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`Natural' Disaster, Conflict and Aid Allocation

Aude-Sophie Rodella-Boitreaud
World Bank
Natascha Wagner
Graduate Institute of International Studies

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Keywords: Disaster, Conflict, Aid Allocation, Longitudinal Panel Methods, GMM

JEL: F35, Q34, Q54, C23

*World Bank Washington DC, United States. Email: asrodella@gmail.com

†International Economics Unit. Graduate Institute of International and Development Studies, Geneva, Switzerland. Email: natascha.wagner@graduateinstitute.ch

1 Introduction

On December 26, 2004 a tsunami hit Indonesia, Sri Lanka, India, and Thailand. An estimated 230,000 people were killed. In January 2010 Haiti's capital Port-au-Prince was devastated by a catastrophic earthquake of magnitude 7, affecting over 3 million people with a death toll reaching that of the Indian Ocean tsunamis.[1] Just in 2010, those mega-disasters were followed by a massive earthquake in central Chile in February and by floods in Pakistan in July, while Russia was fighting wild fires. In March 2011, Japan, one of the most disaster-prepared countries, was struck by an earthquake of an 8.9 magnitude on the Richter scale followed by a tsunami. This disaster is likely to trump the Great Kanto Earthquake of 1923 so far considered the worst calamity in Japan's history.[2]

In 2010, the Emergency Events Database of the Centre for Research on the Epidemiology of Disasters (CRED), recorded 373 natural disaster in its database, killing 296,000 people, affecting over 207 million others and totaling over 109 billion US$ in economic damages. While most of these disasters have received massive media attention –if only a fleeting attention– they are by no means a recent phenomenon. For instance, earthquakes alone have claimed an average of 27,000 lives per year worldwide since the 1990s (Guha-Sapir and Vos, 2011). Clearly reporting of these disasters has increased in recent years. Alongside increased reporting the scope of disasters in terms of costs and human loss has increased as well due to the combined effect of high rates of urbanization and wealth accumulation. Consequently, natural hazards are all the more destructive when they fail to be prevented.

Disasters have haunted humanity throughout history as consistently as another scourge: conflict. According to the Uppsala Conflict Data Program, there were 36 ongoing conflicts in 2009, of which 29 were intrastate and 7 were internationalized. In the case of natural disasters, international response in the form of humanitarian assistance has greatly increased in the last couple of years. The perception of those disasters as the expression of *Nature's raw power* seems to trigger waves of compassion and support. In turn, the response to conflict by the general public seems to be more retained and fatalistic, even when international organizations have come to appreciate the specificities of fragile states.[3]

In this paper we wish to look at the *official* responses to natural disasters and conflicts

[1] Red Cross

[2] It is worth noting that for each unit increase in earthquake magnitude, the strength increases by a factor of 100. That is to say that between two earthquakes of 7 and 9 magnitude, one has to multiply energy dispersion by 1,000

[3] See the OECD Fragile States Principles (2007) and the 2011 World Bank World Development Report (WDR) that focuses on Conflict and Development

through the channels of official development aid (ODA). We want to explore whether donor countries prefer to support disaster stricken countries versus conflict afflicted ones, and in how far donors are susceptible to the concomitance of disaster and conflict. Although we acknowledge that conflict and disaster have very distinctive features, there are several reasons why looking simultaneously at the two makes sense.

First, we argue in terms of the vulnerability of countries in conflict. Countries in conflict or emerging from conflict are less protected against disasters. Their exposure is high both in terms of human casualties and economic consequences. Raddatz (2007) notes that except for geological disasters which tend to be more concentrated in middle income countries, large disasters are significantly more frequent in low-income countries. Besides, governments of low-income countries may have an incentive to inflate the death tolls reflecting the impact of the disaster to attract more relief and assistance. The questions emerging from this point are therefore: How does a disaster-related shock translate into aid allocation? Does receiving 'disaster-related' emergency assistance affect the 'conflict-related' funding? Does ODA systematically vary following either of the two shocks?

The second reason for looking at conflict and disaster concurrently is that it may provide a new take in the understanding of donors' aid allocation preferences and responsiveness. Indeed, as pointed out by Round and Odedokun (2004) little of the sizeable literature on aid addresses the issue of what determines the total volume of aid that donors make available. However, donors are ultimately those who determine the quality and quantity of aid available to recipient countries. Surprisingly, a much larger body of research has dealt with the determinants on the recipient side, trying to identify features and settings conjoining for greater aid allocation. Yet, the same literature acknowledges the strategic dimension of aid, rightfully pointing into the donors' direction for better understanding of aid allocation priorities and preferences. Hoeffler and Outram (2010) find that roughly half of the predicted value of aid is determined by donor specific effects. Of the remaining variation, recipients' need accounts for 36 % and donor self-interest for about 16 %. Hoeffler and Outram further note that recipient merit, measured by growth, democracy and human rights, accounts for only 2 % of predicted aid.

We look at the aid allocation of five major industrialized countries, namely France, Germany, Japan, the United Kingdom and the United States. We also consider three unions of groups of countries: the European Union, the group of the G7 and the OECD. By fitting an identical empirical model for these eight different countries and groups of countries, we aim at understanding whether donors have a preference for exogenous 'natural shocks' in comparison to man-made crises in their allocation of aid. In doing so, we try to tackle the reasons affecting the nature and volume of aid.

Obviously, the analysis is faced with a number of challenges. The assessment of needs in recipient countries is a complicated task. In terms of the empirical analysis, we face the problem of endogenous covariates. The potential endogeneity of the explanatory variables is accounted for by carrying out a GMM analysis that allows us to take past observations of our covariates as instruments for contemporaneous differenced observations. Besides, measuring and comparing conflict and disaster related costs is tricky and not sufficiently standardized. For that reason, we choose to focus our attention on the number of deaths incurred by those crises. Last but not least, we we have to account for the heterogeneity of the recipient countries.

Our findings are the following: While deaths from disasters significantly increase aid endeavors of all countries except Japan, deaths from conflicts do not have a significant impact on the disbursement of per capita official development aid. Once we account for the endogeneity of conflict and instrument it by the size of the youth cohort, the link between conflict and per capita development aid is undermined. Furthermore, we do not find any evidence that governance matters. A country's governance, as measured by the polity2 variable, does not affect aid allocations by any donor. Similarly, the socio-economic and health status of the population in the recipient countries –proxied by life expectancy– has no effect on per capita aid commitments and disbursements. While France and Germany seem quite sensitive to disasters in their aid allocation, Japan acts according to neoclassical theory in that it supports countries with policies that have the potential to enhance growth. In the case of the United Kingdom, trade links are shown to be important determinants of ODA. For the United States it is the strategic dimension of development aid as well as the linkages from trade that appear to be important. In the case of the European Union as well as for the G7 and the OECD, humanitarian disasters are shown to have a substantial impact on disbursed aid. However, only the former two of the three unions seems to be also sensitive to geological disasters. Overall, aid disbursement is sticky in the sense that past disbursed per capita aid is a good predictor for current aid, which points to the importance of their preferences. Our results also show that in order to analyze the patterns of aid allocation carefully, an individual focus on the different donors and their agendas is warranted.

The paper is organized as follows: Section 2 sets out our working definition of disaster and conflict and points to their connection. In section 3 we present the datasets that are used. We have a large panel of 112 countries and 35 years starting in 1970. Although we observe a very recent spike in the occurrence of natural disasters our dataset stops in 2004 due to limitations in data availability. In section 3 it is also outlined how we constructed the disaster and conflict variables. In section 4 present out the econometric specification employed. We apply the System GMM proposed by Blundell and Bond (1998) because it allows us to control for the endogeneity of the covariates using their own past observations as instruments. Section 5 contains the results by donor country and union of countries. We present results for committed and disbursed official development aid (ODA) from one-step and two-step GMM regressions of which the latter employ the efficient variance-covariance matrix. The robustness of the results is addressed in section 6 and implications for aid donors and recipients are drawn in section 7. Section 8 concludes.

2 Context, Definition of Disaster and Conflict

Before proceeding to the empirical analysis it is worth to clarify how we define natural disaster and conflict and to further allude to some of the problems related to the analysis of these events. Obviously, such underlying conceptions are also instrumental in donors' prioritarization of aid allocation.

In first place, one needs to distinguish the concepts of 'hazards' and 'disasters' which are too often conflated in the media. The fundamental difference between hazard and disaster is that while the former is an event, the later is a process. The historic case of the Lisbon Earthquake (1755), which is estimated to have killed between 10,000 and 100,000 people in Lisbon alone, is a good example of the distinction between the two. Rousseau's response to a poem written by Voltaire about that disaster highlights a core tenant of disaster research. Rousseau underlines the fact that *Nature* cannot be held responsible for the building of high-rise houses and that the population density also played in to the scale of the subsequent disaster. In contemporary disaster research, it is now recognized that 'natural disasters' do not exist as such. This position is also shared by the United Nations Strategy for Disaster Reduction (UNISDR) and Smith (2006) notes that "In every aspect of a disaster, causes, vulnerability, preparedness, results and response, and reconstruction, the contours of disaster and the difference between who lives and who dies is to a greater or lesser extent a social calculus". Consequently, one can deduce that while there is a natural input ($\widehat{=}$ hazard) to a disaster, the consequences of hazards are first and foremost human-made (World Bank, 2010b).

In spite of this distinction, the mental perception of disasters as largely *Deus ex machina* persists among donors. Therefore, we subscribe to the understanding of disaster allocated ODA as need-based and more strategically 'neutral' than other types of aid. Yet, we acknowledge the complexity of natural hazards and their disasters and we admit that from a conceptual point of view it is improper to strictly speak of 'natural disaster'.

