UNITED NATIONS UNIVERSITY
UNU-WIDER
World Institute for Development Economics Research

Discussion Paper No. 2007/04

Do Donors Target Aid in Line with the Millennium Development Goals?

A Sector Perspective of Aid Allocation

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October 2007

Abstract

We analyse the aid portfolio of various bilateral and multilateral donors, testing whether they have prioritized aid in line with the Millennium Development Goals (MDGs). Employing Tobit models that combine sectorally disaggregated aid data with various indicators reflecting the situation of recipient countries with regard to the MDGs, we show that donors differ in the extent to which their sectoral aid allocation is conducive to achieving major MDGs. Some MDGs, notably the fight against HIV/AIDS, have shaped the allocation of aid. However, with respect to other MDGs such as primary education, there is a considerable gap between donor rhetoric and actual aid allocation. This invites the conclusion that the current focus on substantially increasing aid is unlikely to have the desired effects unless the targeting of aid is improved.

Keywords: aid allocation, Millennium Development Goals, sector-specific aid

JEL classification: F35, O11, O19

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This study is a revised version of the paper presented at the 16-17 June 2006 WIDER development conference on 'Aid: Principles, Policies, and Performance', directed by George Mavrotas.

UNU-WIDER gratefully acknowledges the financial contribution to the conference by the Finnish Ministry for Foreign Affairs.

UNU-WIDER also acknowledges the financial contributions to the 2006-07 research programme by the governments of Australia (AusAID), Denmark (Royal Ministry of Foreign Affairs), Norway (Royal Ministry of Foreign Affairs), Sweden (Swedish International Development Cooperation Agency—Sida), and the United Kingdom (Department for International Development—DFID).

Acronyms

CPIA country policy and institutional assessment (of the World Bank)

CRS credit reporting system (of OECD-DAC)

IDA International Development Association

MDGs Millennium Development Goals

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Typescript prepared by Liisa Roponen at UNU-WIDER
Printed at UNU-WIDER, Helsinki

ISSN 1609-5774
ISBN 978-92-9230-008-1 (printed publication)
ISBN 978-92-9230-009-8 (internet publication)

1 Introduction

Various developing countries, notably in Sub-Saharan Africa, are highly likely to miss the Millennium Development Goals (MDGs) (UNDP 2005a: 9). This does not apply only to the first and most prominent target, the halving the incidence of absolute poverty (the proportion of people living on less than one dollar a day) by the year 2015. Even though more specific MDGs have received less attention in the public debate, the prospects for achieving education and health-related targets are still worse (Berg and Qureshi 2005: 21). Easterly (2005) lists 'a litany of failure' by referring to the report on the MDGs presented by the Secretary-General of the United Nations to the UN World Summit in September 2005 (UN 2005).

To turn the tide, recent reports published by the UN Millennium Project, directed by Jeffrey Sachs (UNDP 2005a), and the Commission for Africa, set up by Prime Minister Tony Blair (CFA 2005), have issued urgent calls to increase official development aid substantially and, thereby, close the gap between donor rhetoric and reality. Accordingly, donors are mainly compared with regard to their 'generosity' in granting aid. Japan and the United States are widely blamed for falling grossly short of the UN target of 0.7 per cent of gross national income to be devoted to aid, whereas the Netherlands and Scandinavian countries exceeded this target in 2004 (OECD 2006).

In addition to the quantity of aid, qualitative aspects of aid allocation are increasingly recognized to be important for effectively meeting recipient needs. Several studies make the point that aid effectiveness could be improved if aid were better targeted to poor recipient countries with reasonably good local conditions, e.g., in terms of basic institutions and economic policies that would allow aid to be absorbed productively (Burnside and Dollar 2000; Collier and Dollar 2002).[1]

Most studies that compare the allocation of aid across donors conclude that donor performance varies widely. According to Dollar and Levin (2006), some donors (International Development Association (IDA), Denmark, the United Kingdom, Norway, the Netherlands, and Sweden) take both the prevalence of poverty and the quality of institutions and economic policy into account, whereas France and the United States do not.[2] For the United States and Japan, geopolitical and commercial interests seem to be the most important determinants of aid, respectively (Alesina and Dollar 2000).[3] Berthélemy (2006) finds that 'all donors are not the same' with respect to various indicators of recipient need as well as donor interest. However, a drawback of

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1 However, Dalgaard and Hansen (2001), Hansen and Tarp (2000, 2001) and Hudson and Mosley (2001) test the robustness of the interaction term between the Burnside-Dollar policy index and aid, reporting the interaction to be statistically insignificant in many cases.

2 Amprou et al. (2005) show that the pattern of donor selectivity changes considerably once the vulnerability of recipient countries to exogenous shocks and their level of human capital are considered as additional selectivity criteria.

3 Multilateral institutions seem generally to pay greater attention to recipient needs than bilateral donors do (Burnside and Dollar 2000; Alesina and Dollar 2000). Canavire et al. (2006) find no indication that donor countries were able to push through their individual trade and political interests at the multilateral level. However, various other studies suggest that multilateral institutions are not invulnerable to donor pressure (Weck-Hannemann and Schneider 1981; Frey and Schneider 1986; Dreher 2004; Fleck and Kilby 2006; Kilby 2006; Dreher, Sturm and Vreeland 2006; Dreher and Jensen 2007).

all these studies is that they are based on aggregate aid figures. None goes beyond excluding emergency support from 'regular' aid, even though Harms and Lutz (2005: 35) conclude from a survey on the economic growth effects of aid that 'it is not surprising that a variable as aggregate as official development assistance does not have a robust effect on growth'.

Only few of the studies addressing the actual behaviour of donors take up the issue of aid heterogeneity. A notable example is Roodman (2004), who provides a detailed account of donor performance by combining quantitative and qualitative measures of aid, including 'penalties' for tying aid and so-called project proliferation as well as a discounting system favouring aid to poorer and better-governed countries. Yet, his ranking of donors is dominated by differences in the overall quantity of aid. More specifically, Neumayer (2005) assesses the allocation of food aid. His findings underscore the need for a disaggregated analysis of aid. The allocation of food aid differs strikingly from previous results on the allocation of overall aid; food aid appears to be better targeted at countries in need than other forms of aid. However, food aid accounted for just about 3 per cent of total aid in the late 1990s.

The sectoral composition of aid, on which we focus in this paper, has barely received attention in previous efforts to account for aid heterogeneity. This is surprising once it is taken into consideration that the sectoral composition of aid should have an important say on whether or not donors help achieving MDGs other than the general target of halving absolute poverty. In this paper, we follow Clemens, Radelet and Bhavnani (2004) in drawing on the sectorally disaggregated data on aid commitments provided by the OECD Development Assistance Committee's (DAC) Creditor Reporting System. In contrast to the analysis of growth effects by Clemens, Radelet and Bhavnani (2004), however, we take a broader view and differentiate aid by the various specific purposes it is meant to serve according to announcements made by donors. Donors stress the multi-dimensional objective function underlying their aid allocation (Isenman and Ehrenpreis 2003).[4] In a similar vein, McGillivray (2003) as well as Amprou, Guillaumont and Guillaumont Jeanneney (2005) call for a broader concept of aid selectivity and make a case for extending the selectivity model based on the income and policy situation of recipient countries proposed by Collier and Dollar (2002). While it is widely acknowledged that aid may reduce poverty through its impact on economic growth, 'it must also be recognized that aid can reduce poverty through other channels' (McGillivray 2003: 29). Pro-poor public expenditures, e.g., in the fields of basic education and basic health, are often noted in this context.[5] The MDGs provide the obvious point of departure for taking account of a broader range of poverty-relevant objectives of aid.[6]

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4 For instance, Svensson (2005) notes that the Swedish aid agency SIDA lists five objectives in addition to promoting economic growth in the recipient country: economic and social equality; economic and political independence; democratic development; environmental care; and gender equality.

5 As another example, Abu-Ghadia and Klasen (2004) calculate substantial costs in terms of mortality and prevalence of underweight children under five for 45 countries likely to miss the target on gender equality.

6 In the words of Isenman and Ehrenpreis (2003: 10), the MDGs 'identify multidimensional poverty reduction as the ultimate objective of development efforts'.

