%</td>
<td>65</td>
<td>41.9%</td>
<td>15</td>
<td>9.7%</td>
<td>0</td>
<td>0%</td>
<td>1</td>
<td>155 (0.6%)</td>
</tr>
<tr>
<td>ECHO</td>
<td>14</td>
<td>7.7%</td>
<td>77</td>
<td>42.5%</td>
<td>61</td>
<td>33.7%</td>
<td>16</td>
<td>8.8%</td>
<td>11</td>
<td>6.1%</td>
<td>2</td>
<td>181 (1.1%)</td>
</tr>
<tr>
<td>Total*</td>
<td>514</td>
<td>29.3%</td>
<td>370</td>
<td>21.1%</td>
<td>423</td>
<td>24.1%</td>
<td>416</td>
<td>23.7%</td>
<td>14</td>
<td>0.8%</td>
<td>18</td>
<td>1755 (1.0%)</td>
</tr>
</tbody>
</table>

% of cases on overall budget: | 22.7% | 16.3% | 18.7% | 18.4% | 0.6% | 0.8% | 22.5% | ECHO: |

Source: Author's calculations on own dataset based on FTS data. Multichannel contributions were reported in each of the channels (original number of cases in brackets, valid cases n=1278, missings: 2).

a: Percentage of cases in national budgets.

There is a striking lack of channelling via International Governmental Organisations apart from the United Nations. In only 0.8% of channels used, the choice was an IGO other than the UN. This means that apart from the multilateral budget ECHO already had at its disposal, there was hardly any extra-budgetary contribution channelled via ECHO. Thus, multilaterally management of funds within the European Union amounts to about a quarter of the cases.

Looking at the management of the global budget of humanitarian assistance for disaster relief by members of the European Union, it strikes that the share of multilaterally managed funds with 45.2% is about 16% higher than with the average OECD member. The NGOs’

---

*24 For 1992 and 1993 assistance by the European Communities.*
importance is about equal, a prominent role of the UN is slightly less frequent and bilateral implementation is 14.3% less applied than in OECD average. Hence, multilateral management of funds seems to be enhanced by closer cooperation among these partners in other policy fields.

Having emphasised that only a third of the funding stemming from national budgets is to be regarded as purely bilateral, this fact will not be commented on any further in the analysis of the direction of aid flows from national budgets.

**Budget Size**

The share of the OECD members’ total assistance on total assistance by all donors ranges from 28.8% to 83.9% per year, with an average of 54.3% for the last decade. Thus, the OECD contributes a significant share in disaster relief operations.

<table>
<thead>
<tr>
<th>Year</th>
<th>OECD members’ assistance in US$</th>
<th>Total assistance in US$</th>
<th>Share of OECD’s on total assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992</td>
<td>70,845,170</td>
<td>246,232,248</td>
<td>28.8%</td>
</tr>
<tr>
<td>1993</td>
<td>35,393,735</td>
<td>77,540,280</td>
<td>45.6%</td>
</tr>
<tr>
<td>1994</td>
<td>32,164,266</td>
<td>113,477,369</td>
<td>28.3%</td>
</tr>
<tr>
<td>1995</td>
<td>46,251,209</td>
<td>83,024,085</td>
<td>55.7%</td>
</tr>
<tr>
<td>1996</td>
<td>33,791,360</td>
<td>84,140,293</td>
<td>40.2%</td>
</tr>
<tr>
<td>1997</td>
<td>172,388,940</td>
<td>270,046,067</td>
<td>63.8%</td>
</tr>
<tr>
<td>1998</td>
<td>432,152,760</td>
<td>570,356,722</td>
<td>75.8%</td>
</tr>
<tr>
<td>1999</td>
<td>65,981,787</td>
<td>161,728,919</td>
<td>40.8%</td>
</tr>
<tr>
<td>2000</td>
<td>304,210,126</td>
<td>419,725,805</td>
<td>72.5%</td>
</tr>
<tr>
<td>2001</td>
<td>184,810,782</td>
<td>300,063,236</td>
<td>61.6%</td>
</tr>
<tr>
<td>2002</td>
<td>194,136,961</td>
<td>231,358,610</td>
<td>83.9%</td>
</tr>
</tbody>
</table>

Source: Author’s calculations on own dataset based on FTS data.

The budget size for disaster relief, however, is quite low compared to Official Development Assistance. In the nineties, it averaged around 9% of ODA (Randel and German, 2003b: 2). It may therefore seem probable that the importance attached to this policy field is considerably low. Having had a quick view on the overall size and nature of budgets for disaster relief operations, I now turn to the inductive analysis of aggregate donor behaviour.

**4.4.3 Inductive Analysis**

The aim of this analysis is to determine whether disaster relief by the international humanitarian community is proportional to need. This basic model only includes the two variables assumed to reflect need, namely $\text{total}$ and $\text{damage}$, which later on act as control
variables in the model for individual donor’s behaviour. Its fit will be instrumental for the evaluation of the model’s explanatory power.

First, total assistance by the entire humanitarian community will be looked at. Afterwards, the impact of recipients’ need on the level of overall contributions by members of the OECD will be tested.

**Total Assistance**

As has been explained in more detail in section 4.4.1 on the operationalisation of the dependent variable, total assistance \((\text{totalass})\) includes all reported contributions by bilateral donors, be they members of the OECD or not, by NGOs and IGOs.

For the analysis of total assistance, the control variables for the recipients’ needs, which have been operationalised in section 4.3, are the only independent variables to be included in the model. Therefore, we can right away proceed to the inductive analysis.

A multivariate regression analysis was performed on the basis of the independent variables operationalised for the concept of recipient’s need, which will later on serve as control variables in the donor behaviour analysis undertaken in the second set of analyses.

First, the fulfilment of Gauss-Markov-Conditions\(^{25}\) was checked in order to be sure to obtain best linear unbiased estimators for the parameters through Ordinary Least Squares. Regressing total humanitarian assistance per affected on the explanatory variables, it shows with the help of Component-Plus-Residual-Plots that the functional relationships between the dependent variable and the estimated damage in US$, as well as between the dependent variable and the number of people affected were non-linear. In order to meet the linearity assumption, the natural log was taken.

A symmetry plot of the dependent variable \(\text{totalass}\) showed its distribution to be right-skewed. In order to meet the assumption of homoscedasticity, the dependent variable had to be logarithmised. As the distribution is not completely normal after transformation, multivariate regression analysis was performed using the Huber-White-Sandwich estimator of variance.

\(^{25}\) The Gauss-Markov-Conditions assume that errors have a zero mean, that their variance is constant and that errors are uncorrelated with each other. Residuals are taken as visualisation of real errors which cannot be checked for (Hamilton, 1992: 110-111; Kohler and Kreuter, 2001: 198-199).
producing robust standard errors, so despite multivariate outliers the standard errors can be used as a basis for a test of significance.\textsuperscript{26}

Including only the variables for recipients’ need into the OLS regression procedure showed that they explain 20\% of the data’s variance. Assuming that recipients’ need can entirely be represented through data on the number of people affected and material damage in US\$, this means that the recipients’ need explains only the fifth part of the level of assistance granted in a specific case.