Disasters are the consequence of the interplay between nature and man-made intrusion. Nevertheless, at their root lies the hazardous forces of nature that cannot be controlled by human force. Therefore, we consider 'natural disasters' as exogenous events in our empirical analysis. For the ease of exposition, and given the use of this term by donors themselves, we keep writing 'natural disaster' when we refer to natural hazards that cause disasters.

2.1 Conflict, Economic Shocks and Aid

We now turn to conflicts. Despite the growing research on development aid, its analysis in connection with conflict is rather recent, particularly pioneered by Collier and Hoeffler (2004, 2002). Collier and Hoeffler were amongst the first to point out the nexus between economic factors and civil wars (Collier and Hoeffler, 1998 and 2000, and Collier, 1999). The majority of available research on aid and conflict seems to find a negative relationship. Arcand and Chauvet (2001), for example, present evidence that aid decreases the likelihood of the occurence of a violent conflict. Still, they underline that "the uncertainty of aid plays a destabilizing role in that it increases the probability of civil war." Moreover, de Ree and Nillesen (2009) demonstrate that a 10 % increase in foreign aid increases the probability of an ongoing conflict to end by 8%. They argue that a government's ability to increase military spending quells rebellion(s). Looking at the issue of the onset of conflicts and aid, Ruggeri and Schudel (2010a) argue that foreign aid in corrupt countries decreases the risk of civil war outbreak. They suggest that foreign aid deters antagonistic elites from organizing rebellion.

Yet, other studies identify a positive correlation indicating that aid flows increase the propensity for conflicts. Such findings may have several underpinning dynamics, with aid diversion towards military spending as a leading cause. Homer-Dixon (2009) estimated misappropriation of aid for higher military expenditure to occur with 11.4% of all foreign aid within the poorest African nations, and to be responsible for as much as 40% of these countries' military budgets. Such misappropriation, significantly increases the risk of conflict. Similarly, Grossman (1992) demonstrates that foreign aid increases the likelihood of civil war when rebel groups try to assume power in order to exploit such aid transfers. In such a scenario, aid enhances the risk of conflict by triggering rent-seeking behavior of political actors. Foreign aid thereby increases the payoffs to rebels by increasing the value and 'return-on-investment' of capturing the state (Grossman, 1991, 1992 and 1999).

Regarding donors' reaction to conflict in their aid allocation, a similarly controversial discussion can be encountered in the literature. de Ree and Nillesen (2009) find that donor countries decrease aid commitments to countries undergoing armed conflict. Such findings should be put in the perspective of earlier research by Alesina and Dollar (2001) who point out that donor governments see aid as means to reinforce foreign alliances, or tend to distribute aid based on former colonial relationships. Additionally, Alesina and Weder (2002) show that domestic politics and military stability are a secondary concern in determining aid commitments and that government corruption in the recipient country does not lead to a decrease in foreign aid commitments.[4] The authors also underline the fact that aid allocations are largely determined by factors outside the borders of the recipient country.

To set up the larger research universe in which our paper operates, it is worth mentioning that the literature on aid and conflict has also some instructive contributions from the micro level perspective. Among those, one cannot ignore Miguel and Kremer (2004) and Blattman and Miguel (2008) who look into the causal impact of economic shocks on the occurrence of civil war and demonstrate a negative relationship. Fearon and Laitin (2003) focus on the effect of ethnic and religious diversity and its impact on the risk of civil war. Hegre *et al.* (1999) and Sandler and Hegre (2002) test the theory that both solid democratic and harsh autocratic regimes are associated with less civil war than those that are at an intermediate level of democracy. Additional research on aid and conflict includes Bergholt and Lujala (2010), Ruggeri and Schudel (2010b), and Strandow *et al.* (2010).

2.2 Relationship between Conflict and Natural Disasters

Few studies, however, have explored the effect of natural disasters on conflict. Again, these studies are divided into two main camps. The first one argues that disasters mitigate the propensity of conflict by fostering cooperation among groups (Kelman and Koukis, 2000; Quarantelli and Dynes, 1976 and Evin, 2004)

A second category of researchers aims at demonstrating that disasters have the potential to generate conflicts. Ember and Ember (1992) bring forward the argument that the threat of disasters may cause preemptive strikes for resources expected to be scarce in the incidence of a disaster. Olson and Drury (1997) present evidence that the more developed a country, the less likely a natural disaster is to have political consequences. Bhavnani (2006) argues that natural disasters contribute to conflict because they create competition for scarce resources, exacerbate inequality in the distribution of aid, change power relationships, and can create power vacuums and consequently opportunities for

[4]However, Schudel (2008) presents evidence that in the case of bilateral aid the responsiveness of donor states to corruption in the recipient state depends on their own level of corruption: less corrupt donor states allocate more aid to less corrupt recipient states. Whereas corrupt donor states do not make such a clear distinction.

warlords. Similar is the argument brought forward by Nel and Righarts (2008), who look at data for 187 countries and other political entities for the period 1950 to 2000. They find that rapid-onset natural disasters significantly increase the risk of violent civil conflict both in the short and medium-term, specifically in low- and middle-income countries that have high inequality, mixed political regimes , and sluggish economic growth.[5]

Fragile countries are thus particularly vulnerable to disasters entailing instability. Countries like Nicaragua and Guatemala saw their government falling due to the public discontent over disaster response. The 1970 Bhola cyclone in East Pakistan and the delay of relief constituted a major trigger for the Bangladesh Liberation War (1971). More recently, the 2004 tsunamis that affected Sri Lanka and Indonesia, had a heterogeneous impact on the protracted conflicts experienced by those countries. In Aceh (Indonesia), the response to the tsunami seems to have contributed to the resolution of a long-term simmering conflict between Gerakan Aceh Merdeka and the government. Conversely, in Sri Lanka the tensions between the Tamil Tigers and the government appeared to be aggravated.[6]

In terms of ODA, the *relationship* between conflict and natural disasters has received limited attention. Those two fields have long been perceived as separate areas of research in aid allocation. The occurrence of 'mega-disasters' in fragile countries such as Haiti or Pakistan has highlighted the outdated conception of those two types of events as isolated from one another. Still, it is precisely the modalities of aid allocation that have reinforced the disconnect between conflict and disaster. As noted by Noy (2009), the impact of aid that follows disasters is worth exploring. Unlike development aid, disaster aid is first and foremost event-based and thus less dependent on complex considerations that enter into donors' aid allocation agenda. Furthermore, while previous aid decisions factor in to current aid allocation, disaster aid is less likely to be influenced by the history of previously allocated aid. Therefore, we choose the main focus of our analysis to be the variation of aid allocation resulting from the occurrence of a natural disaster. We further compare the differences (if any) between countries at peace and countries in conflict.

3 Data and methodology

Four different data sources have been consolidated in order to analyze the impact of natural disaster and conflict on ODA flows between 1970 and 2004. ODA data come from the

[5]For the case of earthquakes, Brancati (2007) shows that earthquakes increase the likelihood of conflict with a bigger effect for higher magnitude earthquakes. Consequently, relief must consider the conflict-producing potential of earthquakes.

[6]Researchers have since argued that these two countries were at different 'stages' of conflict and that the tsunami and the response to the disaster had different impacts on the warring parties.

OECD (CRS). We consider total commitments and total net disbursements in constant million US$. In order to express ODA in per capita terms and account for the skewness of the distribution we divide ODA by the population size and take the logarithm. Foreign aid from five countries is considered, namely France, Germany, Japan, the United Kingdom and the United States. Furthermore, ODA flows from three groups of countries are analyzed, namely the European Union, the G7 and the OECD. Descriptive statistics for the respective countries are presented at the bottom of Tables 2 to 9.

French ODA flows over the course of the 35 years are on average -13.356 in log per capita terms. German and Japanese log per capita ODA are similar in dimension. UK development aid is with -14.53 slightly smaller and US aid is with -12.80 slightly higher. Per capita aid flows of all five countries are rather steady, as shown by the relatively small standard deviations. Apparently all five countries undertook similar aid efforts in terms of average per capita aid in the recipient countries. Aid per capita from the EU, the G7 and the OECD is higher, yet only marginally. However, when it comes to actual budget sizes the eight countries and groups of countries differ a lot. Not surprisingly the aid budget of the OECD and the G7 is biggest, it's on average 56,403 and 27,437 million US$, respectively. Among the single nation countries the United States have with 7,932 million US$ the biggest average aid budget, followed by Japan and France. Thus, although the countries differ substantially in the sizes of their aid budgets, they don't differ much in the intensity of per capita treatment in the recipient countries.

The country control variables are chosen among the WDI data published by the World Bank. For all the 112 countries[7] that received aid between 1970 and 2004 from one or more of the donors at one or more points in time, we consider the commonly used country covariates. We take GDP per capita because it has been identified by Boone (1995) as one of the main determinants of aid flows and is also a variable of interest in the analysis of armed conflict (Fearon and Laitin, 2003). This variable is measured as real GDP per capita in constant US$ and logs are taken for scaling purposes. By and large GDP per capita of receiving countries is very similar across donors. It ranges from 6.69 to 6.88 in log per capita terms which translates into a range of 805.93 US$ to 973.60 US$ in real per capita terms. Second, we include GDP growth. It accounts for the rate of development in the recipient countries. It's again very homogenous, in the sense that on average donors target similar recipient countries. On average GDP growth ranges slightly above 3.6 %. Yet, the variation in the growth of the recipient countries is substantial. The standard deviation is almost 6 across all empirical specifications. The close proximity in the sum-

[7] The countries considered in the analysis are listed in Table 10. Except for Bahrain, Bhutan, Cote d'Ivoire, Djibouti, Kuwait, Libya and Swaziland all countries are represented in all empirical specifications.

mary statistics for the average recipient country per donor is not surprising given that all donors face the same set of countries in need. We further include the trade volume as % of GDP into the empirical model to account for the integration of developing countries into the world economic and trade system.