Specifically, we compare the aid portfolio of various bilateral and multilateral donors and investigate whether they have prioritized aid in line with the MDGs. For example, the MDGs suggest that aid should be targeted at improving basic education and health conditions in recipient countries. In section 2, we examine to what extent donors have channelled aid to priority sectors. Section 3 evaluates whether donors have allocated sector-specific aid according to specific needs of recipient countries. In a Tobit regression analysis, we combine disaggregated aid data with indicators reflecting the situation of recipient countries with regard to the MDGs. Section 4 summarizes the main conclusions of the paper.

2 The sectoral allocation of aid: some stylized facts

In examining the sectoral composition of aid, we first consider all donors taken together and then look at selected donors individually. These include the two main multilateral donors (EU and IDA), the five biggest bilateral donors (France, Germany, Japan, United States, and United Kingdom), and a group of countries (Denmark, Netherlands, Norway, and Sweden), which not only are generous donors but are also supposed to target aid carefully according to recipient needs.[7] For all aid categories we apply the grant equivalent, i.e., the product of the nominal amount of aid and the grant element; this variable best reflects the effective financial support of donors.[8] In addition, we employ commitments which in the study of aid allocation are superior to disbursements because they constitute the decision variable over which donors exert full control (Neumayer 2003).

As shown in Table 1, the sectoral composition of aid for all donors taken together has changed quite dramatically since the early 1990s. With regard to the MDGs, the most notable result is that the share of aid devoted to the social sector rose from about 20 per cent in the period 1990-92 to about 35 per cent in the period 2002-04, with higher spending on education, health and population programmes, though not on water and sanitation. The expansion of social sector aid has come at the expense of aid towards more traditional targets such as infrastructure, but it also reflects a move from programme assistance to project financing. The latter is somewhat at odds with donors' claims to promote ownership of development strategies on the part of recipients, which would require general budget support rather than a proliferation of projects. Emergency relief and reconstruction is an aid category that has recently gained importance.[9]

The overall pattern of aid masks substantial variations across donors (Table 2). The share of aid going to the social sector ranges from 23 per cent in Japan to 50 per cent in Norway. Within this aid category, it is striking that France and Germany put a strong focus on education but spend very little on primary education, even though the MDGs

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7 Neumayer (2003) calls these countries like-minded donors; Kilby (2006) employs these countries' aid allocation as a humanitarian benchmark.

8 We also considered nominal aid. The results for nominal aid hardly differed from those for grant equivalents, which is not surprising given the extremely high grant element of aid (Nunnenkamp, Thiele and Wilfer 2005). Consequently, we do not report the results for nominal aid below.

9 The empirical finding that aid can be highly effective in post-conflict situations (Collier and Hoeffler 2004) lends support to this new priority of donors.

require donors to concentrate on basic education. Likewise, the composition of educational aid by Denmark, Japan and the EC does not suggest a strong orientation towards the respective MDG. Only in the Netherlands, Norway, and particularly in the United Kingdom, primary education carries markedly higher weight. The leading position of the UK carries over to the concentration of aid on basic health services and population programmes (mainly spending on HIV/AIDS), where it is followed by the United States, Denmark and Norway. As in education, the health-related aid committed by France and Japan does not appear to finance basic services from which poor population segments might benefit most. Denmark and Germany are the only donors that provide a non-negligible share of total aid for basic water and sanitation.

Among the other aid categories mainly related to social rather than economic objectives, environmental protection and the promotion of gender equality—which both explicitly correspond to MDGs (see Annex)—have received little attention from most donors. The smaller donors, with the exception of Norway, channel a considerable part of their aid budget through NGOs. Similar to social sector aid, these funds are unlikely to spur economic growth in the short to medium term, as various NGOs focus on providing social services rather than financing projects in economic infrastructure or production sectors.

In summary, most donors' sectoral aid composition appears to be in line with a multi-dimensional objective function rather than one that narrowly focuses on economic growth. At the same time, the focus of aid differs considerably across donors as well as across MDG-related targets. In the subsequent section, we examine in more detail whether donors have succeeded in reaching their multiple objectives by carefully targeting aid to those recipients most in need.

Table 1
Distribution of aid (grant equivalent) by all donors across sectors,
1990-92 and 2002-04 (per cent of total aid) [a]

Sector	1990-92	2002-04
Social infrastructure and services	20.7	34.5
Education, total	5.9	8.2
– Basic education	0.8	2.8
Health, total	3.1	4.8
– Basic health	1.3	3.0
Population programmes and reproductive health	1.7	3.8
Water supply and sanitation	4.9	3.9
– Basic water and sanitation	1.1	0.8
Economic infrastructure	21.0	13.4
Production sectors	17.7	7.3
Multisector/cross-cutting	10.1	8.5
General environmental protection	1.6	1.9
Women in development	0.1	0.1
Commodity aid/general programme assistance	20.0	9.6
General budget support	12.5	7.0
Action relating to debt	6.8	10.2
Emergency assistance and reconstruction	2.7	10.4
Support to NGOs	0.1	1.9
Other	0.9	4.2

Note: [a] Period average of aid commitments.
Source: OECD (2006).

Table 2
Distribution of aid (grant equivalent) across sectors for major donors, 2002-04
(% of total aid)

Sector	Denmark	France	Germany	Japan	Netherlands	Norway	Sweden	UK	USA	EC	IDA
Social infrastructure & services	38.5	32.3	38.2	22.5	26.8	50.0	33.2	45.3	33.3	34.7	30.9
Education, total	6.8	19.2	15.7	8.6	6.6	13.6	5.8	10.0	1.7	5.2	7.3
– Basic education	2.8	1.2	1.8	1.5	4.0	7.1	2.6	8.2	1.4	1.6	3.6
Health, total	8.1	3.7	3.0	3.9	3.2	7.0	3.9	9.1	4.2	3.3	5.2
– Basic health	6.3	0.5	1.7	1.2	1.6	3.5	1.8	5.5	4.1	2.6	2.3
Population programmes	1.1	0.3	1.9	0.1	2.1	3.0	3.3	7.6	8.5	1.5	3.6
Water supply & sanitation	10.5	2.6	7.0	7.9	3.5	1.7	2.4	1.5	0.6	3.5	5.6
– Basic water & sanitation	4.6	0.4	3.3	0.9	1.4	0.6	0.6	0.2	0.0	0.6	0.0
Economic infrastructure	16.9	3.7	12.4	39.0	5.9	8.3	6.4	9.5	3.3	13.3	23.8
Production sectors	10.0	4.0	4.5	8.6	4.8	6.3	3.5	5.2	6.4	8.7	8.9
Multisector	7.2	6.3	11.3	3.9	6.1	9.2	11.9	5.3	12.8	9.5	3.7
General environment protection	5.0	2.7	2.4	2.8	2.9	2.5	2.5	1.1	1.5	1.7	1.0
Women in development	0.8	0.0	0.2	0.0	0.4	1.2	0.0	0.0	0.1	0.1	0.0
Commodity aid/general programme assistance	5.0	4.4	1.3	4.0	4.2	3.3	4.4	16.1	13.7	14.5	23.3
General budget support	5.0	3.3	0.5	3.3	4.1	3.2	4.4	14.7	7.2	9.9	22.8
Action relating to debt	2.2	39.7	22.3	15.6	5.8	1.4	3.8	6.2	8.7	0.7	2.6
Emergency assistance & reconstruction	4.8	8.6	3.8	3.4	9.1	20.3	19.2	11.7	17.1	14.3	7.1
Support to NGOs	6.1	0.4	0.3	1.4	27.1	0.0	9.2	0.0	0.0	0.1	0.0

Source: OECD (2006).

3 Relating aid allocation to aid objectives

3.1 Approach and data

In order to assess whether aid committed in 2002-04 was conducive to achieving the MDGs, we proceed as follows. First, we select various indicators reflecting the situation of recipient countries in the year 2000 (or the closest year if no data are available for 2000) with regard to the MDGs ('indicators of need').[10] The choice of indicators is very much in line with the list of indicators suggested by the World Bank to evaluate progress made towards the MDGs.[11] We do not consider more traditional aid targets such as the development of infrastructure facilities and agricultural development, even though aid in infrastructure and production sectors such as agriculture continued to be

10 For the complete list of indicators, definitions and data sources, see the Annex.

11 See, for example, www.ddp-ext.worldbank.org/ext/GMIS/gdmis.do?siteId=2&menuId=LNAV01HOME1; or www.siteresources. worldbank.org/DEVCOMMINT/Resources/Document/DC 2003-0003-Add.1all.pdf.

important for some donors (see Table 2). Recent research has indicated that aid granted for improved infrastructure, notably with regard to transportation systems and energy supply, as well as for overcoming agricultural supply bottlenecks may help alleviate poverty and, thus, contribute to achieving the MDGs (Agence Française de Développement et al. 2005). However, in this paper we focus on aid items and indicators of need that are directly related to the MDGs.