The model itself is significant, i.e. the probability of an $R^2$ of 0.20 being computed when indeed the true value of $R^2$ in the universe was zero is close to zero. Therefore, there is strong evidence for the recipients’ need to have an impact on the level of overall funding.

The results obtained in the multivariate OLS regression of the log of total assistance ($\ln(\text{totalass})$) on the log of damage ($\ln(\text{damage})$) and the number of affected persons ($\ln(\text{damage})$) as independent variables are presented in Table 4.

Table 4: Multivariate Regression Results for Total Assistance

<table>
<thead>
<tr>
<th>Regression with robust standard errors</th>
<th>Number of obs = 6690</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F( 2, 220) = 781.79</td>
</tr>
<tr>
<td></td>
<td>Prob &gt; F = 0.0000</td>
</tr>
<tr>
<td></td>
<td>R-squared = 0.2004</td>
</tr>
<tr>
<td></td>
<td>Root MSE = 1.9147</td>
</tr>
<tr>
<td>$\ln(\text{totalass})$</td>
<td>Coef.</td>
</tr>
<tr>
<td></td>
<td>Robust Std. Err.</td>
</tr>
<tr>
<td></td>
<td>T</td>
</tr>
<tr>
<td></td>
<td>P&gt;</td>
</tr>
<tr>
<td></td>
<td>[95% Conf. Interval]</td>
</tr>
<tr>
<td>$\ln(\text{totaff})$</td>
<td>.1860605</td>
</tr>
<tr>
<td></td>
<td>.0103834</td>
</tr>
<tr>
<td></td>
<td>17.92</td>
</tr>
<tr>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.1657058 - .2064152</td>
</tr>
<tr>
<td>$\ln(\text{damage})$</td>
<td>.2562023</td>
</tr>
<tr>
<td></td>
<td>.0115585</td>
</tr>
<tr>
<td></td>
<td>22.17</td>
</tr>
<tr>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>.233544 - .2788607</td>
</tr>
<tr>
<td>$_\text{cons}$</td>
<td>7.097313</td>
</tr>
<tr>
<td></td>
<td>.1816926</td>
</tr>
<tr>
<td></td>
<td>39.06</td>
</tr>
<tr>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>6.741137 - 7.453488</td>
</tr>
</tbody>
</table>

STATA command: regress lntotalass lntotaff lndamage, robust

As the dependent and independent variables were transformed with a natural logarithm, the interpretation of the coefficients is not straightforward any longer.

After having logged both dependent and independent variable, a proportional change in the independent variable is associated with a proportional change in the dependent variable. Therefore, the coefficient is referred to as elasticity.

\textsuperscript{26} For details, please see STATA help and Kohler and Kreuter (2001).
According to Campbell\textsuperscript{27}, predicted proportional changes can be calculated from the coefficients as follows.

Natural log of $x$ is $y$ such that:

$$x = e^y$$

In case both the independent and the dependent variable are logged, multiplying the original independent variable by the rounded basis of the natural log $e=2.718$ will multiply the original dependent variable by $e^b$. When a proportional change in the dependent variable is associated with an $x$ percent increase in the independent variable, the coefficient is referred to as elasticity.

The proportional change in the dependent variable associated with an $x$ percent increase in the independent variable was calculated as $e^{ab}$ with $a = \log\left(\frac{100+x}{100}\right)$ and the elasticity $b$. The predicted proportional change was then converted to a predicted percentage change by subtracting 1 and multiplying by 100.

Hence, the 10% increase in the number of people affected would lead to a 1.8% increase in total assistance, whereas the same increase in material damage is predicted to a 2.5% increase in assistance.

Coefficients for both variables are statistically significant at the 99.9% level, therefore it is highly unlikely that the estimated effects are nonexistent in the universe.

**Assistance by OECD Donors**

In the case of assistance by OECD donors ($donors_a$), the functional relationships and the distribution of the dependent variable asked for the same transformations as with total assistance.

The results of the regression computed with robust standard errors are shown in Table 5.

\textsuperscript{27} The formula for calculating proportional change were taken from a class by Cameron Campbell, Department of Sociology, University of California at Los Angeles, available at http://www.soc.ucla.edu/faculty/campbell/210b_Winter1999/210B_Winter1999_class_8.pdf, last access 6.11.2003.
Table 5: Multivariate Regression Results for Overall Assistance by OECD Donors

| Coef.     | Robust Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|-----------|------------------|------|-----|----------------------|
| Lndonorsa | 0.1268619        | 0.0207008 | 6.13 | 0.000 | 0.0862507 - 0.1674731 |
| Lndamage  | 0.0822533        | 0.0221925 | 3.71 | 0.000 | 0.0387155 - 0.1257911 |
| cons      | 8.74772          | 0.3644319 | 24.00 | 0.000 | 8.032771 - 9.46267 |

The number of persons affected and the material damage caused by natural disasters explain only 7% of the variance in the level of contributions by members of the OECD. However, the probability that there is no effect of recipient need in the universe at all is close to zero.

A 10% increase in the number of people affected is predicted to lead to a 1% increase in assistance by OECD members, as well as to a 1.1% increase with a 10% increase in material damage.

The results in this section suggest that the need of those affected by natural disasters only partly accounts for the difference in the level of total assistance. Assuming that the number of persons affected and estimated damage figures reflect the need of those affected, it seems that the overall humanitarian financing is not proportional to need.

In the following, it will be checked whether the hypothesised donor interests better explain the financing outcome, comparing the fit of the refined models for donor behaviour to the basic models just analysed.

4.5 Second Set of Analyses: Individual Donors’ Behaviour

In the second set of analyses, the aim is to identify the determining factors for the level of a donor’s contribution to relief operations. For this purpose, this section first operationalises the dependent variable and then proceeds to a brief descriptive analysis on major donors in emergency relief. The ten biggest spenders among the members of the OECD are selected for inductive analysis on their donor behaviour, which is subsequently carried out.
4.5.1 Descriptive Analysis

Major Donors

During the last decade, the United States of America contributed the largest share equalling about a third of the OECD members’ overall contributions to disaster relief operations on average.

Figure 7: Donors’ Average Shares of Contributions on Total Assistance by Members of the OECD, 1992-2002

Another third was shouldered by the United Kingdom, Japan and Germany. This means that two thirds of the OECD’s aid flows to disaster relief were donated by only four of the OECD member states. Figure 7 visualises these proportions.

Due to their paramount importance for humanitarian financing, these four donors will be subject to the in-depth analysis of donor behaviour alongside the six major donors following behind. 28

Source: Author’s calculations on own dataset based on FTS data.