To complement the economic variables, we also consider population growth and life expectancy at birth. We take these as proxies for the living conditions and the health care system and therefore as indicators for development beyond the strict increase in production. These variables allow us to see whether demographic and health indicators have a significant impact on the allocation of aid. It is noteworthy to keep in mind that life expectancy in the recipient countries is on average about 60 years whereas life expectancy in the OECD countries is on average 76 years over the same period.

Finally, we also include 'political affinity' as donors are likely to consider the regime type and issues of governance in their aid allocation. To that end, we take the polity2 index –as introduced by Marshall and Jaggers (2002)– to control for the level of democracy in a country. The index ranges from -10 (strongly autocratic) to 10 (strongly democratic) and allows examining general regime effects. A Cold War dummy is used to account for strategic development aid during this area.

To construct our disaster variables, we rely on the Emergency Events Database of the Centre for Research on the Epidemiology of Disasters, henceforth EM data. An event qualifies as a disaster in that database if at least one of the following criteria is fulfilled: (i) 10 or more people are reported killed; (ii) 100 or more people are reported affected, injured and/or homeless; (iii) the government declares a state of emergency, or the government requests international assistance. While the EM dataset is the best available on events of 'natural disaster', several issues should be kept in mind in the course of the analysis. For one, as noted by Stromberg (2007) (mis)reporting of disasters varies systematically across time, levels of income and political regimes. Reporting of small disasters is likely to be more extensive in the latter years of the database as well as for more developed countries. In turn, less democratic countries may have underreported some natural disasters for fear of international intrusion, as in the case of the Cyclone Nargis in Myanmar/Burma in 2008.

Political and strategic concerns may also play in how casualties and affected populations are estimated. Aware of those shortcomings, we follow Noy (2009) in using a measure for disaster magnitude in terms of the number of people killed. We have data on the number of people killed for 507 disaster events. We adapt the measure of disaster magnitude to our research by presuming that the impact of a specific natural disaster on aid allocation depends on the magnitude of the disaster relative to the size of the overall population. That means, donors allocate aid taking into consideration the needs incurred by the people of the recipient country. The needs are estimated to be considerable higher the more people are affected by the disaster. Therefore, we standardize the data by dividing the number of people killed by the population size in the year prior to the disaster. The lagged population size is used since the current year's population has been affected by the disaster itself. We choose that measure of disaster intensity as it allows for a direct comparison between the victims of disaster and conflict. The logs of these variables are taken to account for the skewness and high dispersion of the data.

Following Skidmore and Toya (2002) and Raddatz (2007), we classify disasters into three categories to reflect the potentially differential effects and therefore differential responses:

- Climatic disasters (C) such as floods, droughts, extreme temperatures, and wind storms
- Geological disasters (G) such as earthquakes, landslides, volcanoes, and waves
- Humanitarian disasters (H) such as famines and epidemics

We consider the impact of the intensity of the three types of disasters on aid allocation independently in the analysis.

In terms of conflict, we use the conflict database from the Peace Research Institute Oslo (PRIO). Comparable to our disaster variables, we also apply an intensity measure of conflict in that we consider the number of victims per 10,000 inhabitants. Again we take the lag of the population size and apply the logarithm to account for the skewness of the distribution of conflict intensity. As summary statistics show deaths from conflicts are small. On average roughly one person per 10,000 is killed.

4 Econometric specification

The empirical analysis is carried out cognizant that we face a couple of challenges. For one, the data generating process of our panel is dynamic. Thus, current observations of the dependent variable depend on past realizations. Furthermore, some of our explanatory variables are endogenous and we do not have exogenous instruments for all of these. Besides we compare a set of heterogeneous countries and therefore we have to account for country fixed effects and heteroskedastic errors. Despite the window of 35 years, the number of available time periods T is small relative to the number of countries

($N = 112$). The low number of T stems inter alia from the fact that we do not have all $T = 35$ observations for each country. The resulting econometric model looks as follows:

$$y_{it} = \alpha_1 y_{i,t-1} + \alpha_2 X_{it} + \beta_1 D_{it} + \beta_2 C_{it} + \beta_3 I_{it} + \mu_i + \varepsilon_{it}, \quad (1)$$

where y_{it} is our dependent variable which is log per capita ODA of country i at time t, it also enters as lagged dependent variable. The matrix of country control variables is denoted by X_{it}. This matrix of covariates also includes dummy variables for time periods of five year windows to account for waves in aid allocation. The variable D_{it} captures the disaster magnitudes as described above and C_{it} is a measure of conflict intensity. The interplay between disaster and conflict is captured by I_{it} and the country fixed effect are denoted by μ_i. We transform the above model in its difference form to eliminate the country fixed effect μ_i. The transformed disturbance $\Delta\varepsilon_{it}$ then depends on ε_{it} and ε_{it-1}. Therefore, consistent estimates of the coefficients $(\alpha_1, \alpha_2, \beta_1, \beta_2, \beta_3)$ can be obtained for initial conditions y_{i1} that are uncorrelated to subsequent disturbances ε_{it} for $t = 2, 3, \ldots, T$. Accordingly, the lagged level of y_{it-2} is uncorrelated with $\Delta\varepsilon_{it}$ and serves as instrument. This holds for all the other covariates $(X_{it}, D_{it}, C_{it}, I_{it})$ as well. All lags dating back further than $(t-2)$ can also serve as instruments. Then, we can apply the first-differenced GMM estimator as introduced by Arellano and Bond (1991). It exploits the following moment condition:

$$E[y_{i,t-s}\Delta\varepsilon_{it}] = E[Z_i'\Delta\varepsilon_i] = 0, \quad (2)$$

for $t = 3, 4, \ldots, T$ and $s \geq 2$, where $\Delta\varepsilon_i = (\Delta\varepsilon_{i3}, \Delta\varepsilon_{i4}, \ldots, \Delta\varepsilon_{iT})'$ and Z_i is a $(T-2) \times m$ matrix of initial conditions. We consider the collapsed version of Z_i that restricts the instrument counts.

The difference estimator by itself suffers from one major limitation. It performs poorly when the series under study are (close to) random walks or when the variance of the individual effects increases relative to the variance of the transient shocks. As a consequence, past levels have little information about future changes in the variables as these changes represent the stochastic innovations. This means that the first differences instrumented with past levels will not identify the coefficients as the lagged levels are only weakly correlated with the first-differences. To circumvent this problem Arellano and Bover (1995) offer system GMM as solution. In addition to instrumenting first differences with lagged levels, levels are instrumented with lagged differences. Under the additional assumption of a stationary mean of the time series, system GMM has smaller finite sample bias and greater precision when using persistent series. This implies that *in addition to* the moment condition of the first differenced equation (2) the following moment condition can be exploited:

$$E[\Delta y_{it-1}(\mu_i + \varepsilon_{it})] = 0, \tag{3}$$

for $i = 1, 2, \ldots, N$ and $t = 3, 4, \ldots, T$. The system estimator relies on a stacked dataset with twice the observations –the transformed and the untransformed ones– of each individual country i. As the second moment condition does not account for country fixed effects we also include regional dummies in the estimated specification. In the following analysis we present results for both, the one-step feasible and the two-step efficient GMM estimator using the asymptotically efficient variance-covariance matrix.

Furthermore, we consider conflict to be 'truly' endogenous. While the literature on civil war and conflicts has considerably expanded in recent years, both at the micro and macro levels, one is rather surprised to find that models and analyses proposed remain quite accommodating of endogeneity concerns. While acknowledging the challenge of endogeneity, most studies eventually rely on lagging variables to overcome, or at least minimize this challenge. We try in this paper to tackle this challenge once more and use the instrument in the form of the relative size of the youth cohort. The variable was developed by Barakat and Urdal (2009) in their study of education, youth and conflict. The study is an extension of the work conducted by Urdal (2004) on youth bulges and conflict (See also Urdal and Hoelscher, 2009). While a priori the size of the youth cohort doesn't have a direct impact on per capita development aid, it has been shown that the size of the youth cohort directly influences the propensity of conflict in a country.

Moreover, there is no reason to postulate that the disaster measures will face any reverse casualty from the aid/GDP growth variable. Therefore, the exogeneity of the disaster measure is assumed. As noted by Noy (2009), this assumption is also adopted in three other papers using a disaster measure as an independent variable (albeit in different specifications and for examining different hypotheses). Without the exogeneity assumption, the only way to infer causality from our specifications would entail finding an appropriate instrument for the initial disaster impact. Unfortunately such an instrument remains to be found. The exogeneity issue can potentially be fully overcome by producing an index of disaster intensity that depends only on the physical characteristics of the disaster (i.e. area affected, wave height or storm circumference). The collection of such data from primary sources and the construction of a comprehensive index are beyond the scope of this paper, but would enhance the precision of future research addressing such issues.