Second, we select various aid categories from the sectorally disaggregated DAC database on aid commitments (DAC's Creditor Reporting System, CRS) that are supposed to be most relevant for aid to be effective in contributing to the MDGs. The selection of aid categories ranges from very specific categories such as basic drinking water supply and basic sanitation (so-called 5-digit CRS purpose codes) to more broadly defined categories such as education and health (so-called DAC sector codes). In addition, we consider aid commitments in all sectors combined to assess whether the pursuit of specific targets was strong enough to show up in overall aid allocations. The matching of aid targets, indicators of need and aid categories is specified in the Annex.

We employ Tobit models to assess whether donors allocated total as well as sector-specific aid in accordance to indicators of need for an overall sample of 140 recipient countries.[12] The Tobit approach is chosen because it takes the truncation of the aid variable into account.[13] This is of particular relevance for smaller donors such as Norway and Denmark, which tend to concentrate their aid on a few recipients. With many 'zero' observations, OLS estimates are biased as they do not capture the non-linearity in the estimated relationship.

Apart from the MDG-related indicators of need, we include per capita income and governance as explanatory variables. The per capita income of recipient countries can be interpreted as an encompassing indicator of need and has repeatedly been shown to shape donors' aggregate aid allocations (Berthélemy 2006; Nunnenkamp and Thiele 2006; Dollar and Levin 2006; Neumayer 2003). Per capita income may also have an impact on the allocation of sector-specific aid. On the one hand, some specific indicators of need, though far from all, are highly correlated with per capita income.[14] Hence, the impact of specific indicators of need may be taken up by per capita income. On the other hand, donors may refer to rather broad measures of need even when deciding on the allocation of sector-specific aid.[15]

As concerns governance, some recent studies suggest that recipient countries receive less aid than indicators of need would suggest because they are badly governed

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12 As detailed when presenting the results, the number of observations is sometimes considerably smaller due to missing data for specific indicators of need.

13 Heckman's sample selection model and a two-step probit estimation have been suggested as alternative approaches to deal with the truncated nature of aid variables (Berthélemy and Tichit 2004). For an explanation why the Tobit approach may be considered the preferred option, see Canavire et al. (2006).

14 Pairwise correlations with per capita income exceed 0.6 for several indicators of need (e.g., average years of schooling, births attended by skilled health staff, access to sanitation). By contrast, correlations with per capita income are below 0.1 for some indicators, most surprisingly perhaps for the prevalence of HIV.

15 See also the discussion of fungibility below.

(Nunnenkamp and Thiele 2006; Dollar and Levin 2006). One option to control for governance would be to use the World Bank's country policy and institutional assessment (CPIA). We decided against this option, as publicly available information on the CPIA is still rudimentary and its use would reduce the number of observations considerably. Instead, we employ 'voice and accountability', an institutional index provided by Kaufmann, Kraay and Mastruzzi (2005) that refers to the extent to which a country's citizens can participate in selecting their governments as well as to freedom of expression, association and the media. As such, the index serves as a proxy for the development of democratic institutions. Democracy is often mentioned by donors as an important precondition for aid to be effective, and there is at least some evidence (e.g., Gates and Hoeffler 2004) that donors have acted accordingly by giving more aid to democratic governments. We also considered the level of corruption, another element of governance typically emphasized in donor statements, but this variable turned out to be insignificant in all but a few cases, supporting what Alesina and Weder (2002) find for an earlier period. Results for corruption therefore are not reported below.

We deliberately do not control for variables that reflect donors' self-interest in the allocation of aid. This is not to ignore that donors do pursue their own economic and political interests when deciding on aid (Alesina and Dollar 2000; Berthélemy and Tichit 2004; Canavire et al. 2006; Dreher, Nunnenkamp and Thiele 2006). The self-interest of donors may well have the effect that many of the coefficients reported below remain insignificant. But this would not invalidate the conclusion to be drawn from insignificant coefficients, namely that donors contributed less for achieving the MDGs than public statements suggest.

Yet, our approach has some limitations. Arguably, the indicators of need may be endogenous to the allocation of aid. For example, the correlation between the primary school enrolment ratio in recipient countries and aid for basic education may understate the extent to which donors took low enrolment ratios into account when deciding on the allocation of educational aid as educational aid may help raise primary enrolment. However, reverse causation of this sort should not pose a major problem for our analysis because of the considerable time lags involved. As shown by Clemens, Radelet and Bhavnani (2004), less than half of total aid can reasonably be expected to have short-term effects on the economic performance of recipient countries. Furthermore, at least some of the indicators used here are clearly exogenous.[16] For other indicators, the risk of reverse causation is minimized by using data for 2000, whereas aid data refer to 2002-04.

Furthermore, even if the allocation of sector-specific aid was in line with the MDGs, this would not necessarily imply higher foreign plus local resources devoted to specific targets. The fungibility of aid may undermine donor attempts to direct more funds to specific targets. However, aid for, say, basic education or rural infrastructure is unlikely to be fully fungible (Feyzioglu, Swaroop and Zhu 1998).[17] This is particularly true in countries heavily dependent on aid, where the large contribution of aid to public budgets

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16 For example, 'malaria ecology' represents an ecologically based indicator that is predictive of the extent of malaria transmission and combines information on temperature, mosquito abundance and mosquito vector type.

17 In an evaluation of a rural road rehabilitation project in Vietnam, van de Walle and Mu (2007) show that, on balance, more roads were built in project areas, indicating less than full fungibility.

limits the discretion of local governments to shift resources. The observation that donors devoted an increasing share of aid to specific purposes such as basic education and basic health (see Table 2) indeed suggests that they expected fungibility to be limited. Otherwise, the fine-tuning of aid according to specific purposes would not make sense. In any case, donors are hardly to blame if the correlation with indicators of need turns out to be weaker for total (foreign and local) financing than for aid financing alone. This leaves the question of whether the allocation of sector-specific aid is driven by need in a broader sense rather than specific sector-related indicators of need. As noted before, the inclusion of per capita income in the regressions for sector-specific aid may help answer this question. The coefficient of per capita income (the encompassing indicator of need) should then be negative, whereas the coefficient of the specific indicator of need should be insignificant.

In running the regressions, we distinguish an unweighted and a population-weighted version of the Tobit model. The unweighted model follows the bulk of the aid allocation literature in that each recipient country, independent of its size, is treated as an observation with an equal weight attached to it. The rationale behind this specification is that donors tend to decide on aid portfolios at the country level. Aid quotas for individual countries have been shown to be fairly stable in the short run, even if countries become less needy or they experience changes in institutional quality (Nunnenkamp and Thiele 2006). Moreover, attaching more weight to more populated recipient countries is difficult to reconcile with the frequently observed small-country bias, according to which per capita aid tends to be higher for smaller recipient countries. However, the traditional approach of assessing the allocation of aid may be inappropriate when it comes to analysing whether the allocation of aid is in line with the MDGs.[18] Arguably, giving equal weight to all recipient countries is in contrast to the MDGs, which refer to percentages of the global population. This is why we weight the explanatory variables by the respective country's population in a modified Tobit model so that the unit of observation is no longer the country but rather the individual. Results for the weighted model are likely to be driven largely by China and India, which together account for 47 per cent of the population of all sample countries. In order to assess the sensitivity of results, we re-estimate the weighted model without these two hugely populated countries. As is shown below, our results strongly depend on the choice between these models.

3.2 Results for aid by all donors

We first investigate whether all donors taken together considered MDG-related indicators of need in the allocation of aid. Specifically, we evaluate (i) whether indicators of need affected specific aid categories such as basic health and basic education; (ii) whether or not the relationship persists on the next level of aid aggregation such as health and education; and (iii) whether the indicator was considered important enough by donors to have shaped the allocation of total aid. We estimate all three versions of the Tobit model, always controlling for GDP per capita as well as 'voice and accountability'.

[18] We owe this important point to an anonymous referee.