Donor Behaviour

As we have seen above, the U.S.A., the United Kingdom, Japan and Germany were the donors contributing the largest average share of assistance between 1992 and 2002. Although it does not go without saying, it is not surprising that those donors being the most active in relief operations contribute the largest mean share of assistance per case. Figure 8 makes a case for the presumption that a higher donor activity is almost proportional to a higher share on the contributions to a specific operation. This seems to hold largely true for the big spenders at least. In the case of Japan and the U.S.A., there is a tendency to contribute a large share to relief operations and in turn rather refrain from donating in other cases.

28 For detailed donors’ contributions and shares of overall disaster relief contributions by OECD members, please consult Annex 1.
For those contributors donating less than an average of 5% of OECD assistance, however, activity and share are far less proportional to each other. Austria, Canada, Denmark, Luxembourg, Mexico and New Zealand show a disproportional high donor activity compared to their share on total contributions. This means they mostly make smaller contributions, but are relatively more likely to take part in an emergency relief operation.

Figure 8: Number of Cases in which Donor was Active and Donor’s Average Share of Total Assistance per Case

Source: Author’s calculations on own dataset based on FTS data.

4.5.2 The Dependent Variable: Donor’s Assistance

The variable for a donor’s assistance (donorsa) includes the value of contributions given in US$ at current prices including cash and in-kind contributions as reported in the FTS. Donor contributions were added for all bilateral donors being members of the OECD as well as for multilateral agencies. The way contributions were tracked was included for each contribution as well as whether it was a cash or an in-kind transfer. All of these contributions had to be typed in by hand, which was a laborious task.29 However, it was well worth the effort, because as to my knowledge, for the first time data on the severity of a disaster were merged with data on donors’ contributions. This opens up new paths for analysis to be explored in the empirical analysis of this study.

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29 As all of the FTS data had to be typed in by hand, although it was done very carefully, it cannot be guaranteed that all of them are represented correctly in this study’s dataset.
Having specified the dependent variable of interest to the analysis of individual donors’ behaviour, I will now turn to the operationalisation of the independent variables.30

4.5.3 Independent Variables

The first set of independent variables refers to the donor’s hypothesised political interests.

Political Interests

For a donor’s political interest, the concepts of political closeness between donor and recipient, as well as the recipient’s compliance with good governance criteria and historical ties have to be operationalised for the analysis to follow.

- **Political Closeness**
  In order to account for political closeness, I operationalise the percentage of times, in which a recipient country has voted with the potential donor in a UN voting. The data is a courtesy by Alesina and Dollar (2000) and refers to UN voting between 1990 and 1995. In the dataset, there was also included the Affinity data by Gartzke and Jo (2002), which uses the S measure for portfolio similarity proposed by Signorino and Ritter (1999). Due to many missings in the Affinity data, the ‘UN friend’ (frun[iso3]) indicator by Alesina and Dollar was chosen for this analysis.

- **Good Governance**
  In my dataset, the Polity IV data (Marshall and Jaggers, 2000) was included, which identifies levels of democracy and autocracy, as well as the Political Terror Scale and SIPRI military expenditure data. Due to the many missings for all of these variables, however, the more comprehensive democracy index by Freedom House (gaspol), ranging from 1 to 7 (1 representing the most free), which is a courtesy by Alesina and Dollar (2000) and based on a five year average, was chosen for analysis.

- **Historical Ties**
  In order to account for a recipient’s colonial experience with the United Kingdom or France as a former colonial power, the dummy variables (fr/uk/cola) were used, a courtesy by S.C. Carey from her article (Zanger, 2000). Value ‘0’ indicates no colonial experience with one of the two former colonial powers and ‘1’ signifies that the recipient formerly was a colony of one of the two countries.

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30 For details, please see the codebook provided on the CD-R.
**Economic Interests**

In order to account for a donor’s economic interests in the empirical analysis, the concepts of trade relations, economic strength, Official Development Assistance and geographical closeness had to be operationalised.

- **Trade Relations**
  Dyadic trade relations were taken from Gleditsch’s ‘Expanded Trade and GDP data’ (2003). Unfortunately, however, they could not be used for the analysis as truly dyadic, but only as an aggregate due to the coding of the variable and existing time constraints. Therefore, a variable for the recipient’s total trade in current US$ \( \text{rectottr} \) was included in the dataset, roughly accounting for the economic strength of the recipient country, but not relating to the individual donor. The variable was lagged by one year, so the data on economic strength was not altered by the respective natural disaster.

- **Official Development Assistance**
  For the Operationalisation of Official Development Assistance, Net ODA in current US$ was taken from the ‘OECD Geopographical Distribution of Financial Flows to Aid Recipients database’. In order to make sure that the natural disaster did not have any effect on ODA data, the variable \( \text{odaym1} \) was also lagged by one year. Only the grant elements of the ODA were included.

- **Geographical Closeness**
  Geographical Closeness was operationalised with the help of the CEPII’s (2003) data measuring the distance between the donor’s and the recipient’s most important cities in kilometres \( \text{dist} \).

**Strategic Considerations**

For the analysis of a donor’s strategic considerations, the concepts of visibility and common language had to be operationalised.

- **Visibility**
  It was assumed that earthquakes and volcanic eruptions were the two disaster types being the most prone to a high level of media coverage due to impressive and rare images. Therefore, two dummy variables were constructed \( \text{earthqdu, volcdum} \) based on the EM-DAT’s information on disaster types.
• **Common Language**
  The dummy variable indicating a common language (\textit{comlng}) in donor and recipient country was taken from the CEPII dataset.

Table 6 summarises the operationalisation of all variables included in the analysis and displays the hypothesised impact of an increasing value in the independent / control variable on the dependent variable.
Table 6: Operationalisation of Variables and Their Hypothesised Impact