5 Empirical Results

Before estimating our empirical model, the time series properties of the different aid categories are checked. AR(3) specifications are presented in Table 1. All series have a level of first oder panel autocorrelation above 0.300. 10 out of the 16 series have an autocorrelation of at least 0.500. The second lag is significant for all specifications and the third lag is significant for 15 specifications. Therefore we feel confident about employing the system GMM specification as presented in section 4.

For the eight countries and groups of countries we consider both log per capita committed and disbursed ODA as dependent variable. The results are found in Tables 2 to 9. All tables show the one and two step estimation results for committed ODA in the first and the second column, the analogue for actually disbursed ODA is presented in columns three and four of the same table. The empirical specification is only rejected in five of the 34 cases making us confident about the model employed. Thus, 85 % of our empirical specifications are properly identified. Coefficient sizes only change slightly between the one and the two step estimation procedure, yet inference changes significantly. As indicated before, all specifications include country fixed effects in the first moment restriction and regional dummies according to the UN classification[8] in the second moment restriction. In addition, we also consider period dummies for seven windows of five years. For clarity's sake, the coefficients associated with the regional and the period dummies are not reported in the tables. All p values are robust in the sense that the corresponding standard-error estimates are consistent in the presence of any pattern of heteroskedasticity and autocorrelation within panels. Although two step errors should already be robust, we apply Windmeijer's finite-sample correction.

Even at first glance, the results show that the countries and groups of countries under study have different agendas and react differently to conflict and natural disasters in their aid allocations. For example, for the United States, the G7 and the OECD strategic placement of aid in the presence of the cold war appears to matter. Additionally, while some countries seem to be sensitive to humanitarian disasters, others are more prone to respond to geological disasters. Furthermore, for all donors the history of aid flows seems to matter more in the context of disbursed aid than for aid commitments. This situation is of particular interest for fragile states and 'aid orphan' countries, for whom the scope of the impact of recovery is likely to be greater.

[8]Regions are the Caribbean, Central America, Central Asia, Eastern Africa, Eastern Asia, Eastern Europe, Middle Africa, Northern Africa, Northern America, Northern Europe, Oceania, South America, South-Eastern Asia, Southern Africa, Southern Asia, Southern Europe, Western Africa, Western Asia, and Western Europe

We also introduce a dummy variable that captures the concomitance of disaster and conflict. As this dummy variable is also very likely to be endogenous, we instrument it by the interaction term of the size of the youth bulge and the occurrence of a geological disaster as well as the interaction term of the size of the youth bulge and the occurrence of a humanitarian disaster. Regarding conflict-disaster concomitance, none of the donors are influenced in their aid allocation by this double-whammy throughout the period and in all the countries. The interaction dummy of the concomitance of the two events is indeed always insignificant. Thus, if a given developing country is in a situation of conflict, donors are not deterred from disaster relief once a natural disaster occurs concurrently. Conversely, the concomitance of disaster and conflict does not induce a double back-up for affected countries either. Yet, we remain doubtful about the instruments of the concomitance dummy. To overcome these doubts, we also estimate specifications excluding the concomitance dummy. Results do not change significantly. We proceed by looking at the individual countries' aid allocation in a bit more detail:

We start the analysis with France. The results are presented in Table 2. In terms of *committed* ODA per capita we see that past allocation of ODA doesn't play a role, neither do political or strategic variables. However, the number of people who died as consequence of a humanitarian disaster significantly increases the commitment of aid per capita. A 10 % increase in log per capita deaths from a humanitarian disaster, increases log per capita aid by 1.05 %. In other words, in the sample at hand on average 283 people died due to humanitarian disasters for an average population of 39.4 million. Thus, if the magnitude of the disaster doubles, ODA increases from 59.1 million US$ to 67.1 million US$. In contrast, geological disasters do not influence the French per capita aid commitment patterns nor do conflicts. When it comes to actual *disbursement* of aid per capita, the picture is slightly different in that disbursement follows a more deterministic path. Past allocation of per capita aid predicts current allocation with a coefficient of 0.303 (two-step estimation). Yet, it becomes apparent that in the actual allocation, the French government considers both humanitarian and geological disasters. Strategic variables such as the cold war dummy do not play a role, neither for the commitment nor for the distribution of per capita aid. Also, French aid decisions do not seem to be driven by economic and/or trade motives. We fail to reject the validity of the empirical specification.

The results for German commitment and allocation patterns are shown in Table 3. Again, all specifications are well identified according to the Arellano-Bond tests. Although, one would expect that strategic aid in the face of the cold war and under the special situation of a divided country had a momentous impact on German aid, we do not find any indication that this was the case. The cold war dummy is indeed never significant. In per capita aid *commitments*, disasters do not seem to play a role, yet the incidence and intensity of conflict has a negative impact on the amount of per capita aid committed. While in the one-step specification the log number of deaths from conflict per 10,000 inhabitants is only significant at the 11.3 % level, it is significant at the 9.1 % level employing the efficient variance-covariance matrix. Considering only the one-step estimation, the disaster-conflict interaction dummy is significant at the 11.1 % level and reduces log per capita committed ODA by 0.527. Interestingly, past commitments of per capita aid seem to have a negative impact on current commitments. Yet, this picture is changed into the usual aid continuance story when we look at per capita *disbursed* German ODA. In fact, there is a relatively high level of persistence in per capita aid flows as shown in Columns (3) and (4) of Table 3. While good governance does not play a role for the disbursement of per capita aid, economic variables appear to matter. Germany appears to favor recipient countries with low log GDP per capita and relatively low trade shares. In contrast to committed per capita aid that takes conflict intensity into consideration, actually disbursed per capita aid does not seem to be driven away from conflict countries. In addition, both humanitarian and geological disasters significantly increase the log per capita aid that is directed to a certain country. Thereby, geological disasters appear to be favored. The coefficient for the responsiveness to geological disaster is twice as large as the coefficient for the reaction to humanitarian disasters. Despite the sizable differences in estimated coefficient size, the equality of the two coefficients cannot be rejected. As in all other specifications estimated, the disaster-conflict interaction is not significant.

In the case of Japan, per capita aid engagements are neither driven by disasters nor conflicts, nor the by the concomitance of the two. As shown in Table 4 Japan appears to favor growing economies. In this case, 'growing' means two things. On one hand, Japan fosters economies with a growing GDP and on the other hand, preference is given to countries with growing populations. It would be too simplistic to conclude that Japan acts in its aid endeavors in a Solow way. Yet, the allocation and distribution patterns do echo the neoclassical growth model that predicts output growth stemming from population growth. In a way, Japan seems to consider development aid as the engine of growth rather than an instrument of relief. Moreover, Japan does not appear to display self-interest in the sense that it assists countries with higher trade shares. Throughout specifications, the coefficient on the trade share is insignificant. As for the preceding countries, the specification tests support our model.

The United Kingdom (UK) follows yet another path in its aid efforts. Indeed, the UK seems to favor countries that have a high trade share relative to their GDP. Yet, the coefficients are small. Table 5 Columns (1) and (2) show the relatively small trade coefficients of 0.011 and 0.009 in the one and two step estimation, respectively, for *committed* per capita aid. Despite the small value of the coefficients, the effect is sizable as the mean trade share in the sample is 68.39 % and the standard deviation is 36.67 %. Neither conflict-related deaths, nor deaths from geological disasters appear to influence per capita aid commitments of the UK. In contrast, deaths from humanitarian disasters do. However, their impact does not make the way through into the actual distribution. Next to the trade share, long-term relationships between the UK and the recipient countries as well as past spending patterns appear to matter most in the *disbursement* of per capita aid. It has to be noted that the specification for log committed ODA per capita is properly identified, yet the empirical model for log disbursed ODA per capita is only borderline identified.

The results for the United States are quite similar to those for the United Kingdom. They are presented in Table 6. Existing links do play a major role in the decision about per capita aid *commitments*. As in the case of the UK, the coefficient on lag ODA per capita is above 0.300 and thus by far higher than for the other donors. Disasters, both humanitarian and geological, do increase the *commitment* and the *disbursement* of US per capita development aid. While they are significant in the one-step specification, they are not significant in the two-step model. Yet, their joint significance cannot be rejected. Therefore, we come to the conclusion that jointly disasters do influence the per capita aid allocation and spending pattern of the United States. In contrast to the UK, the United States seems to take into consideration the level of GDP per capita of the recipient country in their per capita aid allocations. Countries with higher GDP per capita are disadvantaged under this scenario. This result holds not only for the *commitment* of per capita aid, but also for the *distribution*. Interestingly, the strongest effect on disbursed per capita aid stems from the cold war dummy. Among the *five individual* countries in our sample the cold war dummy only shows up significant for the United States. This is yet another confirmation of the strategic role played by American ODA during the Cold War. In addition, there is some mild indication that trade shares also matter, yet the coefficient is not significant at conventional significance levels.

We turn now to the European Union (EU), the group of the G7 and the OECD countries. The results for the former can be found in Table 7. The EU is the only union that shows a slight tendency for increased funding endeavors in countries that are concurrently conflict and disaster stricken. Yet this tendency is only perceptible in the *committed* per capita aid, with a significance level at 15.6 % for the two step model. The sign turns negative and significance vanishes completely in the actual *disbursement* of per capita aid. Yet, when analyzing the results for the European Union one has to keep in mind that the overall model specification for *committed* per capita aid is rejected by the Arellano-Bond tests. However, the specification tests fail to reject the model for *disbursed* per capita ODA.