In the unweighted Tobit model, both GDP per capita and 'voice and accountability' turn out to be significant with the expected sign in all but the CO_2 emissions regression when we look at total commitments.[19] Donors thus appear to target foreign aid towards poorer and more democratic recipients. The general poverty orientation of aid we find is very much in accordance with the previous literature (e.g., Dollar and Levin 2006; Nunnenkamp and Thiele 2006). At the same time, our analysis adds to the hitherto limited evidence (in particular, Gates and Hoeffler 2004) that points to donors rewarding democratic institutions.

In a number of cases, GDP per capita and 'voice and accountability' remain significant at lower levels of disaggregation. For example, the allocation of aid for basic education as well as aid for population and reproductive health programmes is shown to be targeted to poorer recipients with more democratic institutions. The same applies to developmental food aid, a finding that is consistent with a recent study by Neumayer (2005) according to which, self-interest of the donors has not played a role in the distribution of food aid.

Turning to our variables of particular interest, aid appears to be only weakly targeted according to specific indicators of need (Table 3). Notable exceptions are the fight against hunger and HIV/AIDS, and to a lesser extent, the provision of access to improved water. But even these indicators do not remain significant at higher levels of aid aggregation. The prevalence of HIV/AIDS, for instance, had an impact on the size of donor-financed population and reproductive health programmes but not on the allocation of aid for the entire health sector or total aid.

At the level of total aid, two indicators of need—malnutrition of children and the number of births attended by skilled health staff—are significant but carry an unexpected sign. This is likely to be caused by the correlation of these variables with GDP per capita. If we re-run the regressions without GDP per capita, both coefficients become insignificant. Furthermore, the results for environmental sustainability (target 9) are in conflict with the underlying assumption that donors may have considered the listed indicators to reflect the need for environmental aid. If anything, the opposite was true. In the case of CO_2 emissions, this is because per capita emissions increase in line with rising per capita income of recipient countries.[20] Whatever the environmental concerns donors might have wished to address by granting aid, they were dominated by the general poverty orientation of aid when it comes to the correlation between aid and CO_2 emissions. In the case of nationally protected areas, the positive correlation with aid committed to environmental protection suggests that the focus of donors was on helping protect existing habitats, rather than financing the creation of new ones where nationally protected areas accounted for a small percentage of total land area.

If we weigh all recipients by the size of their population, results change quite dramatically. In contrast to the unweighted model, GDP per capita often remains insignificant and 'voice and accountability' turns out to be insignificant almost across the board. As detailed below, this surprising result is mainly due to the high weights

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19 Results for the control variables are not reported in the tables; detailed results are available from the authors upon request.

20 The correlation between these two variables is as high as 0.60.

Table 3
Tobit results for total aid by all donors (unweighted) [a]

Targets/indicators of need [b]	Aid categories [c]		
Target 2: Hunger	Total aid	Developmental food aid	Emergency food aid
¯ Undernourishment (99)	0.03	0.01	0.04***
¯ Malnutrition of children (83)	-0.67***	-0.03*	0.02
Target 3: Primary schooling	Total aid	Education	Basic education
¯ Net primary enrolment (89)	-0.20	0.02	-0.02
¯ Primary completion rate (98)	0.03	0.02	-0.01
¯ Average yrs of schooling (71)	0.76	0.27	0.08
Target 4: Gender disparity in education	Total aid	Education	Basic education
¯ Ratio girls/boys in education (110)	0.14	0.05	-0.01
¯ Literacy ratio, males/females (89)	-5.87	0.09	-0.14
Target 5: Under-5 mortality	Total aid	Health	Basic health
¯ Under-5 mortality rate (121)	-0.02	-0.01	0.00
¯ Immunization, measles (121)	0.14	0.02	0.00
Target 6: Maternal mortality	Total aid	Health	Basic health
¯ Maternal mortality ratio (113)	0.00	0.00	0.00
¯ Births attended (99)	0.42*	0.03	0.01
Target 7: HIV/AIDS	Total aid	Health	Population programmes
¯ Prevalence of HIV (92)	-0.01	-0.01	0.08***
Target 8: Malaria, other diseases	Total aid	Health	Basic health
¯ Incidence tuberculosis (121)	-0.02	0.00	0.00
¯ Malaria ecology (111)	0.11	0.02	0.01
Target 9: Environmental sustainability	Total aid	Environmental protection	Agricultural land resources
¯ CO_2 emissions (120)	-1.77	-0.06*	0.00
¯ Forest area (117)	0.21	0.01	0.00
¯ Nationally protected areas (130)	0.10**	0.00	0.00*
¯ GDP per unit of energy use (79)	-0.09	0.03	0.03
Targets 10/11: Water & sanitation/slum dwellers	Total aid	Water supply & sanitation	Basic drinking water
¯ Access to improved water (113)	-0.03	0.03	-0.00*
¯ Access to improved sanitation (111)	0.11	0.03*	-0.00

Notes: [a] Based on a Tobit model estimated with per capita income and governance as controls; controls and constant term not reported. ***, **, * significant at 1, 5 and 10 per cent level, respectively;

[b] Number of observations in parentheses. For definition and sources, see Annex;

[c] Period average of grant equivalent of aid in 2002-04, per capita of the recipient countries' population.

Source: Own calculations based on sources given in the Annex.

attached to China and India. On the other hand, the estimates in Table 4 show that several additional MDG-related targets in the field of education (primary completion rates, average years of schooling[21]) and health (under-five mortality, maternal

21 It has to be noted that this indicator is clearly inferior to the other two indicators supposed to reflect the situation of recipient countries with regard to primary schooling. Target 3 requires donors to focus on primary education, while average years of schooling (which we considered in accordance to the World Bank suggestions mentioned above) include more advanced levels of education.

mortality, tuberculosis and malaria) affected donor decisions. These targets as well as those already found significant in the unweighted regressions are not only linked to specific aid categories, but also influenced the allocation of total aid. The weighted regressions thus suggest a more widespread targeting of aid according to specific indicators of need, even though certain indicators such as net primary school enrolment rates, the male-to-female literacy ratio and the rate of immunization against measles remain insignificant.

Replicating the weighted regressions without China and India illustrates that these two countries have a decisive influence on the population-weighted Tobit results. For a start, the allocation of total aid is now again strongly poverty oriented, with the coefficient of GDP per capita being significant at the 5 per cent level or better in all specifications. In most instances, donors also appear to have considered GDP per capita as an

Table 4
Tobit results for total aid by all donors (weighted, including China and India) [a]

Targets/indicators of need [b]	Aid categories [c]		
Target 2: Hunger	Total aid	Developmental food aid	Emergency food aid
¯ Undernourishment	0.51***	0.02***	0.03**
¯ Malnutrition of children	-0.53***	-0.02**	0.02
Target 3: Primary schooling	Total aid	Education	Basic education
¯ Net primary enrolment	-0.21*	-0.01	-0.01
¯ Primary completion rate	-0.32***	-0.03***	-0.01**
¯ Average yrs of schooling	-4.26***	-0.37***	-0.22***
Target 4: Gender disparity in education	Total aid	Education	Basic education
¯ Ratio girls/boys in education	0.17	0.02	0.01*
¯ Literacy ratio, males/females	0.50	0.57	0.26
Target 5: Under-5 mortality	Total aid	Health	Basic health
¯ Under-5 mortality rate	0.10***	0.01***	0.00***
¯ Immunization, measles	0.15*	0.01	0.00
Target 6: Maternal mortality	Total aid	Health	Basic health
¯ Maternal mortality ratio	0.02***	0.00***	0.00***
¯ Births attended	0.25**	0.01	0.00
Target 7: HIV/AIDS	Total aid	Health	Population programmes
¯ Prevalence of HIV	1.28***	0.07**'	0.12***
Target 8: Malaria, other diseases	Total aid	Health	Basic health
¯ Incidence tuberculosis	0.03**	0.00***	0.00***
¯ Malaria ecology	0.83***	0.05***	0.02***
Target 9: Environmental sustainability	Total aid	Environmental protection	Agricultural land resources
¯ CO_2 emissions	-1.33	-0.02	-0.02
¯ Forest area	0.19**	0.00*	0.00
¯ Nationally protected areas	0.16	0.01***	0.00
¯ GDP per unit of energy use	0.12	0.01	0.01
Targets 10/11: Water & sanitation/slum dwellers	Total aid	Water supply & sanitation	Basic drinking water
¯ Access to improved water	-0.33***	-0.01	-0.01***
¯ Access to improved sanitation	0.36***	0.02***	-0.00

Notes and source: as given in Table 3

encompassing indicator of need when allocating aid to specific sectors. Likewise, once India and China are excluded from the sample, 'voice and accountability' becomes an important determinant of sector-specific aid. At the most disaggregated aid level, we find that donors were consistently more generous towards poorer and more democratic recipients except in the case of emergency food aid, which is driven by specific need. The stronger impact of GDP per capita and 'voice and accountability' in this version of the Tobit model is mainly due to the exclusion of India, which constitutes an outlier in the sense that it received very little aid per capita despite being a relatively poor country with democratic institutions. China is richer and more autocratic, but its aid inflows were still lower than the prevailing levels of per capita income and governance would predict.