<table>
<thead>
<tr>
<th>Underlying Concept</th>
<th>Variable Name</th>
<th>Hypothesised Impact With Increasing Value</th>
<th>Details</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INDEPENDENT VARIABLES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Interests</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Closeness</td>
<td>fr[doniso3]</td>
<td>+ Nd,t</td>
<td>Percentage of times in which the recipient has voted in the UN votes as [doniso3]</td>
<td>Courtesy of A. Alesina and D. Dollar (Alesina and Dollar, 2000)</td>
</tr>
<tr>
<td>Good Governance</td>
<td>gaspol</td>
<td>- Nd,t</td>
<td>Political rights, average 1990-1995, based on Freedom House (1 represents most free)</td>
<td>Courtesy of A. Alesina and D. Dollar (Alesina and Dollar, 2000)</td>
</tr>
<tr>
<td>Historical Ties</td>
<td>[f/uk]colo</td>
<td>+ Nd,t</td>
<td>Dummy variable for colonial experience</td>
<td>Courtesy of S.C. Carey (Zanger, 2000)</td>
</tr>
<tr>
<td>Economic interests</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade relations</td>
<td>rectottr</td>
<td>+ Nd,t</td>
<td>Recipient’s total trade</td>
<td>Gleditsch’s Expanded Trade and GDP data (2003)</td>
</tr>
<tr>
<td>Official Development Assistance</td>
<td>odaym1</td>
<td>+ Nd,t</td>
<td>ODA in previous year</td>
<td>OECD</td>
</tr>
<tr>
<td>Geographical Closeness</td>
<td>dist</td>
<td>- Nd,t</td>
<td>Distance between most important cities</td>
<td>CEPII (2003)</td>
</tr>
<tr>
<td>Strategic considerations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visibility</td>
<td>earthqdu</td>
<td>+ Nd,t</td>
<td>Dummy variable earthquake</td>
<td>On the basis of ‘distype’ from EM-DAT</td>
</tr>
<tr>
<td></td>
<td>volcdu</td>
<td>+ Nd,t</td>
<td>Dummy variable volcano</td>
<td></td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recipient’s need</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>totaff</td>
<td></td>
<td>+ Nd,t</td>
<td>Number of people affected (injured+homeless+affected), excluding killed</td>
<td>EM-DAT</td>
</tr>
<tr>
<td>damage</td>
<td></td>
<td>+ Nd,t</td>
<td>Estimated material damage in current US$</td>
<td>EM-DAT</td>
</tr>
</tbody>
</table>
4.5.4 Inductive Analysis

Analysing the determinants of individual OECD members’ decisions on humanitarian funding, the dependent variable \(\text{donorsa}\) is regressed on the independent variables specified in Table 6. Having to limit the scope of the in-depth analysis on individual donor behaviour, those ten OECD countries were chosen who spent the most on disaster relief between 1992 and 2002.\(^{31}\)

For the analysis of donor behaviour, it was reconsidered whether it was appropriate to use OLS regression for the estimation of parameters. The transformation on the dependent variable complicates the interpretation of the coefficients and data may be regarded as censored as for dyadic data of donor’s assistance \(\text{donorsa}\) the vast majority of the cases (84.7%) has a zero value due to donor inactivity. Thus, a tobit regression procedure for censored data may usefully have been applied.\(^{32}\) However, the application of the tobit procedure showed that OLS regression outplayed tobit regression in predictive quality.

Thus, an OLS procedure using robust standard errors was applied in order to estimate the independent variables’ coefficients. Table 7 gives an overview on the multivariate regression results, as well as each donor’s share on contributions by members of the OECD.

As the dependent variable \(\text{donorsa}\) had to be logged due to heteroscedasticity, the percentage changes of the dependent variable with a 10% increase on the independent variable were calculated as mentioned above and displayed in Annex 3 for easier interpretation of the regression results.

For the raw independent variables included in the regression, the percentage changes were also calculated. With a logged variable, every unit change in the independent variable is expected to multiply the original dependent variable by \(e^b\), with \(e=2.718\) for the natural log, and \(b\) being the coefficient. The proportional change in the dependent variable with every one point increase in the independent variable is therefore calculated as \(e^b\). In Annex 4, you may find the calculated percentage changes in the dependent variable are given for raw independent variables\(^{33}\).

\(^{31}\) For details of the inductive analysis, please consult the STATA-Log-file, which you may find on the CD-R provided with this paper. In order to facilitate replication, a STATA-Do-file has also been included.

\(^{32}\) For an introduction to the censored regression (tobit) model, see Greene (2003: 761-780).

\(^{33}\) The formula for calculating proportional change were taken from a class by Cameron Campbell, Department of Sociology, University of California at Los Angeles, available at http://www.soc.ucla.edu/faculty/campbell/210b_Winter1999/210B_Winter1999_class_8.pdf, last access 6.11.2003
### Table 7: Multivariate Regression Results for Individual Donors' Assistance

**Dependent variable: ln(donors\textsubscript{a})**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-Value</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln\textsubscript{gaspol}</td>
<td>2.07**</td>
<td>3.41**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln\textsubscript{hodoy}</td>
<td>-7.92</td>
<td>-9.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln\textsubscript{tircur}</td>
<td>.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln\textsubscript{eartshu}</td>
<td>.49</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln\textsubscript{voldum}</td>
<td>.43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln\textsubscript{[fr\textsubscript{uk}]col}</td>
<td>.66</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln\textsubscript{comlng}</td>
<td>-.43</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln\textsubscript{natotaff}</td>
<td>.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln\textsubscript{damage}</td>
<td>1.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ln\textsubscript{daym1}</td>
<td>-.18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dist</td>
<td>1.06**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>earthquake</td>
<td>(.10)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>volcanic</td>
<td>.03*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of active cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of valid cases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>share of assistance on total assistance by OECD members</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **United States**: 62 cases, R\textsuperscript{2} = 0.38, 217 valid cases, share of assistance = 30.9%.
- **United Kingdom**: 73 cases, R\textsuperscript{2} = 0.33, 206 valid cases, share of assistance = 16.5%.
- **Japan**: 61 cases, R\textsuperscript{2} = 0.40, 188 valid cases, share of assistance = 9.0%.
- **Germany**: 61 cases, R\textsuperscript{2} = 0.33, 189 valid cases, share of assistance = 8.1%.
- **Sweden**: 45 cases, R\textsuperscript{2} = 0.37, 107 valid cases, share of assistance = 4.7%.
- **Netherlands**: 45 cases, R\textsuperscript{2} = 0.36, 97 valid cases, share of assistance = 4.3%.
- **Spain**: 18 cases, R\textsuperscript{2} = 0.62, 81 valid cases, share of assistance = 3.6%.
- **Italy**: 27 cases, R\textsuperscript{2} = 0.64, 107 valid cases, share of assistance = 3.4%.
- **Canada**: 41 cases, R\textsuperscript{2} = 0.34, 94 valid cases, share of assistance = 2.3%.
- **France**: 27 cases, R\textsuperscript{2} = 0.40, 75 valid cases, share of assistance = 1.7%.

\* The quadratic term gaspolq was added to the regression equation due to the appearance of a u-shaped functional relationship.

For all cases denoted with ‘ln’ in front of the original name of the independent variable, natural log was taken due to non-linearity of the functional relationship.

OLS regressions with heteroscedasticity robust standard errors. Absolute t-values in parentheses.

*p<0.05; ** p<0.01; ***p<0.001

In Annex 3 you may find the calculated percentage changes for each of the logged independent variables, in Annex 4 you may find the calculated percentage changes for raw variables.
The model for political economic donor behaviour on average explains around 40% of the variance in assistance. Thus, taking into account donor interests better predicts funding decisions than purely needs-based estimation does.

An interpretation of the multivariate regression results will be given in reference to each hypothesis.