Thus, we feel confident about the non-existence of an effect of the disaster-conflict interaction in the model of disbursed per capita aid. In turn, we take very cautiously the result indicating a positive impact of the disaster-conflict interaction for committed per capita aid. Throughout all EU specifications, deaths from humanitarian disasters increase per capita aid significantly. The coefficient associated with deaths from geological disasters is not persistent as it looses its significance in the two-step specification. Yet jointly, the disaster coefficients are significant in all specifications. Last but not least, past per capita aid allocations do not influence current aid allocations to a similar degree as for the five individual countries under study. What matters for EU decisions is the trade share of the recipient country, which positively and significantly affects the disbursed per capita aid. In stark contrast to what we have seen for Japan, the GDP growth of the recipient countries has a negative effect on per capita ODA disbursements in the case of the EU.

We now focus on the G7 countries[9] as a group. In their joint commitment the G7 appear to follow a more deterministic pattern than the EU. This can be verified in Table 8. Past commitment patterns are good predictors of current commitment, with actual disbursement of ODA being even 'stickier'. For the group of the G7 the strategic component of aid is also very strong. Throughout specifications the cold war dummy significantly increases per capita aid commitments and disbursements. As in the case of Germany, the occurrence and intensity of conflict matters for per capita aid commitments. It significantly reduces committed per capita aid. Yet again, it does not work its way through into actual disbursed per capita aid. As for the European Union, deaths from both types of disasters cause the G7 to increase per capita aid allocation and disbursement. There is, however, no indication for increased aid endeavors in the case of a concomitance of disaster and conflict. Mild evidence points out that instead of considering GDP growth when deciding about per capita aid disbursement, the group of the G7 favors recipient countries with a low level of GDP per capita.

In the case of OECD countries, Table 9 shows that this group mirrors the aid efforts of the G7 quite well. Per capita aid commitments and disbursements were significantly increased during the cold war. Again, humanitarian disasters trigger action. Deaths from conflict significantly reduces committed per capita aid, however disbursed per capita aid is not affected. In contrast to the G7 aid allocation and spending patterns, the trade share of the recipient countries matters to the OECD. The higher the trade share of any recipient country, the more likely is the country to receive foreign aid. In the process of commitment, OECD countries appear to take into consideration the level of GDP per capita in the receiving countries. However, this is not displayed in actual disbursement patterns. Yet, the specification for disbursed per capita aid has to be analyzed with cau-

[9]France, Germany, Italy, Japan, UK, USA and Canada

tion as its overall fit is rejected for both the one- and the two-step specifications. Instead, the model for committed per capita aid is properly identified.

6 Robustness of Results

Our results are supported by a number of robustness checks. As already discussed in the previous section, we do not only rely on the feasible GMM estimation, we contrast it with the results employing the efficient variance-covariance matrix. In interpreting the results, we consider as credible only those that are consistent across the two specifications. In addition, we tested whether our empirical model is properly identified. Instead of employing the system GMM estimator we used the difference GMM and the orthogonal deviations estimator. Yet, we rejected these models according to the specification tests.

Second, we tested for the significance of the third category of disaster (climatic disasters). However, the variable did not show to have any impact on the allocation and disbursement of aid of any of the donors. Therefore, we decided to exclude deaths from climatic disasters from the specifications presented.

Third, we considered different lack structures of the disaster and conflict intensity variables to account for a potential lag in the reaction time of large administrations. None of these specifications proved to improve upon the results presented. This led us to conclude that donor governments react to disasters in a way very similar to those of individuals. Initial consternation causes them to become involved within a negligible lag of time. From a political economy point of view the prompt reaction of donor countries to disasters may be considered with caution. Taking action out of initial dismay can lead to short-sighted interventions that lack sustainability. We do not argue that the high responsiveness of international donors is intrinsically to be criticized. We only want to point out that donor's immediate reaction also comprises the danger that development aid is only used as short term relief without having any long-term goals. In light of the fact that we fail to identify an impact of past disasters on contemporaneous aid allocations, the possibility of donors' short-sightedness needs further discussion.

7 Implications for aid donors and recipients

Our results present new evidence that donors and groups of donors have their distinct individual preferences when it comes to prioritizing their development aid. While this is not surprising, it in fact confirms Hoeffler and Outram's findings, our results bear additional implications in terms of aid allocation in general, and in the case of natural disaster and/or conflict shocks in particular. Our study support the intuition that donors have a higher degree of responsiveness in the case of disasters in comparison to conflict shocks. Indeed, our analysis helped establish that France and Germany appear to be sensitive to disasters in their aid allocations. Japan, in turn, seems to prefer providing support to countries with policies that have the potential to enhance growth. Trade links on the other hand are stronger predictors of aid allocation for the United Kingdom and the United States, with the latter displaying a strong strategic dimension in aid disbursements over the period. In the case of the European Union, the G7 and the OECD, our results show donors' receptiveness to humanitarian disasters. However, only the former two of the three unions also take action in the aftermath of geological disasters.

The political situation in fragile stages and open-conflict situations is complex. Yet, we cannot find clear-cut evidence that countries in conflict receive less per capita ODA. Nevertheless, donors' aid commitment to these countries seems to be reduced. Indeed, prior research has noted how conflict countries may receive less assistance than their peaceful counterparts presenting similar needs (Patel *et al.*, 2009). In the study at hand we cannot find a significant reduction in aid due to conflict which coevally implies that there is no aid-financing of conflict. Another potential explanation for the missing link between aid and conflict is our instrument choice. Although the empirical specification is valid according to the Arellano-Bond specification tests, it is possible that the relative size of the youth bulge is a weak identification of conflict intensity as measured by the number of victims per 10,000 inhabitants.

In the case of 'double whammy', countries do not see a lasting surge of aid allocations. The attention span of donors is short and we do not observe a systematic increase or decrease in per capita ODA as a consequence of the concomitance of disaster and conflict

Our results have also implications in terms of donors' capacity to coordinate and harmonize their aid allocations per their commitment to the Paris Declaration (2005) and the Accra Agenda for Action (2008). Donors undoubtedly face major challenges in walking the talk, as their previous aid allocation patterns confirm. Furthermore, donor preferences and their difficulty to harmonize aid can be expected to have more parlous effects in the case of fragile countries. Regarding predictability, our analysis confirms that actual disbursement of ODA is indeed 'stickier' than aid commitments. However, this type of predictability can only be established ex-post and thus does not count towards improving aid recipients' visibility in terms of aid allocations.

Another consistent and interesting observation provided by our analysis is that the socio-economic situation of the recipient country and the populations' health status, proxied by life expectancy, does not influence aid commitments or disbursements. Such a finding is interesting in light of the donor commitments to the Millennium Development Goals (MDGs). While the MDGs do not specifically make increasing life expectancy a goal, the first six goals directly have this variable as an outcome of their fulfillment. Therefore, one could have expected donors' allocation to reflect more clearly this commitment. This finding further reinforces the point that developing countries faced with multiple shocks and challenges are at a major disadvantage in terms of the responsiveness of aid to their needs and vulnerability.

In the context of Bilateral Donors' review of their assistance strategy (See "The Future of UK Aid", 2011), our results have implications to enhance aid effectiveness in a situation of competing priorities and increased budget constraints. Countries participating in the Development Assistance Committee (DAC) continue to represent the majority of ODA (120 billion US$), but new donors have become substantially more engaged. Indeed, over the last two decades, aid has nearly doubled, reaching a level of about 200 billion US$ in 2008, a 50 % increase in real terms. In 2008, 65 billion US$ of total aid comes from NGOs, foundations, corporations and many others.[10] An additional 15 billion US$ comes from non-DAC bilateral donors (OECD/ DAC 2008). Thus, the increase in aid observed over the last two decades has been largely induced by those 'non-traditional' sources emphasizing the need to identify patterns of aid allocation and avoid a Keynesian beauty contest scenario, likely to be the most detrimental to fragile countries.

8 Conclusion

This paper has considered how donors respond to *natural* disasters and conflicts in their allocation of ODA. Our results are supported by a series of robustness checks. We showed that by and large donors quickly respond to natural disasters but none of the donor countries under study is influenced by the double-whammy of conflict and disaster, throughout the period and across countries. While donors are not deterred from providing disaster relief when a natural disaster occurs in a conflict-afflicted country, the concomitance of disaster and conflict does not induce a double backing either. We also confirmed that for all donors, the history of aid flows matters more with respect to disbursed aid than for aid commitments. This pattern in turn reinforces the donors' preferences. Overall, we could show that the main determinants of aid allocations are donor interests and that these vary substantially across countries.

[10] Metcalf-Little (2010) shows that Americans gave 37.3 billion US$ to charitable causes in the developing world in 2008, almost 1.5 times more funding than US ODA for the same period. The sectoral distribution of private giving follows patterns similar to ODA, although new research suggests that philanthropic citizens behave differently from governments when making choices about whom to give. Indeed, Desai and Kharas (2009) find that the selectivity of private aid is less oriented toward country-specific factors, and more toward frontline projects, indicating that private aid and official aid are complementary.

This situation is particularly problematic for fragile states and 'aid orphan' countries, for whom the scope of the impact both in terms of costs and length of recovery is likely to be greater. An analysis based on vulnerability and resilience with an early warning type of approach would offer donors with a stronger basis in their arbitration on aid allocation to 'fragile states'. If prevention is indeed a key concern in aid allocation to fragile states, a better understanding of how to prevent the trickling effect of hazards –regardless of their initial nature– is crucial (World Bank, 2010b).