Table 5 reports the effects of the MDG-related indicators of need on aid allocations. The number of significant coefficients is somewhat lower than in the weighted regressions that include China and India, especially at higher levels of aid aggregation. The overall

Table 5
Tobit results for total aid by all donors (weighted, excluding China and India) [a]

Targets/indicators of need [b]	Aid categories [c]		
Target 2: Hunger	Total aid	Developmental food aid	Emergency food aid
¯ Undernourishment	0.38***	0.01***	0.03***
¯ Malnutrition of children	-0.49***	-0.01	0.02*
Target 3: Primary schooling	Total aid	Education	Basic education
¯ Net primary enrolment	-0.17	-0.01	-0.01
¯ Primary completion rate	-0.20***	-0.02**	-0.01
¯ Average yrs of schooling	-0.68	-0.18	-0.15*
Target 4: Gender disparity in education	Total aid	Education	Basic education
¯ Ratio girls/boys in education	-0.18	-0.01	-0.01
¯ Literacy ratio, males/females	0.55	0.82	0.40**
Target 5: Under-5 mortality	Total aid	Health	Basic health
¯ Under-5 mortality rate	0.04	0.00**	0.00***
¯ Immunization, measles	0.06	0.00	0.00
Target 6: Maternal mortality	Total aid	Health	Basic health
¯ Maternal mortality ratio	0.01**	0.00***	0.00***
¯ Births attended	0.24***	0.01	0.00
Target 7: HIV/AIDS	Total aid	Health	Population programmes
¯ Prevalence of HIV	0.56*	0.04**	0.10***
Target 8: Malaria, other diseases	Total aid	Health	Basic health
¯ Incidence tuberculosis	0.00	0.00	0.00*
¯ Malaria ecology	0.11	0.02	0.01
Target 9: Environmental sustainability	Total aid	Environmental protection	Agricultural land resources
¯ CO_2 emissions	-0.36	0.00	0.00
¯ Forest area	0.07	0.00	0.00
¯ Nationally protected areas	0.04	0.01*	0.00
¯ GDP per unit of energy use	0.39	0.00	0.00
Targets 10/11: Water & sanitation/slum dwellers	Total aid	Water supply & sanitation	Basic drinking water
¯ Access to improved water	-0.13	-0.01	-0.01
¯ Access to improved sanitation	0.01	0.01	-0.01

Notes and source: as given in Table 3.

conclusion remains the same, however: donors tend to regard MDG-related indicators of need as relevant determinants of aid allocations, but there are again several notable exceptions. For example, aid for basic water supply and sanitation is found to be unaffected by the number of people with access to safe drinking water and sanitation when China and India are excluded.

In sum, the prevalence of undernourishment and HIV/AIDS are the only MDG-related indicators of need that robustly shaped the sector-specific aid per capita given by all donors. The evidence on health-related targets is stronger if we only look at the weighted estimates, which come closer to analysing whether the allocation of aid is in line with the MDGs and on which we focus in the remainder of the paper. Three additional health-related indicators—the under-five-mortality rate, the maternal mortality ratio, and the incidence of tuberculosis—are found to affect the amount of aid allocated to basic health, irrespective of whether China and India are included. For education (MDG targets 2 and 3) as well as for water and sanitation (MDG targets 10 and 11), however, the link between indicators of need and aid categories remains weak: only the most imperfect educational indicator, average years of schooling, is significant in both specifications of the weighted model. This finding is consistent with Table 1 in section 2, where it was shown that donors devoted only about one-third of education-related aid to basic education and 20 per cent of aid for water and sanitation to basic services, whereas two-thirds of health-related aid went to basic health. In other words, the persistent bias of donors towards higher levels of service provision may have undermined efforts to ensure that all children complete a full course of primary education, that gender disparity in education is eradicated, and that poor people have access to safe drinking water and sanitation.

3.3 Donor-specific aid

As noted in section 1, earlier studies have shown that the allocation of aid differs significantly between donors (e.g., Berthélemy 2006; Dollar and Levin 2006). However, previous studies do not consider specific indicators of need related to the MDGs, nor do they disaggregate aid. In the following, we compare the allocation of aid across the eleven (bilateral and multilateral) donors listed in section 2 by employing the Tobit approach with MDG-related indicators of need.[22]

Especially when considering the targeting of sector-specific aid, it may be argued that differences between donors could be due to donor coordination. Each donor might focus on specific MDG targets and specialize in specific aid sectors such as aid for education, leaving other targets and sectors to other donors. Hence, insignificant results for a particular donor with respect to various other targets and aid categories would not necessarily point to this donor having ignored the MDGs, but rather to a division of labour with other donors.

However, donor coordination of this sort is highly unlikely to seriously affect our results. This is not to ignore that coordination figures high on the policy agenda of donors. The Paris Declaration on Aid Effectiveness of March 2005 re-emphasized donor commitments made two years earlier at the High-Level Forum on Harmonization in

[22] For the reasons stated above, this section presents only the results from the weighted Tobit model.

Rome, including 'to eliminate duplication of efforts and to rationalize donor activities to make them as cost-effective as possible'. But little appears to have been achieved in this respect so far. A recent progress report on aid effectiveness notes:

> When measured against the commitments …, there is not yet sufficient momentum in applying good practice … Many aid agencies still have in place arrangements that discourage, often unintentionally, the approaches and behaviours necessary to meet the Rome and Marrakech commitments (OECD and World Bank 2005: 14).

Empirical findings support the view that donor coordination remains elusive. Mascarenhas and Sandler (2006) apply non-nested tests to distinguish between non-cooperative (Nash-Cournot) and cooperative (Lindahl) behaviour. None of the 15 donors considered by these authors behaved cooperatively when deciding on the allocation of aid. Berthélemy and Tichit (2004) employ aid provided by other bilateral donors as a control variable when analysing the allocation of aid by individual donor countries, in order to test whether donors take note of aid allocations by other donors. If coordination and specialization were prevalent, the coefficient of this variable should be negative. However, if significant, the coefficient typically turns out to be positive, suggesting that donors tend to favour the same 'aid darlings'.[23] We corroborate this finding by a simple correlation analysis reported in the Annex. It turns out that 43 out of the 55 Spearman rank correlations for total aid per capita are significantly positive. Sector-specific aid of individual donors tends to be less strongly correlated with that of other donors, but most of the correlations are still positive and very few are significantly negative.[24]

With donor coordination being unlikely to affect the interpretation of our results, we proceed in two steps. For a start, we estimate the weighted Tobit model with total aid per capita received from individual donors as the dependent variable. Later, we turn to sector-specific aid. MDG target 9 'Environmental sustainability' is no longer considered for the reasons given above. Control variables are the same as for all donors combined.

With some notable exceptions, the allocation of total aid is significantly affected by per capita income of the recipient countries (not shown in the table). Denmark, Sweden, the UK and IDA consistently grant less aid to more developed recipients. In most instances, per capita income enters negatively also for Germany, Japan, the Netherlands and Norway, at least when China and India are excluded. Strikingly, however, the coefficient of per capita income remains insignificant in almost all estimates for France and the US, and in various cases also for the EC.[25]

Similar to the results for all donors combined, 'voice and accountability' in the recipient countries has not shaped the allocation of total aid in the weighted model with China

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23 Some small donors not considered in our paper (Belgium, Ireland and Italy) provide exceptions.

24 In the Annex, we report the correlations for health-related aid, for which there is just one significantly negative correlation (between France and the UK). Similar results were achieved for aid related to water and sanitation (not shown). With regard to aid for education, five out of 55 correlation coefficients turned out to be significantly negative, all involving France.