**Political Interests**

- **Political Closeness**
  
  Hypothesis H1.1 suggests a positive functional relationship between political closeness and level of assistance. Regression results, however, show a positive relationship with only seven of the top ten donors.

  Yet, looking into the three negative coefficients for the Netherlands, Germany and Italy, it shows a slightly different picture. The probability to be reported as an effect although there is no effect in the universe ranges above 0.6 for all of them, the 95% confidence intervals all include positive values and the largest negative effect is a 13.3% decrease in assistance with a 10% increase in voting with the Netherlands in the UN. Apart from the negative effects mentioned, the U.S.A. show an exceptionally low positive effect of a 3% increase in assistance. Although the negative effects put the hypothesis in doubt, or at least its operationalisation, the strong positive effects with a 10% increase in voting with the donor, ranging from a 386.5% increase of assistance from Sweden to a 46.5% increase from France for most of the donors, as well as the statistically significant effect for the United Kingdom, increasing assistance by 57.7% for similar voting in the UN, improve the evaluation of the political closeness hypothesis.

  The operationalisation of political closeness may be improved. An option would be to use the Affinity data (Gartzke and Jo, 2002), which had already been included in the dataset. However, there is a large share of missings, which lead to the decision to take the ‘UN friend’ data by Alesina and Dollar (2000).

- **Good Governance**
  
  The second hypothesis on political motivations suggested that the compliance with good governance criteria enhances a recipient country’s chances of receiving a higher level of assistance. The hypothesised relationship was a decreasing level of assistance with increasing

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34 In Annexes 3 and 4 you may find the calculated percentage changes for each of the coefficients.
values of Alesina and Dollar’s (2000) \( \text{gaspol} \), as higher values signify less political freedom in the Freedom House Index.

Regression results, however, do not show any indication for such a functional relationship. They would even rather suggest an inverse u-shaped relationship, at least in the case of Japan, Germany, the Netherlands, Spain, Italy and France, where the linear coefficient is positive and the squared one is negative, i.e. the level of assistance would increase with less freedom, but at a decreasing rate.

The Netherlands, Germany, Spain and France show an especially high increase in the level of assistance with decreasing freedom in the recipient country, ranging from a just-under-400%- to a 684%-increase in donor’s assistance. For the Netherlands, this effect is statistically significant at the 95%-level. This finding is a big surprise and deserves more investigation.

In an alternative model, donors could be assumed to aim at influencing a recipient country’s political setting by providing disproportionally more aid to this country. An inverse u-shaped relation seems to be plausible with this assumption. Donors may spend more on response operations in recipient countries with a lower level of freedom, but there might be a level of autocracy where the probability of exerting an influence is getting lower and diminishing marginal benefits would cause the donor to reduce his contributions.

In retesting the relationship between good governance and level of assistance, it may be a good alternative to use the Polity IV data, which were also included in the dataset, but were not used due to lacking data for many recipient countries. Choosing a different scope of analysis, global humanitarian assistance, for example, those missings may not cause as much of a problem. Also, it may be promising to use year-by-year data instead of averaged data, optimally for the previous year. Using yearly data from Freedom House might also change the picture. Other data, which has also been included in the dataset and should further be analysed is the SIPRI military expenditure data, the Corruption Perception Index and the Political Terror Scale data. Unfortunately, due to given time restraints for this study and problems of many missings, not all of the analyses of interest could be carried out. However, retesting the influence of good governance on levels of contributions to humanitarian response can be a task for future research.

- **Historical Ties**

Whether colonial experience was rewarded with a higher level of assistance was tested for the former colonial powers Great Britain and France. For France, former colonies are predicted to
receive an additional 49.2% of assistance, whereas the extra payments for ex-colonies by the United Kingdom amount to 93.5% of the assistance an affected country would receive if it were not a former colony.

The two coefficients are not statistically significant, but they do point in the hypothesised direction and show a considerable impact on the dependent variable. Therefore, it may be useful to further elaborate the aspect of former colonies in future research.

In sum, the empirical analysis of political interests did not consistently show significant effects on donor behaviour. While colonial experience showed the hypothesised additional assistance for ex-colonies, the impact of similar voting in the UN on the level of donors’ assistance was not clear. For the good governance hypothesis, results suggested an inverse u-shaped functional relationship between civil liberties and the level of disaster response funding. In total, it seems that there is no consistent influence of political motivations such as political affinity and good governance criteria, which may influence funding decisions. Only a tendency by the United Kingdom and France to favour former colonies in providing higher levels of assistance to them can be noted.

**Economic Interests**

For economic motivations, the results of the analysis turn out to be slightly more promising due to more consistency in the directions of the effects.

- **Trade Relations**
  Trade relations may better be judged by looking at actual trade flows between a specific donor and a specific recipient. The dataset constructed also allows for this analysis, because it includes Gleditsch’s Expanded Trade data. However, as dyads are noted in a way that the country with the smaller COW code always is state A, it will require some extra effort to make use of this data for the distinction between donor and recipient trade flows. Therefore, the trade relations hypothesis can only be evaluated on the basis of the recipient’s total trade in this study.

The level of total trade also indicates the strength and openness of a national economy. Thus, evaluating the trade relations and the economic strength hypothesis, which may conceal the true effects, it has to be stated that the regression results obtained are very diverse. The hypothesised increase in the level of assistance with tighter trade relations and a stronger national economy may only be found with four out of nine of the top ten donors. For Spain, the variable had to be dropped due to missing data. Neither the increase nor the decrease in the level of assistance
shows strong effects and only for the United States is the decrease of about 5% statistically significant.

Trade relations and the strength of the recipient’s economy do not seem to have a consistent influence on the level of assistance given to a recipient country. In the case of trade relations, analysing dyadic trade flows may be a path for future research. Economic interdependence could be measured as a ratio of the relative size of bilateral trade to a state’s GDP (Maoz and Russett, 1993; Oneal and Ray, 1997). For the strength of the national economy, the recipient’s GDP per capita may be analysed in order to get a better estimation of the effects of economic strength. To date, recipient Gross National Income (GNI) was included in the dataset; however, including the per capita measure may be more useful for analysis.

- **Official Development Assistance**

  The provision of development assistance by a donor country to a recipient country was hypothesised to have an increasing effect on the level of assistance for disaster relief operations. This may be due to the fact, that existing channels for assistance may be used in order to provide humanitarian assistance. Perhaps more importantly, the level of Official Development Assistance (ODA) will indicate more clearly the interest a certain donor attaches to a specific recipient country due to the much higher volume of ODA compared to the amount spent on disaster relief.

  Regression results obtained show indeed positive effects of the provision of ODA in the previous year on the level of assistance in the wake of a disaster. However, the effects are not very strong, ranging between an increase by 0.2% for Germany and 4.8% for Spain. For France, even a decrease in assistance by –0.5% was noted for a 10% increase in ODA. However, none of the coefficients obtained is statistically significant.