There is ample scope for further research. For one, in the case of disasters, we have not included in our analysis the importance of media attention in disaster reporting and the potential impact it has on donors' aid allocation (Potter and Van Belle, 2008).[11] Second, the type of assistance provided by bilateral donors should also be further explored. Given the substantial part of General Budget Support (GBS) provided by donors[12] and the high fungibility of this type of aid, it is likely that refining aid allocation beyond total commitment and disbursement could yield relevant information for policy-making. However, the data provided by donors in the OECD Creditor Reporting System (CRS) isn't sufficiently consistent across donors and recipients over time to carry out such an analysis at this point. Third, the emergence of new donors such as China, Brazil, India and the OPEC countries constitutes a major 'game change' likely to increasingly be considered by other donors in their aid allocation. Fourth, large cities exposed to cyclones and earthquakes will more than double their population by 2050, from 680 million in 2000 to 1.5 billion in 2050.[13] Furthermore, climate change[14] is expected to raise the complexity of the issues relating to both conflict and disasters. Due to their exposure, mega-cities are at high risk to suffer tremendous damages from climate change. Therefore, a combination of prevention and early warning systems appears not only necessary but also economically sensible beyond relief and ODA. Ergo, there is a lot of policy-relevant research that needs to be done.

[11] The authors showed that the media impact on relief spending after disasters is also felt at the level of the affected country/state. Besley and Burgess (2002) find that politicians' responsiveness to disasters is increased by media coverage.

[12] For the European Union it is about 25% of the total ODA disbursement.

[13] For example, Mumbai (India), the fourth largest city in the world with 20 million people and 6.7 million slum dwellers (WHO), is one of the top 10 most vulnerable cities in terms of floods, storms and earthquakes. Like many of Asia's coastal mega-cities, most of the city is less than a meter above sea-level. With Mumbai accounting for almost 40 % of India's tax revenue, any serious catastrophe there could have drastic economic consequences for the country.

[14] An estimate of the increase in damage associated with changed tropical cyclone activity as a result of climate change is between $28 billion and $68 billion annually by 2100. This represents an increase of between 50 and 125 % over no climate change (World Bank, 2010a).

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	1st lag	2nd lag	3rd lag
Committed French ODA	0.421	0.216	0.215
	[0.000]	[0.000]	[0.000]
Disbursed French ODA	0.584	0.207	0.090
	[0.000]	[0.000]	[0.046]
Committed German ODA	0.302	0.396	0.150
	[0.000]	[0.000]	[0.000]
Committed Japanese ODA	0.374	0.247	0.135
	[0.000]	[0.000]	[0.001]
Disbursed Japanese ODA	0.621	0.134	0.036
	[0.000]	[0.001]	[0.306]
Disbursed German ODA	0.605	0.136	0.127
	[0.000]	[0.003]	[0.001]
Committed UK ODA	0.490	0.175	0.220
	[0.000]	[0.000]	[0.000]
Disbursed UK ODA	0.632	0.178	0.084
	[0.000]	[0.000]	[0.064]
Committed US ODA	0.548	0.260	0.091
	[0.000]	[0.001]	[0.060]
Disbursed US ODA	0.688	0.139	0.089
	[0.000]	[0.005]	[0.071]
Committed EU ODA	0.348	0.215	0.151
	[0.000]	[0.000]	[0.001]
Disbursed EU ODA	0.498	0.277	0.087
	[0.000]	[0.000]	[0.010]
Committed G7 ODA	0.506	0.277	0.111
	[0.000]	[0.000]	[0.000]
Disbursed G7 ODA	0.717	0.132	0.075
	[0.000]	[0.020]	[0.053]
Committed OECD ODA	0.508	0.329	0.063
	[0.000]	[0.000]	[0.024]
Disbursed OECD ODA	0.718	0.143	0.062
	[0.000]	[0.011]	[0.125]

Table 1: Time series properties of all aid variables studied; all variables are in log per capita terms. Heterogeneity adjusted p-values are in brackets.

	Com. French ODA		Disb. French ODA	
	1 step	2 step	1 step	2 step
Lag ODA pc (log)	0.120	0.133	0.328	0.303
	[0.229]	[0.209]	[0.000]	[0.005]
GDP pc (log)	0.245	0.164	0.221	0.172
	[0.465]	[0.682]	[0.417]	[0.635]
GDP growth	0.013	0.013	0.010	0.007
	[0.166]	[0.256]	[0.103]	[0.366]
Trade as % of GDP	0.002	0.003	-0.001	-0.001
	[0.753]	[0.576]	[0.777]	[0.917]
Population growth	0.085	0.069	0.088	0.080
	[0.385]	[0.011]	[0.195]	[0.476]
Life expectancy	0.042	0.045	0.022	0.056
	[0.325]	[0.483]	[0.560]	[0.301]
Polity	-0.043	-0.024	-0.031	-0.019
	[0.189]	[0.494]	[0.185]	[0.622]
Cold war dummy	-0.075	-0.108	0.302	0.290
	[0.813]	[0.737]	[0.122]	[0.175]
Deaths from conflict per	-0.396	-0.445	-0.069	-0.094
10,000 inhabitants (log)	[0.388]	[0.424]	[0.729]	[0.764]
Deaths from humanitarian	0.105	0.101	0.078	0.081
disaster pc (log)	[0.007]	[0.033]	[0.008]	[0.022]
Deaths from geological	0.052	0.048	0.102	0.099
disaster pc (log)	[0.319]	[0.302]	[0.041]	[0.090]
Disaster-Conflict interaction	0.415	0.501	-0.201	-0.232
	[0.364]	[0.280]	[0.693]	[0.704]
Observations	1193	1193	1156	1156
Number of countries	111	111	112	112
AR(1) test in $1^{st}\Delta$	[0.001]	[0.016]	[0.000]	[0.002]
AR(2) test in $1^{st}\Delta$	[0.486]	[0.521]	[0.254]	[0.249]
	Mean	Std	Min	Max
ODA pc (log)	-13.356	2.019	-20.159	-8.138
GDP pc (log)	6.800	1.207	4.314	9.723
GDP growth	3.608	5.681	-31.300	71.188
Trade as % of GDP	70.003	36.991	6.320	228.875
Population growth	2.094	1.183	-6.761	11.516
Life expectancy	59.740	11.362	23.680	78.678
Polity	0.302	6.851	-10.000	10.000
Cold war dummy	0.372	0.484	0.000	1.000
Deaths from conflict	0.098	0.367	0.000	3.187
Deaths from humanitarian d.	-15.285	2.018	-20.949	-7.356
Deaths from geological d.	-15.447	1.669	-20.477	-7.165

Table 2: Official development assistance by France. Robust p-values are in brackets. The lower part of the panel shows descriptive statistics.

	Com. German ODA		Disb. German ODA	
	1 step	2 step	1 step	2 step
Lag ODA pc (log)	-0.110	-0.121	0.410	0.399
	[0.108]	[0.099]	[0.000]	[0.000]
GDP pc (log)	-1.079	-0.778	-0.578	-0.431
	[0.048]	[0.239]	[0.029]	[0.168]
GDP growth	0.015	0.000	0.004	0.002
	[0.153]	[0.994]	[0.622]	[0.802]
Trade as % of GDP	-0.006	-0.006	-0.004	-0.005
	[0.282]	[0.346]	[0.262]	[0.159]
Population growth	0.063	0.113	0.039	0.078
	[0.641]	[0.375]	[0.618]	[0.556]
Life expectancy	0.109	0.098	0.023	0.034
	[0.142]	[0.406]	[0.524]	[0.560]
Polity	-0.027	-0.037	-0.003	-0.001
	[0.422]	[0.365]	[0.904]	[0.983]
Cold war dummy	0.240	0.385	0.389	0.343
	[0.391]	[0.199]	[0.378]	[0.421]
Deaths from conflict per	-0.655	-0.716	-0.368	-0.400
10,000 inhabitants (log)	[0.113]	[0.091]	[0.160]	[0.207]
Deaths from humanitarian	0.062	0.024	0.051	0.053
disaster pc (log)	[0.216]	[0.533]	[0.046]	[0.050]
Deaths from geological	0.088	0.050	0.113	0.107
disaster pc (log)	[0.050]	[0.323]	[0.002]	[0.042]
Disaster-Conflict interaction	-0.527	-0.336	-0.516	-0.487
	[0.111]	[0.525]	[0.167]	[0.264]
Observations	1381	1381	1284	1284
Number of countries	112	112	111	111
AR(1) test in $1^{st}\Delta$	[0.001]	[0.002]	[0.014]	[0.024]
AR(2) test in $1^{st}\Delta$	[0.920]	[0.916]	[0.343]	[0.373]
	Mean	Std	Min	Max
ODA pc (log)	-13.067	1.469	-18.678	-9.156
GDP pc (log)	6.843	1.208	4.314	10.136
GDP growth	3.776	5.811	-31.300	71.188
Trade as % of GDP	69.157	37.230	6.320	280.361
Population growth	2.155	1.178	-6.761	11.516
Life expectancy	59.562	11.061	23.680	78.678
Polity	0.041	6.919	-10.000	10.000
Cold war dummy	0.454	0.498	0.000	1.000
Deaths from conflict	0.099	0.360	0.000	3.187
Deaths from humanitarian d.	-15.308	1.964	-20.949	-7.356
Deaths from geological d.	-15.444	1.647	-20.692	-7.165

Table 3: Official development assistance by Germany. Robust p-values are in brackets. The lower part of the panel shows descriptive statistics.