25 France and the US are also among the bilateral donors considered by Berthélemy and Tichit (2004) that take less note of the *income* poverty of the recipients.

and India included. This applies to all donors under consideration, mainly because India got little aid in per capita terms while it was rated favourably with respect to 'voice and accountability'. Once China and India are excluded, Denmark and the UK stand out in that they consistently favoured more democratic recipients. Though less consistently so, we find similar results for Japan and the Netherlands. In the case of Japan, this is probably due to its aid being focused on Asian neighbours which tend to be relatively well governed. On the other hand, 'voice and accountability' has no effect on the allocation of aid by France, Sweden, the US and IDA. With respect to the two big bilateral donors, this finding is supported by the recent literature, most robustly so for France (Nunnenkamp and Thiele 2006; Dollar and Levin 2006) whereas the poor evidence for IDA and Sweden contrasts with Dollar and Levin (2006).

Turning to our variables of principal interest, i.e., MDG-related indicators of need, Table 6 shows that, once again, results depend considerably on the inclusion of China and India. Some implausible results for the weighted model with all recipients are driven exclusively by these two heavyweights. For example, the unexpected coefficients of malnutrition of children, the ratio of girls to boys in education and access to improved sanitation largely disappear in the estimates without China and India. At the same time, some favourable results indicating that specific indicators of need had an impact on the allocation of total aid, as suggested by the MDGs, weaken considerably when the sample excludes China and India. Most notably, the evidence that greater need was associated with higher total aid per capita weakens for MDG targets 3 (primary schooling) and 7 (HIV/AIDS).

It is mainly for the Netherlands, and somewhat less for Germany, Japan and Sweden, that the results depend strongly on the sample underlying the weighted Tobit model. Results are largely unaffected for Denmark and IDA.[26] Based on the complete sample of recipients, Table 6 points to striking differences between donors with respect to the extent to which specific indicators of need had an impact on the allocation of total aid. French aid as well as EC aid was directed to more needy recipients according to ten out of the 16 specific indicators under consideration. This does not necessarily imply that these two donors outperformed the other donors in terms of targeting aid to needy recipients since, as noted before, the per capita income of recipients typically remained insignificant in the estimates for France and the EC. However, the fine-tuning of French and EC aid according to specific indicators of need qualifies earlier verdicts that the poverty orientation of aid by these two donors is particularly weak (see also below on sector-specific aid). Denmark represents the opposite case: while none of the specific indicators of need shows up significantly with the expected sign, Danish aid was strongly related to overall need as reflected by per capita income.

Yet Table 6, in combination with the findings on per capita income reported above, reveals that some donors underperformed in allocating their total aid according to the MDGs. This particularly applies to the two largest bilateral donors in terms of total aid commitments in 2002-04. US aid was shaped neither by specific indicators of need

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26 Denmark committed less than 2 per cent of its aid to China and India in 2002-04. At the opposite extreme, China and India accounted for 23 per cent of Japan's overall commitments. IDA committed hardly any aid to China, while India was a major recipient with 12 per cent of IDA commitments in 2002-04.

Table 6
Donor-specific results: total aid [a]

Targets/indicators of need	Japan		Denmark		France		Germany		Netherlands	
	All recipients	China/India excl.	All recipients	China/India excl.	All recipients	China/India excl.	All recipients	China/India excl.	All recipients	China/India excluded
Target 2: Hunger										
¯ Undernourishment	-0.05	-0.08	-0.01	0.11	0.16***	0.12**	0.10**	0.08*	0.05**	0.04**
¯ Malnutrition of children	-0.18**	-0.11	-0.06*	-0.02	-0.18	-0.15*	-0.20***	-0.20***	-0.05**	-0.04
Target 3: Primary schooling										
¯ Net primary enrolment	0.11	0.12*	-0.03	0.00	-0.10*	-0.09	-0.02	-0.01	-0.02	-0.02
¯ Primary completion rate	0.03	0.09**	0.00	0.01	-0.15**	-0.12***	-0.06**	-0.03	-0.02**	0.00
¯ Av. years of schooling	0.23	1.73**	0.06	-0.03	-1.57***	-1.10*	-0.68	-0.13	-0.35*	-0.08
Target 4: Gender disparity in education										
¯ Ratio girls/boys in education	0.21***	0.17**	0.08**	0.04	-0.09	-0.20***	0.06	-0.04	0.32*	0.00
¯ Literacy ratio, males/females	-5.87**	-6.36**	-2.09	-1.39	5.31***	5.48**	-0.55	-0.15	-0.38	-0.10
Target 5: Under-5 mortality										
¯ Under-5 mortality rate	-0.04**	-0.07***	-0.01**	-0.01	0.06***	0.05***	0.02*	0.01	0.01	0.00
¯ Immunization, measles	0.19**	0.16***	0.08***	0.07***	-0.05	-0.06	0.05	0.02	0.03*	0.01
Target 6: Maternal mortality										
¯ Maternal mortality ratio	-0.01**	-0.01***	0.00	0.00	0.01***	0.01**	0.00	0.00	0.01**	0.00
¯ Births attended	0.15***	0.14***	0.02	0.02	0.08**	0.08**	0.09***	0.08***	0.02	0.02
Target 7: HIV/AIDS										
¯ Prevalence of HIV	-0.12	-0.43**	0.13	0.10	0.37**	0.24	0.30**	0.15	0.12***	0.06
Target 8: Malaria, other diseases										
¯ Incidence tuberculosis	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00**	0.00
¯ Malaria ecology	0.16	-0.08	0.02	0.01	0.42***	0.38***	0.13	-0.04	0.07**	0.01
Targets 10/11: Water & sanitation/slum dwellers										
¯ Access to improved water	0.00	0.10	-0.01	0.02	-0.12***	-0.11**	-0.07**	-0.02	-0.02	0.00
¯ Access to improved sanitation	0.05***	0.13**	0.01	0.02	0.04	-0.08	0.08***	0.02	0.03**	0.00

Table 6 continues

Note: [a] Based on a (weighted) Tobit model estimated with per capita income and governance as control variables; controls and constant term not reported.
***, **, * significant at 1, 5 and 10 per cent level, respectively.

Table 6 (con't)
Donor-specific results: total aid [a]

	Norway		Sweden		UK		US		EC		IDA	
	All recipients	China/India excl.	All recipients	China/India excl.	All recipients	China/India excl.	All recipients	China/India excl.	All recipients	China/India excl.	All recipients	China/India excl.
Target 2: Hunger												
¯ Undernourishment	0.04***	0.04***	0.05***	0.05***	0.07	0.06	0.25*	0.16	0.19**	0.15**	0.19***	0.18**
¯ Malnutrition of children	-0.01	-0.01	-0.04*	-0.04	-0.05	0.00	-0.31*	-0.43***	-0.28**	-0.25***	-0.08	-0.04
Target 3: Primary schooling												
¯ Net primary enrolment	-0.02**	-0.02**	-0.01	-0.01	0.01	-0.05	-0.04	-0.04	-0.13*	-0.12*	-0.09**	-0.08*
¯ Primary completion rate	-0.02***	-0.02**	-0.02*	-0.02	-0.04	-0.03	-0.08*	-0.02	-0.18***	-0.15***	-0.10***	-0.07**
¯ Average years of schooling	-0.24**	-0.12	0.22	-0.06	-1.05**	-0.85	-1.50	1.26	-2.07***	-1.00	-0.60	-0.06
Target 4: Gender disparity in education												
¯ Ratio girls/boys in education	0.02	0.00	0.04**	0.03	0.10*	0.02	0.02	-0.03	0.02	-0.19*	0.01	-0.10
¯ Literacy ratio, males/females	0.04	0.02	-2.38**	-2.33**	-0.89	-0.07	-0.44	-2.26	2.15	2.67	1.67	1.83
Target 5: Under-5 mortality												
¯ Under-5 mortality rate	0.01**	0.00	0.00	0.00	0.02*	0.02	0.04	-0.01	0.06***	0.04**	0.04**	0.03*
¯ Immunization, measles	0.01	0.01	0.03*	0.02	0.05	0.02	0.04	0.04	0.04	-0.02	0.00	-0.02
Target 6: Maternal mortality												
¯ Maternal mortality ratio	0.00***	0.00***	0.00	0.00	0.01***	0.01***	0.01	0.00	0.01***	0.01**	0.01***	0.01*
¯ Births attended	0.01	0.01	0.02	0.02	0.00	0.00	0.12	0.12	0.09*	0.09*	0.01	0.02
Target 7: HIV/AIDS												
¯ Prevalence of HIV	0.12***	0.10***	0.16***	0.13**	0.49***	0.43***	0.32	-0.03	0.76***	0.49***	0.16	0.01
Target 8: Malaria, other diseases												
¯ Incidence tuberculosis	0.00***	0.00**	0.01**	0.00	0.01***	0.01**	0.00	-0.01	0.01	0.29	0.01	0.00
¯ Malaria ecology	0.02	-0.02	0.01	-0.04	0.17**	0.07	0.12	-0.32	0.39***	0.09	0.15	0.03
Targets 10/11: Water & sanitation/slum dwellers												
¯ Access to improved water	-0.01*	-0.01	-0.03	-0.02	-0.05	0.00	-0.02	0.06	-0.18***	-0.09	-0.06	-0.04
¯ Access to improved sanitation	0.01**	0.00	0.02	0.01	0.04	0.01	0.26***	0.l4	0.14***	-0.02	0.05	0.02

Source: Own calculations based on sources given in the Annex.