- **Geographical Closeness**

  More geographical closeness was supposed to have an increasing effect on the level of humanitarian assistance due to regional beneficial effects, which may result from humanitarian financing. Therefore, with higher values in the distance between the most important cities, a decreasing relation had been hypothesised.

  Regression results show no effect at all for most of the top ten donors. Therefore, it is quite obvious that geographical closeness does not exert any influence on donor decisions on disaster
relief operations. For the United States and the United Kingdom, on the contrary, geographical distance to the recipient seems to be very decisive as each kilometre more in distance reduces the level of assistance by about 100%. These strong effects, however, do not prove statistically significant.

It may be worth a try in future research to measure the influence of distance on the level of funding with the help of a categorical variable discriminating between close, more distant and remote recipients. This may result in an outcome, which is more sensible in the interpretation than additional kilometres of distance.

The impact of economic motivations on the level of assistance to a recipient country proves to be almost as insignificant as the effect of political motivations did. The direction of influences is more consistent for the provision of ODA in the previous year, which generally seems to increase the level of humanitarian assistance, but for the recipients’ total trade, the effects were very diverse. Geographical closeness only exerts an influence with the donor countries U.S.A. and United Kingdom. Except for the strong decreasing effect of geographical distance on assistance by the United States and the United Kingdom, none of the effects are particularly strong and apart from a 5% decrease in the United States’ assistance for a 10% increase in recipient trade, none of the results proves to be statistically significant.

**Strategic Considerations**

The impact of strategic considerations on the contrary seems to be highly significant. Assuming that media coverage is higher with earthquakes and volcanic eruptions, the United States of America seems to attach an enormous importance to the visibility of their involvement in relief action. Also, a higher media coverage of a particular crisis may have aroused strong humanitarian feelings in the population, so the government was forced to act in order to gain more popularity with the constituency. People being affected by earthquakes tend to receive about eight times the United States’ assistance they would be provided with in case they had been affected by another disaster. For volcanic eruptions this is even more true. The United States provide about thirty times the assistance to people being affected by a volcano. Coefficients in both cases are statistically significant at the 99%-level. Japan gives about three times more assistance to people being affected by earthquakes, which also proves to be statistically significant.

All other donors except for France also provide a higher level of assistance in the aftermath of an earthquake.
Taking all donors into account however, for volcanoes the impact is not as clear. While the
United States provide much more assistance to people affected by volcanoes, the United
Kingdom and Japan provide between 34.9% and 16.5% less of assistance to those in need due to
or immediately prior to a volcanic eruption. For the other donors, the impact of being affected by
a volcanic eruption could not be observed due to collinearity with the dummy for earthquakes.
While France does not seem to be the only country to give slightly less assistance in the wake of
an earthquake despite the potentially high media coverage, its donor behaviour in humanitarian
financing for disaster relief seems to be the most strongly affected by the use of a common
language. Francophone recipients receive about 59 times higher assistance holding anything else
constant. This finding shows to be statistically significant at the 99.9%-level.

Strategic considerations of visibility seem to be the most influential in donor behaviour. All
donors except for France provide a higher level of assistance to people affected by earthquakes.
The United States and France are especially prone to visibility considerations. For the United
States, it is likely that extensive media coverage on earthquakes and volcanic eruptions triggers
the disproportionally high amount of assistance. For France, the aspect of a common language
seems to be the most decisive for favouring a recipient country: Japan is predicted to provide
about three times the aid if the disaster is an earthquake. Japan’s own experience with
earthquakes and therefore a tentatively higher sensitivity of its population towards this type of
disasters, as well as know-how in relief operations in the aftermath of earthquakes may explain
this effect, which is significant at the 99%-level.

Recipients’ needs exert the most consistent and statistically significant, however, not the strongest
influence on funding decisions. Increases by 10% in the number of persons affected and in
material damage only lead to an increase of assistance by between 1% and 4.2%.
Political and economic considerations only rarely prove to have a strong and statistically
significant impact on donor behaviour. Effects may even point into different directions. The
most astonishing finding is that the level of assistance tends to increase with decreasing freedom.
However, this may seem probable assuming that donor countries may want to influence the
political situation in a country, taking into account that the increase in the level of assistance
happens at a decreasing rate in most of the cases.

Strategic considerations seem to exert the greatest impact on the top ten donors’ funding
decisions. Especially, being affected by an earthquake assures a higher level of assistance by most
of the top ten donor countries than being affected by any other type of disaster. Visibility with
the population due to media coverage may well be the reason for this. A francophone recipient seems to have a strong advantage concerning French disaster relief due to the common language.

The apparently low impact of political and economic motivations on the top ten donors’ funding decisions is surprising in the context of a political economic model for humanitarian assistance in the wake of disasters. This may be a good sign for the predominance of humanitarian principles as well as needs-based funding in disaster relief. The decisive function of strategic considerations, however, supports the strategic part of the model’s utility function as well as the hypothesised rule for aggregation.

However, low detected importance of political and economic motivations could also be due to the low volume of payments involved in the funding of disaster relief operations. Donor motivations may become more visible with a higher volume of payments and a larger number of cases. Also the relative importance of disaster relief is considerably low compared to the donors’ GDPs as well as relative to other budgets, including ODA and humanitarian assistance to complex emergencies.

For future research it may therefore be of interest to investigate into the entire policy field of humanitarian assistance including complex emergencies. However, it may prove difficult to clearly separate humanitarian assistance in case of complex emergencies from development assistance. Also it may be instructive to look into the aggregate of development assistance and global humanitarian assistance. According to humanitarian principles, one would like to expect donor motivations to be of less importance in humanitarian funding than in development assistance. However, this may not necessarily be the case and analysing the joint aspect may well provide deeper insights into donor motivations due to the higher volume of payments and larger number of cases. Also, improvements may be made on the specification of the model. An explanation of 40% of the variance still leaves enough room for improvement. Maybe different aspects of possible donor motivations will have to be included into the model. Especially, the aspect of good governance may be viewed under a different angle. Donors may not provide more assistance to those recipients with a better governance, but they may increase funding with worse governance. Finally, it would be of great help to the test of the model, if data on political and economic conditions was more comprehensive for the recipient countries.
CHAPTER V:

CONCLUSION
Humanitarian financing in disaster relief has often been suspected to be guided by the donors’ political and economic motivations. Assessing the question of whether a discriminative effect on political and economic grounds can be substantiated in disaster relief operations, a political economic argument was applied. The model constructed hypotheses on political, economic and strategic interests determining the utility a donor derives from making a contribution to a specific disaster relief operation. Funding decisions were suggested to be based on the maximisation of a donor government’s utility.

In order to test whether the hypothesised utility function holds true, an empirical analysis was performed on the basis of humanitarian financing data, as well as political, economic, and structural indicators, controlling for the influence of the recipients’ need.