	Com. Japanese ODA		Disb. Japanese ODA	
	1 step	2 step	1 step	2 step
Lag ODA pc (log)	0.131	0.138	0.494	0.477
	[0.079]	[0.108]	[0.000]	[0.000]
GDP pc (log)	0.124	0.012	0.289	0.566
	[0.686]	[0.980]	[0.226]	[0.266]
GDP growth	0.016	0.018	0.014	0.016
	[0.146]	[0.181]	[0.086]	[0.116]
Trade as % of GDP	0.002	0.004	-0.002	-0.002
	[0.733]	[0.637]	[0.654]	[0.708]
Population growth	0.369	0.389	0.160	0.244
	[0.001]	[0.011]	[0.134]	[0.100]
Life expectancy	-0.020	-0.008	-0.021	-0.047
	[0.671]	[0.923]	[0.539]	[0.387]
Polity	-0.010	-0.013	-0.013	-0.018
	[0.786]	[0.850]	[0.704]	[0.687]
Cold war dummy	0.191	0.091	0.784	0.585
	[0.547]	[0.797]	[0.126]	[0.226]
Deaths from conflict per	-1.083	-0.771	-0.020	-0.310
10,000 inhabitants (log)	[0.113]	[0.424]	[0.980]	[0.729]
Deaths from humanitarian	0.035	-0.011	0.037	0.053
disaster pc (log)	[0.420]	[0.862]	[0.175]	[0.184]
Deaths from geological	0.045	0.037	0.082	0.032
disaster pc (log)	[0.342]	[0.346]	[0.050]	[0.611]
Disaster-Conflict interaction	-0.451	-0.385	-0.025	0.180
	[0.381]	[0.456]	[0.961]	[0.747]
Observations	1292	1292	1220	1220
Number of countries	112	112	112	112
AR(1) test in $1^{st}\Delta$	[0.002]	[0.006]	[0.049]	[0.078]
AR(2) test in $1^{st}\Delta$	[0.498]	[0.536]	[0.187]	[0.245]
	Mean	Std	Min	Max
ODA pc (log)	-13.543	1.789	-20.191	-9.094
GDP pc (log)	6.881	1.206	4.314	10.586
GDP growth	3.730	5.669	-20.616	71.188
Trade as % of GDP	70.507	37.765	6.320	280.361
Population growth	2.134	1.199	-6.761	11.516
Life expectancy	60.283	10.832	23.680	78.678
Polity	0.296	6.922	-10.000	10.000
Cold war dummy	0.418	0.493	0.000	1.000
Deaths from conflict	0.085	0.320	0.000	3.187
Deaths from humanitarian	-15.314	2.012	-20.949	-7.356
Deaths from geological	-15.454	1.689	-20.692	-7.165

Table 4: Official development assistance by Japan. Robust p-values are in brackets. The lower part of the panel shows descriptive statistics.

	Committed UK ODA		Disbursed UK ODA	
	1 step	2 step	1 step	2 step
Lag ODA pc (log)	0.338	0.306	0.484	0.459
	[0.000]	[0.000]	[0.000]	[0.000]
GDP pc (log)	-0.020	0.132	0.060	-0.048
	[0.959]	[0.806]	[0.847]	[0.933]
GDP growth	0.018	0.008	0.006	0.000
	[0.111]	[0.515]	[0.478]	[0.982]
Trade as % of GDP	0.011	0.009	0.008	0.007
	[0.012]	[0.080]	[0.025]	[0.135]
Population growth	-0.006	0.058	0.070	0.137
	[0.961]	[0.689]	[0.451]	[0.148]
Life expectancy	-0.016	-0.030	-0.027	-0.017
	[0.685]	[0.652]	[0.366]	[0.779]
Polity	-0.022	-0.023	0.017	0.017
	[0.544]	[0.752]	[0.504]	[0.564]
Cold war dummy	0.053	0.108	-0.073	-0.096
	[0.876]	[0.779]	[0.798]	[0.745]
Deaths from conflict per	0.293	0.217	0.140	0.036
10,000 inhabitants (log)	[0.532]	[0.643]	[0.535]	[0.917]
Deaths from humanitarian	0.073	0.081	0.043	0.036
disaster pc (log)	[0.043]	[0.018]	[0.104]	[0.237]
Deaths from geological	0.010	0.017	0.017	0.013
disaster pc (log)	[0.817]	[0.697]	[0.606]	[0.792]
Disaster-Conflict interaction	-0.180	0.042	-0.008	-0.058
	[0.536]	[0.899]	[0.980]	[0.866]
Observations	1209	1209	1172	1172
Number of countries	109	109	109	109
AR(1) test in $1^{st}\Delta$	[0.001]	[0.006]	[0.000]	[0.003]
AR(2) test in $1^{st}\Delta$	[0.652]	[0.627]	[0.103]	[0.110]
	Mean	Std	Min	Max
ODA pc (log)	-14.531	2.109	-21.189	-8.051
GDP pc (log)	6.736	1.125	4.314	9.723
GDP growth	4.037	5.610	-31.300	71.188
Trade as % of GDP	68.390	36.674	6.320	280.361
Population growth	2.154	1.138	-6.761	11.516
Life expectancy	59.072	11.012	23.680	78.678
Polity	0.378	6.878	-10.000	10.000
Cold war dummy	0.458	0.498	0.000	1.000
Deaths from conflict	0.094	0.347	0.000	3.169
Deaths from humanitarian d.	-15.319	1.998	-20.949	-7.356
Deaths from geological d.	-15.470	1.652	-20.477	-7.165

Table 5: Official development assistance by the United Kingdom. Robust p-values are in brackets. The lower part of the panel shows descriptive statistics.

	Committed US ODA		Disbursed US ODA	
	1 step	2 step	1 step	2 step
Lag ODA pc (log)	0.372	0.364	0.361	0.345
	[0.001]	[0.001]	[0.000]	[0.000]
GDP pc (log)	-0.945	-0.822	-0.564	-0.699
	[0.016]	[0.159]	[0.146]	[0.099]
GDP growth	0.006	0.008	-0.002	0.000
	[0.561]	[0.543]	[0.787]	[0.983]
Trade as % of GDP	0.002	-0.002	0.006	0.006
	[0.705]	[0.805]	[0.130]	[0.189]
Population growth	0.048	0.064	0.015	-0.003
	[0.672]	[0.584]	[0.893]	[0.985]
Life expectancy	0.002	-0.025	-0.005	-0.011
	[0.956]	[0.778]	[0.884]	[0.773]
Polity	0.055	0.028	0.013	-0.026
	[0.076]	[0.560]	[0.649]	[0.420]
Cold war dummy	0.750	0.641	1.645	1.587
	[0.187]	[0.225]	[0.000]	[0.000]
Deaths from conflict per	-0.133	-0.058	-0.208	-0.116
10,000 inhabitants (log)	[0.713]	[0.894]	[0.547]	[0.759]
Deaths from humanitarian	0.081	0.060	0.054	0.035
disaster pc (log)	[0.036]	[0.176]	[0.017]	[0.203]
Deaths from geological	0.058	0.049	0.058	0.068
disaster pc (log)	[0.114]	[0.281]	[0.174]	[0.110]
Disaster-Conflict interaction	0.110	0.100	-0.163	-0.137
	[0.763]	[0.796]	[0.693]	[0.779]
Observations	1230	1230	1034	1034
Number of countries	108	108	108	108
AR(1) test in $1^{st}\Delta$	[0.068]	[0.132]	[0.024]	[0.027]
AR(2) test in $1^{st}\Delta$	[0.212]	[0.302]	[0.539]	[0.619]
	Mean	Std	Min	Max
ODA pc (log)	-12.798	1.922	-21.888	-6.682
GDP pc (log)	6.718	1.143	4.314	9.723
GDP growth	3.777	5.435	-31.300	35.224
Trade as % of GDP	68.585	35.944	6.320	280.361
Population growth	2.124	1.153	-6.761	11.516
Life expectancy	58.797	11.114	23.680	78.678
Polity	0.424	6.793	-10.000	10.000
Cold war dummy	0.442	0.497	0.000	1.000
Deaths from conflict	0.097	0.339	0.000	3.187
Deaths from humanitarian d.	-15.257	1.964	-20.949	-7.356
Deaths from geological d.	-15.454	1.623	-20.477	-7.165

Table 6: Official development assistance by the United States. Robust p-values are in brackets. The lower part of the panel shows descriptive statistics.