Table 7
Donor-specific results: sector-specific aid [a]

Targets/indicators of need	Aid category	
	Target 2: Hunger	
	Development food aid	Emergency food aid
Undernourishment	IDA, (EC)	**Germany**, ***US***, **EC**
Malnutrion of children	**Netherlands, Norway, UK**, IDA	**Netherlands**, **Norway**, **UK**, **US**, EC
	Target 3: Primary schooling	
	Education	Basic education
Net primary enrolment		
Primary completion rate	**France**, Germany	
Average yrs of schooling		***Norway***
	Target 4: Gender disparity in education	
	Education	Basic education
Ratio girls/boys in educ.		**France**, (*Germany*)
Literacy ratio, m/f	**France**	**France**, **Germany**, (*Denmark*)
	Target 5: Under-5 mortality	
	Health	Basic health
Under-5 mortality rate	**France**	
Immunization, measles	(France)	**IDA**
	Target 6: Maternal mortality	
	Health	Basic health
Maternal mortality ratio	(*Germany*), (Norway)	(Norway), (UK)
Births attended	**UK**	**Netherlands**, **UK**, *IDA*
	Target 7: HIV/AIDS	
	Health	Population programmes
Prevalence of HIV	***Norway***, (Sweden)	***Denmark, France, Netherlands, Norway, Sweden, UK, US, EC***
	Target 8: Malaria, other diseases	
	Health	Basic health
Incidence tuberculosis	***Netherlands, Norway***, (Sweden), (*UK*), (*EC*)	***Netherlands***, (UK)
Malaria ecology	**France**	(France)
	Targets 10/11: Water & sanitation/slum dwellers	
Access to:	Water supply & sanitation	Basic drinking water
- improved water		
- improved sanitation	Denmark, Norway, Sweden, UK, EC	Denmark, **EC**

Notes: [a] Based on weighted Tobit model with per capita income and governance as control variables; controls and constant term not reported. Donors listed grant significantly more aid to countries with greater need as given by specific indicator of need; **bold** if same result when China and India are excluded; in parentheses if only when China and India excluded; *italics* if per capita income significantly negative.

Source: Own calculations based on sources given in the Annex.

(with only two exceptions, i.e., the prevalence of undernourishment and the primary completion rate), nor by per capita income as an encompassing indicator of need. Japan stands out in that various specific indicators of need enter with an unexpected sign (pointing to more aid for less needy recipients), even though the coefficient of per capita income remains insignificant in various estimates for the complete sample of recipients.

In the second step, we estimate the weighted Tobit model with sector-specific aid as the dependent variable. In particular, we assess whether individual donors targeted aid in the sense that: (i) food aid was granted predominantly to recipient countries whose population suffered from malnutrition and hunger; (ii) the health situation of recipient countries has shaped the allocation of health-related aid; (iii) aid for education was channelled to where primary education deficits and gender disparities in education were most pronounced; and (iv) aid for improved water supply and sanitation favoured recipients with seriously impaired access to water and sanitation.

As before, we control for per capita income and 'voice and accountability'. Findings with respect to the MDG-related indicators of need are summarized in Table 7. In some respects, sector-specific results resemble the results for total aid. In various instances, whether or not specific indicators of need have an impact on the allocation of sector-specific aid depends on the inclusion of China and India. For example, when the two heavyweights are excluded, the finding that limited access to improved sanitation went along with more aid granted by several donors for water supply and sanitation no longer applies. On the other hand, a few donors granted more health-related aid to countries with higher maternal mortality ratios, but only in the sample without China and India.

It is also in line with earlier findings that some donors appear to have taken note of specific indicators of need (France, Norway, and the UK), whereas other donors have not or have done so only rarely (Japan, Denmark, Sweden, the US and IDA). As for total aid, France fine-tuned its sector-specific aid according to MDG-related indicators of need, while per capita income typically remained insignificant.[27] This is in contrast to Norway, whose allocation of sector-specific aid was affected by both specific and encompassing indicators of need in various instances. Likewise, when comparing donors for whom MDG-related indicators of need appear to have played a minor role, it must be taken into account that Denmark, Sweden and IDA granted higher sector-specific aid with few exceptions to recipients with lower per capita income (not shown in the table). This was hardly the case for Japan, and per capita income of recipients entered significantly negative in just about half of all regressions run for sector-specific aid of the US.

Table 7 also offers some additional insights on whether donors have specialized in helping achieve selected MDGs, and leaving other MDGs to other donors. Donor coordination to this effect should have resulted in a pattern where at least smaller donors concentrated on specific targets. However, donors such as Norway and the Netherlands are listed under as many MDG targets as are such large donors as France, the UK or the EC. Moreover, there is little evidence that smaller donors such as Denmark and Sweden refrained from entering into areas such as the fight against HIV/AIDS where various

[27] In the complete sample of recipient countries, there was actually just one significantly negative coefficient for per capita income out of 32 estimates run for sector-specific aid of France (Norway: 21; UK: 25).

large donors are engaged. Nor do they appear to have grasped the chance to occupy areas which were largely neglected by other donors; the most notable case in point is aid for basic education that may help improve primary enrolment and completion.

It rather emerges that some MDG targets received particular attention by various donors, whereas other targets were largely neglected. The evidence for targeted aid is strongest with regard to the fight against HIV/AIDS through committing resources to 'population programmes'. Target 7 attracted encompassing donor engagement. Similarly, indicators of need related to MDG target 2 ('hunger') were taken into account by all major suppliers of emergency food aid except France. The evidence is comparatively weak with respect to so-called developmental food aid. This applies especially to the US who committed developmental food aid to an outstandingly large number of 77 countries in 2002-04. Arguably, this type of 'aid' was still used as an outlet of surplus agricultural production at home, with needs-based targeting taking second place.

The allocation of aid for education was hardly shaped by specific indicators of need. Most surprisingly, none of the donors under consideration took primary enrolment and completion rates into account when deciding on the allocation of aid for basic education. Health-related aid appears to be somewhat better targeted than education-related aid when accounting for (unreported) results on the impact of per capita income on aid allocation. In our estimates for aid for health and population programmes, per capita income entered significantly negative in about 75 per cent of all cases, while this was true in just slightly more than half of all cases for aid for education. However, the allocation of health-related aid according to specific indicators of need reveals that donors focused on selected targets that figure prominently in public debate (HIV/AIDS and, though less so, tuberculosis), whereas less publicized issues such as the immunization against measles did not receive particular attention. Essentially the same applies to aid for improving access to water and sanitation, once it is taken into account that most of the coefficients reported in Table 7 are highly sensitive to sample selection**.**

4 Concluding remarks

This paper departs from the observation that the Millennium Declaration and the list of MDGs consider growth promotion to be just one channel through which aid may help fighting poverty. In the same vein, economists such as McGillivray (2003) and Amprou, Guillaumont and Guillaumont Jeanneney (2005) have called for a broader concept of aid selectivity not just including the income and policy situation of recipient countries as proposed by Collier and Dollar (2002). And indeed, donors typically claim that their aid allocation is based on a multi-dimensional objective function.