OLS regression results showed no consistent impact of political and economic interests for the level of funding in disaster relief. On the other hand, parameter estimates for strategic considerations concerning visibility of a humanitarian emergency and the relevant relief operations with the constituency seem to play an important role for decision-making in humanitarian funding. Disaster types assumed to come along with high media coverage due to dramatic and rare images, namely earthquakes and volcanic eruptions receive disproportionately high funding by OECD donor countries.

Humanitarian feelings in the population aroused by media coverage may trigger a government’s involvement in humanitarian action, but may also evoke disproportionately low assistance to less visible humanitarian crises.

Although the humanitarian principle of proportionality is endangered by strategic considerations, there is also some good news for the humanitarian community. Contrary to common suspicion, political and economic interests do not seem to jeopardise the principle of non-discrimination in disaster relief.
References


Data Sources

Data on the Severity of Disasters

Notes on the EM-DAT database:
Detailed information on the coding in the EM-DAT dataset is available at http://www.cred.be/emdat/Guide/


Data on Donors’ Contributions
Data on ODA by DAC members:

Data on Population and GDP

Expanded Trade and GDP Data

Data on Distances, Contiguity and Common Language:

Notes on CEPII database:

Polity IV

Affinity of Nations Index (3.0)

Freedom House and UNFriend Data

Colony Dummies
### Annex 1: Donors’ Average Shares of Overall Contributions by Members of the OECD

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>AUS</td>
<td>102,979</td>
<td>47,473,225</td>
<td>3.0%</td>
<td>ISL</td>
<td>33</td>
<td>15,000</td>
<td>0%</td>
</tr>
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<td>AUT</td>
<td>10,066</td>
<td>4,640,638</td>
<td>0.3%</td>
<td>JPN</td>
<td>307,130</td>
<td>141,587,140</td>
<td>9.0%</td>
</tr>
<tr>
<td>BEL</td>
<td>68,405</td>
<td>31,534,926</td>
<td>2.0%</td>
<td>KOR</td>
<td>6,508</td>
<td>3,000,333</td>
<td>0.2%</td>
</tr>
<tr>
<td>CAN</td>
<td>78,792</td>
<td>36,323,121</td>
<td>2.3%</td>
<td>LUX</td>
<td>22,547</td>
<td>10,394,303</td>
<td>0.7%</td>
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<tr>
<td>CHE</td>
<td>65,031</td>
<td>29,979,395</td>
<td>1.9%</td>
<td>MEX</td>
<td>25,902</td>
<td>11,940,659</td>
<td>0.8%</td>
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<tr>
<td>CZE</td>
<td>430</td>
<td>198,452</td>
<td>0%</td>
<td>NLD</td>
<td>146,446</td>
<td>67,511,766</td>
<td>4.3%</td>
</tr>
<tr>
<td>DEU</td>
<td>276,328</td>
<td>127,387,071</td>
<td>8.1%</td>
<td>NOR</td>
<td>89,239</td>
<td>41,139,307</td>
<td>2.6%</td>
</tr>
<tr>
<td>DNK</td>
<td>54,319</td>
<td>25,040,972</td>
<td>1.6%</td>
<td>NZL</td>
<td>8,124</td>
<td>3,745,113</td>
<td>0.2%</td>
</tr>
<tr>
<td>ESP</td>
<td>124,177</td>
<td>57,245,676</td>
<td>3.6%</td>
<td>POL</td>
<td>2,184</td>
<td>1,006,601</td>
<td>0.1%</td>
</tr>
<tr>
<td>FIN</td>
<td>19,678</td>
<td>9,071,532</td>
<td>0.6%</td>
<td>PRT</td>
<td>9,600</td>
<td>4,425,420</td>
<td>0.3%</td>
</tr>
<tr>
<td>FRA</td>
<td>56,875</td>
<td>26,219,303</td>
<td>1.7%</td>
<td>SVK</td>
<td>935</td>
<td>431,000</td>
<td>0%</td>
</tr>
<tr>
<td>GBR</td>
<td>561,794</td>
<td>258,987,258</td>
<td>16.5%</td>
<td>SWE</td>
<td>160,332</td>
<td>73,913,191</td>
<td>4.7%</td>
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<td>GRC</td>
<td>3,249</td>
<td>1,497,734</td>
<td>0.1%</td>
<td>TUR</td>
<td>7,458</td>
<td>3,438,322</td>
<td>0.2%</td>
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<tr>
<td>HUN</td>
<td>2,018</td>
<td>930,403</td>
<td>0.1%</td>
<td>USA</td>
<td>1,053,162</td>
<td>485,507,732</td>
<td>30.9%</td>
</tr>
</tbody>
</table>

### Annex 2: Members of the Organisation for Economic Co-operation and Development and the Development Assistance Committee

<table>
<thead>
<tr>
<th>Member of the OECD</th>
<th>Since</th>
<th>Member of the DAC</th>
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<tbody>
<tr>
<td>Australia</td>
<td>7 June 1971</td>
<td>Since 1966</td>
</tr>
<tr>
<td>Austria</td>
<td>29 September 1961</td>
<td>Since 1965</td>
</tr>
<tr>
<td>Belgium</td>
<td>13 September 1961</td>
<td>Since 1961</td>
</tr>
<tr>
<td>Canada</td>
<td>10 April 1961</td>
<td>Since 1961</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>21 December 1995</td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>30 May 1961</td>
<td>Since 1963</td>
</tr>
<tr>
<td>Finland</td>
<td>28 January 1969</td>
<td>Since 1975</td>
</tr>
<tr>
<td>France</td>
<td>7 August 1961</td>
<td>Since 1961</td>
</tr>
<tr>
<td>Germany</td>
<td>27 September 1961</td>
<td>Since 1961</td>
</tr>
<tr>
<td>Greece</td>
<td>27 September 1961</td>
<td>Since 1999</td>
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<tr>
<td>Hungary</td>
<td>7 May 1996</td>
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</tr>
<tr>
<td>Iceland</td>
<td>5 June 1961</td>
<td></td>
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<tr>
<td>Ireland</td>
<td>17 August 1961</td>
<td>Since 1985</td>
</tr>
<tr>
<td>Italy</td>
<td>29 March 1962</td>
<td>Since 1961</td>
</tr>
<tr>
<td>Japan</td>
<td>28 April 1964</td>
<td>Since 1961</td>
</tr>
<tr>
<td>Korea</td>
<td>12 December 1996</td>
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<td>Luxembourg</td>
<td>7 December 1961</td>
<td>Since 1992</td>
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<tr>
<td>Mexico</td>
<td>18 May 1994</td>
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<td>Netherlands</td>
<td>13 November 1961</td>
<td>Since 1961</td>
</tr>
<tr>
<td>New Zealand</td>
<td>29 May 1973</td>
<td>Since 1973</td>
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<tr>
<td>Norway</td>
<td>4 July 1961</td>
<td>Since 1962</td>
</tr>
<tr>
<td>Poland</td>
<td>22 November 1996</td>
<td></td>
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<td>Slovak Republic</td>
<td>14 December 2000</td>
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<td>Spain</td>
<td>3 August 1961</td>
<td>Since 1991</td>
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<td>Sweden</td>
<td>28 September 1961</td>
<td>Since 1965</td>
</tr>
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<td>Switzerland</td>
<td>28 September 1961</td>
<td>Since 1968</td>
</tr>
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<td>Turkey</td>
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<td>2 May 1961</td>
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<td>United States</td>
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<td>Since 1961</td>
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<tr>
<td>Commission of the European Communities</td>
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<td>Since 1961</td>
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Source OECD membership: [http://www.oecd.org/document/58/0,2340,en_2649_34483_1889402_1_1_1_1,00.html](http://www.oecd.org/document/58/0,2340,en_2649_34483_1889402_1_1_1_1,00.html), last access 12.11.2003