	Committed EU ODA		Disbursed EU ODA	
	1 step	2 step	1 step	2 step
Lag ODA pc (log)	0.118	0.100	0.253	0.170
	[0.093]	[0.242]	[0.002]	[0.022]
GDP pc (log)	0.102	-0.097	-0.863	-0.555
	[0.792]	[0.871]	[0.051]	[0.450]
GDP growth	-0.018	-0.002	-0.011	-0.015
	[0.055]	[0.923]	[0.122]	[0.095]
Trade as % of GDP	0.005	0.000	0.010	0.011
	[0.390]	[0.982]	[0.003]	[0.000]
Population growth	0.206	0.084	-0.094	-0.070
	[0.109]	[0.559]	[0.528]	[0.727]
Life expectancy	-0.015	0.087	0.061	0.040
	[0.718]	[0.350]	[0.187]	[0.502]
Polity	0.029	0.015	0.031	0.035
	[0.402]	[0.857]	[0.306]	[0.401]
Cold war dummy	-0.005	-0.055	0.253	0.195
	[0.995]	[0.938]	[0.491]	[0.585]
Deaths from conflict per	-0.127	0.150	-0.127	-0.337
10,000 inhabitants (log)	[0.687]	[0.690]	[0.559]	[0.125]
Deaths from humanitarian	0.178	0.122	0.085	0.058
disaster pc (log)	[0.000]	[0.059]	[0.001]	[0.069]
Deaths from geological	0.108	0.077	0.099	0.072
disaster pc (log)	[0.043]	[0.369]	[0.006]	[0.106]
Disaster-Conflict interaction	0.986	1.128	-0.120	-0.063
	[0.008]	[0.156]	[0.608]	[0.855]
Observations	1132	1132	1165	1165
Number of countries	109	109	109	109
AR(1) test in $1^{st}\Delta$	[0.000]	[0.000]	[0.006]	[0.017]
AR(2) test in $1^{st}\Delta$	[0.059]	[0.073]	[0.161]	[0.227]
	Mean	Std	Min	Max
ODA pc (log)	-12.837	1.952	-21.048	-8.494
GDP pc (log)	6.692	1.131	4.314	9.723
GDP growth	3.610	5.542	-31.300	71.188
Trade as % of GDP	69.167	36.276	6.320	280.361
Population growth	2.092	1.156	-6.761	11.516
Life expectancy	59.137	11.299	23.680	78.642
Polity	0.507	6.755	-10.000	10.000
Cold war dummy	0.389	0.488	0.000	1.000
Deaths from conflict	0.099	0.360	0.000	3.187
Deaths from humanitarian d.	-15.225	2.014	-20.949	-7.356
Deaths from geological d.	-15.408	1.644	-20.477	-7.165

Table 7: Official development assistance by the European Union. Robust p-values are in brackets. The lower part of the panel shows descriptive statistics.

	Committed G7 ODA		Disbursed G7 ODA	
	1 step	2 step	1 step	2 step
Lag ODA pc (log)	0.225	0.228	0.439	0.454
	[0.001]	[0.001]	[0.000]	[0.000]
GDP pc (log)	-0.491	-0.320	-0.441	-0.496
	[0.107]	[0.390]	[0.155]	[0.100]
GDP growth	0.009	0.008	0.004	0.000
	[0.197]	[0.319]	[0.555]	[0.954]
Trade as % of GDP	0.001	0.001	0.002	0.002
	[0.697]	[0.837]	[0.584]	[0.720]
Population growth	0.082	0.071	-0.058	-0.040
	[0.402]	[0.537]	[0.671]	[0.788]
Life expectancy	0.053	0.029	0.022	0.030
	[0.185]	[0.525]	[0.502]	[0.359]
Polity	-0.011	-0.009	-0.009	-0.005
	[0.602]	[0.805]	[0.648]	[0.862]
Cold war dummy	0.601	0.580	0.637	0.707
	[0.000]	[0.001]	[0.035]	[0.041]
Deaths from conflict per	-0.640	-0.636	-0.108	-0.173
10,000 inhabitants (log)	[0.051]	[0.042]	[0.607]	[0.490]
Deaths from humanitarian	0.091	0.068	0.083	0.077
disaster pc (log)	[0.002]	[0.013]	[0.001]	[0.000]
Deaths from geological	0.079	0.082	0.068	0.069
disaster pc (log)	[0.024]	[0.051]	[0.011]	[0.041]
Disaster-Conflict interaction	-0.170	-0.099	0.076	0.029
	[0.647]	[0.821]	[0.775]	[0.927]
Observations	1404	1404	1330	1330
Number of countries	112	112	112	112
AR(1) test in $1^{st}\Delta$	[0.000]	[0.001]	[0.002]	[0.008]
AR(2) test in $1^{st}\Delta$	[0.885]	[0.941]	[0.952]	[0.919]
	Mean	Std	Min	Max
ODA pc (log)	-10.943	1.263	-15.328	-6.638
GDP pc (log)	6.846	1.210	4.314	10.586
GDP growth	3.767	5.842	-31.300	71.188
Trade as % of GDP	69.787	37.481	6.320	280.361
Population growth	2.159	1.180	-6.761	11.516
Life expectancy	59.579	11.038	23.680	78.678
Polity	0.089	6.931	-10.000	10.000
Cold war dummy	0.457	0.498	0.000	1.000
Deaths from conflict	0.098	0.358	0.000	3.187
Deaths from humanitarian d.	-15.277	1.965	-20.949	-7.356
Deaths from geological d.	-15.412	1.656	-20.692	-7.165

Table 8: Official development assistance by the G7 countries. Robust p-values are in brackets. The lower part of the panel shows descriptive statistics.

	Committed OECD ODA		Disbursed OECD ODA	
	1 step	2 step	1 step	2 step
Lag ODA pc (log)	0.143	0.140	0.505	0.510
	[0.038]	[0.065]	[0.000]	[0.000]
GDP pc (log)	-0.539	-0.684	-0.281	-0.360
	[0.033]	[0.021]	[0.206]	[0.188]
GDP growth	0.009	0.007	-0.001	0.001
	[0.140]	[0.348]	[0.894]	[0.818]
Trade as % of GDP	0.010	0.012	0.008	0.008
	[0.000]	[0.001]	[0.009]	[0.049]
Population growth	0.101	0.055	0.044	0.015
	[0.162]	[0.594]	[0.462]	[0.879]
Life expectancy	0.032	0.053	-0.002	0.005
	[0.341]	[0.231]	[0.943]	[0.890]
Polity	-0.007	0.018	-0.009	-0.006
	[0.687]	[0.584]	[0.568]	[0.846]
Cold war dummy	0.405	0.461	0.469	0.478
	[0.020]	[0.027]	[0.094]	[0.089]
Deaths from conflict per	-0.461	-0.435	-0.100	-0.079
10,000 inhabitants (log)	[0.046]	[0.057]	[0.532]	[0.718]
Deaths from humanitarian	0.101	0.073	0.065	0.067
disaster pc (log)	[0.000]	[0.026]	[0.002]	[0.006]
Deaths from geological	0.070	0.042	0.026	0.029
disaster pc (log)	[0.022]	[0.201]	[0.448]	[0.427]
Disaster-Conflict interaction	-0.167	0.019	0.151	0.291
	[0.466]	[0.943]	[0.589]	[0.449]
Observations	1408	1408	1387	1387
Number of countries	112	112	112	112
AR(1) test in $1^{st}\Delta$	[0.000]	[0.000]	[0.006]	[0.011]
AR(2) test in $1^{st}\Delta$	[0.171]	[0.192]	[0.063]	[0.091]
	Mean	Std	Min	Max
ODA pc (log)	-10.151	1.253	-14.279	-6.474
GDP pc (log)	6.849	1.214	4.314	10.596
GDP growth	3.759	5.859	-31.300	71.188
Trade as % of GDP	69.842	37.446	6.320	280.361
Population growth	2.162	1.189	-6.761	11.516
Life expectancy	59.584	11.027	23.680	78.678
Polity	0.068	6.933	-10.000	10.000
Cold war dummy	0.457	0.498	0.000	1.000
Deaths from conflict	0.100	0.361	0.000	3.187
Deaths from humanitarian d.	-15.274	1.963	-20.949	-7.356
Deaths from geological d.	-15.408	1.656	-20.692	-7.165

Table 9: Official development assistance by the OECD. Robust p-values are in brackets. The lower part of the panel shows descriptive statistics.

1	Albania	39	Gabon	77	Nicaragua
2	Algeria	40	Gambia	78	Niger
3	Angola	41	Georgia	79	Nigeria
4	Argentina	42	Ghana	80	Oman
5	Armenia	43	Guatemala	81	Pakistan
6	Azerbaijan	44	Guinea	82	Panama
7	Bahrain	45	Guinea-Bissau	83	Papua New Guinea
8	Bangladesh	46	Guyana	84	Paraguay
9	Benin	47	Haiti	85	Peru
10	Bhutan	48	Honduras	86	Philippines
11	Bolivia	49	India	87	Rwanda
12	Botswana	50	Indonesia	88	Saudi Arabia
13	Brazil	51	Iran	89	Senegal
14	Burkina Faso	52	Israel	90	Sierra Leone
15	Burundi	53	Jamaica	91	Slovenia
16	Cambodia	54	Jordan	92	Solomon Islands
17	Cameroon	55	Kazakstan	93	South Africa
18	Central African Rep.	56	Kenya	94	Sri Lanka
19	Chad	57	Korea	95	Sudan
20	Chile	58	Kuwait	96	Swaziland
21	China	59	Kyrgyz Republic	97	Syria
22	Colombia	60	Laos	98	Tajikistan
23	Comoros	61	Lesotho	99	Tanzania
24	Congo, Rep.	62	Liberia	100	Thailand
25	Costa Rica	63	Libya	101	Togo
26	Cote d'Ivoire	64	Madagascar	102	Trinidad & Tobago
27	Croatia	65	Malawi	103	Tunisia
28	Cyprus	66	Malaysia	104	Turkey
29	Djibouti	67	Mali	105	Turkmenistan
30	Dominican Republic	68	Mauritania	106	Uganda
31	Ecuador	69	Mauritius	107	Uruguay
32	Egypt	70	Mexico	108	Uzbekistan
33	El Salvador	71	Moldova	109	Venezuela
34	Equatorial Guinea	72	Mongolia	110	Yemen
35	Eritrea	73	Morocco	111	Zambia
36	Ethiopia	74	Mozambique	112	Zimbabwe
37	FYROM-Macedonia	75	Namibia		
38	Fiji	76	Nepal		

Table 10: List of recipient countries in the regressions. Except for Bahrain, Bhutan, Cote d'Ivoire, Djibouti, Kuwait, Libya and Swaziland all the other countries are represented in all empirical specifications