Yet, various developing countries, particularly in Sub-Saharan Africa, will in all likelihood miss not only the most prominent MDG of halving absolute poverty by the year 2015 but also the more specific targets, e.g., those related to health and education. In this paper, we explore one possible reason for this failure, namely that donors may have paid insufficient attention to the MDGs by not allocating aid according to the MDG-related needs of recipients. Our results do suggest that at least part of the blame falls on insufficient targeting of aid. While some MDGs such as the fight against HIV/AIDS have shaped the allocation of aid, the sector-specific results reveal that with

respect to other MDGs, most notably primary education, there is a considerable gap between donor rhetoric and actual aid allocation.

Comparing donors, it turns out that the two largest bilateral donors, Japan and the United States, have not only failed to meet the UN target of 0.7 per cent of gross national income to be devoted to aid, but have also performed poorly in terms of targeting aid to needy recipients. At the same time, our analysis qualifies previous findings on the poverty orientation of donors. France, whose *income* poverty orientation has often been rated as weak, took various specific indicators of need into account when allocating aid. By contrast, MDG-related indicators of need have hardly shaped the allocation of aid by donors (such as Denmark) that are widely perceived to be superior donors because of their strong poverty orientation as measured by per capita income of recipient countries.

These results invite the conclusion that the current focus on substantially increasing aid in order to turn the tide and try achieving the MDGs misses an important point. Unless the targeting of aid is improved, higher aid will not have the desired effects. At the same time, it should be stressed that better targeting is just a necessary, but not a sufficient, condition for more effective aid. Reinikka and Svensson (2004), for example, estimate that over the period 1991-95, only 13 per cent of a grant received by the Ugandan government to cover primary schools' non-wage expenditures actually reached the schools. Likewise, Easterly (2005) reports for four African countries that 30 to 70 per cent of drugs distributed by the government disappeared before reaching the patients. Given leakages of such magnitude, an obvious avenue for future research would be to directly estimate how effective the sectoral allocation of aid is in achieving the various MDGs. This would offer more detailed insights than the typically considered aid-growth relationship.

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MDGs	Indicators of need (source) [a]	Relevant aid category [b] (CRS code)
	Goal 1: Eradicate extreme poverty and hunger	
Target 1: Halve the proportion of people with income of less than $1 a day [c]	Average per-capita income (World Bank 2005) Share of population below $1 a day Human development index (UNDP 2005b)	Total aid
Target 2: Halve the proportion of people who suffer from hunger	Prevalence of undernourishment (FAO 2004) Malnutrition of children, weight (World Bank 2005)	Developmental food aid/food security assistance (520) Emergency food aid (710)
	Goal 2: Achieve universal primary education	
Target 3: Ensure that children complete a full course of primary schooling	Net primary school enrolment ratio (World Bank 2005) Primary completion rate, total (World Bank 2005) Average years of schooling (Barro and Lee 2000)	Education (110) Basic education (112)
	Goal 3: Promote gender equality and empower women	
Target 4: Eliminate gender disparity in education	Ratio of girls to boys in prim. & sec. education (World Bank 2005) Literacy ratio, males to females (World Bank 2005)	Education (110) Basic education (112)
	*Goal 4: Reduce child mortal*ity	
Target 5: Reduce under-five mortality rate	Under-five mortality rate (World Bank 2005) Immunization, measles (World Bank 2005)	Health (120) Basic health (122)
	Goal 5: Improve maternal health	
Target 6: Reduce the maternal mortality ratio	Maternal mortality ratio (UNDP 2005b) Births attended by skilled health staff (World Bank 2005; WHO 2005)	Health (120) Basic health (122)
	Goal 6: Combat HIV/AIDS, malaria, and other diseases	
Target 7: Halt and reverse the spread of HIV/AIDS	Prevalence of HIV (World Bank 2005; UNAIDS 2004)	Health (120); pop. programmes & reproductive health (130)
Target 8: Halt and reverse the incidence of malaria, and other major diseases	Incidence of tuberculosis (WHO 2005) Malaria ecology (Kiszewski et al. 2004)	Health (120) Basic health (122)
	Goal 7: Ensure environmental sustainability	
Target 9: Integrate principles of sustainable development into country policies & reverse the loss of environmental resources	CO_2 emissions per capita (World Bank 2005) Forest area (World Bank 2005; FAO 2004) Nationally protected areas (UNDP 2005b) GDP per unit of energy use (World Bank 2005)	General environmental protection (410) Agricultural land resources (31130)
Target 10: Halve the proportion of people w/o sustainable access to safe water & basic sanitation	Access to improved water source (World Bank2005) Access to improved sanitation (World Bank 2005)	Water supply & sanitation (140) Basic drinking water supply &basic sanitation (14030)
Target 11: Achieve significant improvement in the lives of slum dwellers	Same as under target 10	See target 10

Notes: [a] All indicators for 2000 or closest year. Italics if used only in the analysis of aid by all donors combined; [b] In addition: total aid for all MDGs/indicators of need. Italics if used only in the analysis of aid by all donors combined; [c] Target 1 not specifically considered in this paper; for an analysis of the poverty orientation of overall aid, see the literature given in section 1

Definition of variables

1	Aid variables	
	Grant equivalent per capita	Nominal amount*grant element/100 per population of recipient country
2	Indicators of need [a]	
	Access to improved water source (-)	% of population
	Access to improved sanitation (-)	% of population
	Average years of schooling (-)	Relates to the total population aged 15 and over
	Births attended by skilled health staff (-)	% of total
	CO_2 emissions per capita (+)	metric tons per capita
	Forest area (-)	% of total land area
	GDP per unit of energy use (-)	2000 PPP $ per kg of oil equivalent
	Immunization, measles (-)	% of children of the age of 12-23 months
	Incidence of tuberculosis (+)	Estimated incidence rate of all forms of tuberculosis, per 100,000 people
	Literacy ratio, males to females (+)	Literacy rate of adult males divided by literacy rate of adult females
	Malaria ecology (+)	Predictive of the extent of malaria transmission
	Malnutrition of children, weight (+)	% of children under five
	Maternal mortality ratio (+)	Adjusted ratio per 100,000 live births
	Nationally protected areas (-)	% of total land area
	Net primary school enrolment ratio (-)	% of the population of the corresponding official school age
	Prevalence of HIV (+)	% of population aged 15-49
	Prevalence of undernourishment (+)	% of population
	Primary completion rate, total (-)	% of the relevant age group
	Ratio of girls to boys in primary & secondary education (-)	%
	Under-5 mortality rate (+)	Probability per 1,000 newborn babies

Note: [a] In parentheses: expected sign of coefficient if higher need according to indicator went along with more aid.

Annex Table
Comparison of aid allocation by major donors:
Spearman rank correlations for total aid per capita and health-related aid per capita

	Japan	Denmark	France	Germany	Netherlands	Norway	Sweden	UK	US	EC	IDA
Japan		0.18**	0.00	0.16*	0.03	-0.05	-0.09	0.14*	0.20**	0.22***	0.29***
Denmark	*0.18***		-0.07	0.38***	0.60***	0.56***	0.54***	0.40***	0.21**	-0.06	0.29***
France	*-0.02*	*-0.07*		0.33***	0.11	0.04	0.11	0.04	0.02	0.48***	0.28***
Germany	*0.17***	*0.27****	*0.11*		0.63***	0.59***	0.62***	0.43***	0.51***	0.26***	0.50***
Netherlands	*0.05*	*0.42****	*-0.04*	*0.33****		0.75***	0.75***	0.45***	0.46***	0.16*	0.43***
Norway	*0.05*	*0.33****	*-0.05*	*0.43****	*0.44****		0.79***	0.49***	0.50***	0.14*	0.35***
Sweden	*0.24****	*0.22****	*-0.03*	*0.29****	*0.22***	*0.29****		0.38***	0.48***	0.12	0.40***
UK	*0.08*	*0.33****	*-0.15**	*0.52****	*0.47****	*0.55****	*0.32****		0.30***	0.28***	0.40***
US	*0.27****	*0.17***	*-0.04*	*0.51****	*0.21***	*0.37****	*0.33****	*0.42****		0.27***	0.30***
EC	*-0.05*	*0.12*	*-0.01*	*0.16**	*0.21***	*0.07*	*0.01*	*0.16**	*0.03*		0.32***
IDA	*0.15**	*0.14**	*-0.04*	*0.28****	*0.16**	*0.14*	*0.10*	*0.35****	*0.22***	*0.21***	

Note: Upper right panel: total aid; lower left panel (italics): health-related aid. ***, **, * significant at the 1, 5, and 10 per cent level, respectively.