Source DAC membership: [http://www.oecd.org/document/38/0,2340,en_2649_33721_1893350_1_1_1_37413,00.html](http://www.oecd.org/document/38/0,2340,en_2649_33721_1893350_1_1_1_37413,00.html), last access 12.11.2003
Annex 3: Calculated Percentage Changes in the Dependent Variable with a 10% Increase of the Independent Variable, for Logged Independent Variables

<table>
<thead>
<tr>
<th></th>
<th>recov</th>
<th>cultm</th>
<th>debt</th>
<th>total</th>
<th>damage</th>
<th>Number and share of cases in which donor was active out of n=461 valid cases</th>
<th>Share of assistance on total assistance by OECD members</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>+3.0%</td>
<td>-5.1%*</td>
<td>+1.4%</td>
<td>+2.6%</td>
<td>+4.2%**</td>
<td>217</td>
<td>30.9%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>+57.7%*</td>
<td>-0.9%</td>
<td>+0.4%</td>
<td>+2.9%*</td>
<td>+1.0%</td>
<td>206</td>
<td>16.5%</td>
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<tr>
<td>Japan</td>
<td>+91.2%</td>
<td>+0.1%</td>
<td>+0.5%</td>
<td>+1.4%</td>
<td>+2.2%*</td>
<td>188</td>
<td>9.0%</td>
</tr>
<tr>
<td>Germany</td>
<td>-5.6%</td>
<td>-3.7%</td>
<td>+0.2%</td>
<td>+1.5%</td>
<td>+3.9%*</td>
<td>189</td>
<td>8.1%</td>
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<td>Sweden</td>
<td>+386.5%</td>
<td>-2.4%</td>
<td>+2.1%</td>
<td>+2.6%*</td>
<td>+1.5%</td>
<td>107</td>
<td>4.7%</td>
</tr>
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<td>Netherlands</td>
<td>-13.3%</td>
<td>+0.7%</td>
<td>+0.6%</td>
<td>+2.9%</td>
<td>+0.3%**</td>
<td>97</td>
<td>4.3%</td>
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<tr>
<td>Spain</td>
<td>+352.9%</td>
<td>+4.8%</td>
<td>+0.7%</td>
<td>+1.5%</td>
<td>+2.3%*</td>
<td>81</td>
<td>3.6%</td>
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<td>Italy</td>
<td>-12.1%</td>
<td>-2.3%</td>
<td>+1.5%</td>
<td>+1.5%</td>
<td>+2.3%*</td>
<td>107</td>
<td>3.4%</td>
</tr>
<tr>
<td>Canada</td>
<td>+66.2%</td>
<td>+0.3%</td>
<td>+1.9%</td>
<td>+1.2%</td>
<td>+1.6%</td>
<td>94</td>
<td>2.3%</td>
</tr>
<tr>
<td>France</td>
<td>+46.5%</td>
<td>+4.9%</td>
<td>-0.5%</td>
<td>+1.4%</td>
<td>-0.3%</td>
<td>75</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

* p<0.05; ** p<0.01; *** p<0.001

Annex 4: Calculated Percentage Changes in the Dependent Variable per One Point Increase of the Independent Variable, for Raw Independent Variables

<table>
<thead>
<tr>
<th></th>
<th>gaspol</th>
<th>dist</th>
<th>earthqdu</th>
<th>volcdum</th>
<th>[f/uk]</th>
<th>colo</th>
<th>comlng</th>
<th>Number and share of cases in which donor was active out of n=461 valid cases</th>
<th>Share of assistance on total assistance by OECD members</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>-44.0%</td>
<td>-</td>
<td>+692.3%**</td>
<td>+2925.5%***</td>
<td>-60.1%</td>
<td>217</td>
<td></td>
<td></td>
<td>30.9%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-9.5%</td>
<td>100%</td>
<td>+63.2%</td>
<td>-34.9%</td>
<td>+93.5%</td>
<td>206</td>
<td></td>
<td></td>
<td>16.5%</td>
</tr>
<tr>
<td>Japan</td>
<td>+136.3%</td>
<td>98%</td>
<td>+188,6%**</td>
<td>-16.5%</td>
<td></td>
<td>188</td>
<td></td>
<td></td>
<td>9.0%</td>
</tr>
<tr>
<td>Germany</td>
<td>+568.5%</td>
<td>0*</td>
<td>+228.7%</td>
<td></td>
<td></td>
<td>189</td>
<td></td>
<td></td>
<td>8.1%</td>
</tr>
<tr>
<td>Sweden</td>
<td>+36.3%</td>
<td>0</td>
<td>+49.2%</td>
<td></td>
<td></td>
<td>107</td>
<td></td>
<td></td>
<td>4.7%</td>
</tr>
<tr>
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<td>+684.4%</td>
<td>0</td>
<td>+47.7%</td>
<td></td>
<td></td>
<td>97</td>
<td></td>
<td></td>
<td>4.3%</td>
</tr>
<tr>
<td>Spain</td>
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<td></td>
<td>+11.6%</td>
<td></td>
<td></td>
<td>81</td>
<td></td>
<td></td>
<td>3.6%</td>
</tr>
<tr>
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<td>0</td>
<td>+56.8%</td>
<td></td>
<td></td>
<td>107</td>
<td></td>
<td></td>
<td>3.4%</td>
</tr>
<tr>
<td>Canada</td>
<td>+8.3%</td>
<td>0</td>
<td>+93.5%</td>
<td></td>
<td></td>
<td>94</td>
<td></td>
<td></td>
<td>2.3%</td>
</tr>
<tr>
<td>France</td>
<td>+385.4%</td>
<td>0</td>
<td>-8.6%</td>
<td>+49.2%</td>
<td>+5871.5%***</td>
<td>75</td>
<td></td>
<td></td>
<td>1.7%</td>
</tr>
</tbody>
</table>

* p<0.05; ** p<0.01; *** p<0.001