RIETI Discussion Paper Series 07-E-050

The Millennium Development Goals and Aid Allocation: Which donors give high-quality aid?

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The Millennium Development Goals and Aid Allocation: Which donors give high-quality aid?*

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June 9, 2007

Abstract

This paper evaluates donor performance by using data on aid for 10 sectors that are closely related to the Millennium Development Goals (MDGs). We utilize the MDGs indicators to measure the recipient's need for aid in each sector and investigate whether donors designate aid for specific sectors in the countries that need it most. Our results suggest that the majority of donors are selective in all the sectors. Not only the Nordic countries but also other large donors are selective and have a clear tendency to allocate more assistance to poor countries.

keywords: Donor performance; Foreign aid; Millennium Development Goals; Selectivity

JEL classification: F35; O10

*This research is a part of the project "Economics of Foreign Aid" undertaken at the Research Institute of Economy, Trade and Industry (RIETI). The author would like to thank RIETI for generous financial support toward the project. The author is also grateful to Yasuyuki Sawada and other members of the project for helpful comments and suggestions. The opinions expressed and arguments employed in this paper are the sole responsibility of the author and do not necessarily reflect those of RIETI or the Ministry of Economy, Trade and Industry of Japan.

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1 Introduction

Recently the quality of foreign aid has been under severe scrutiny. Since it is not easy for donor countries to increase the amount of aid to developing countries, the issue is what kind of aid can contribute to poverty reduction and under what conditions aid can be effective. Burnside and Dollar (2000) suggest that the impact of aid on growth is positive only if recipients have good policies.[1] Although recent studies such as Hansen and Tarp (2001) and Easterly et al. (2004) find that the results of Burnside and Dollar (2000) are not robust, their paper is influential.[2] There is a general acceptance among practitioners and policy-makers that policies and institutions matter. Accordingly, many papers on the pattern of aid allocation examine whether donors are selective on policy. For example, recent studies such as Alesina and Dollar (2000) and Dollar and Levin (2004) investigate whether the pattern of aid allocation by each donor depends on policy as well as poverty.

Several studies have evaluated donor performance. Most of them examine the determinants of aid allocation across countries, and appreciate donors if their assistance is targeted to poor countries or countries with good policies and institutions because aid is supposed to be effective in those countries. Alesina and Dollar (2000) investigate the determinants of aid across countries and show that the Scandinavian countries (Denmark, Finland, Norway and Sweden) and the United States are selective on poverty while aid by France and Japan has little relationship to poverty. Dollar and Levin (2004) estimate donors' poverty and policy selectivity indices (elasticity of aid with respect to the recipient's per capita GDP and index of good policies, respectively). They suggest that Denmark, Norway, Sweden, the United Kingdom, Ireland and the Netherlands are policy- and poverty-selective while large donors such as France and the United States are not particularly selective (Japan is selective only on policy). Roodman (2006) also appreciates the Scandinavian countries and has a low opinion of Japanese and U.S. aid.[3] Sawada et al. (2007) found that Canada, Finland, Japan, the Netherlands, Norway, Sweden and the United Kingdom are poverty-selective. Overall, recent empirical studies suggest that the

[1] See also Collier and Dollar (2002) for the aid-policy link.

[2] See also Roodman (2004) for the robustness of the aid-policy link.

[3] Roodman (2006) developed an index of donor performance. He penalizes tied aid, project proliferation, and low policy and poverty selectivity.

Scandinavian countries are poverty-selective while the results for the large donors in absolute terms such as Japan and the United States are mixed.

It is likely that using aggregate aid is (at least partially) responsible for the mixed results. There are many kinds of aid projects and clearly all the projects are not the same; some donors focus on poverty reduction while others allocate resources to combat AIDS and other diseases. Hence, to conduct proper evaluations, it is important to take into account differences in the purposes of aid. All of the studies above examine the allocation of aggregate aid across countries and do not consider differences in aid projects although some of them take into account differences in aid modality (grant, loan, technical assistance, bilateral, multilateral, and so on).[4] More importantly, examining whether donors are selective on poverty and policy is not enough to conduct proper evaluations. It is important to know whether donors designate aid for specific sectors in the countries that need it most. Although this information is essential to improving the quality of aid, it has been neglected in the literature. Note that giving aid to the poorest countries does not necessarily imply giving aid to countries that need it most. For example, in Zimbabwe, poverty rates and prevalence of HIV are extremely high while they have relatively good access to safe drinking water, good primary education, and low levels of CO2 emissions. These facts imply that they need aid for HIV control most but aid for water supply, education, and environmental protection less. In this case, examining whether donors are selective on poverty is not enough.

Projects (recipients and sectors) are supposed to be selected appropriately. However, it is not always the case. The question is: what is appropriate (high-quality) aid? In this paper, we suppose that aid in a given sector is appropriate if a donor gives aid to a country that needs it most. We examine whether a donor's aid for a sector is associated with the recipient's need in the sector. In other words, we investigate aid allocation across countries for each sector.[5] Then, the next question is how we measure the recipient's need for aid in a sector. To answer this question, we use the indicators for monitoring progress in the Millennium Development Goals

[4]One recent exception is Clemens et al. (2004). They divide aid into three categories such as short-impact aid, long-impact aid and humanitarian aid, and show that short-impact aid has a large effect on growth.

[5]It is also possible to examine aid allocation across sectors for a given recipient. However, in this paper we limit the discussion to aid allocation across countries.

(MDGs), which state the world's most pressing development challenges. Since all the donors recognize the importance of the MDGs, it is appropriate to focus on the MDGs and use their indicators to measure the need for aid in each sector.

We evaluate donor performance as follows. For example, an indicator that measures the need for aid in education is school enrollment ratio (from Target 3 in the MDGs). We suppose that, if a country has a low school enrollment ratio, this country needs aid for education. We examine whether a donor's aid for education is associated with the recipient's school enrollment ratio. We appreciate the donor when we find a significant association between the amount of aid for the sector and the indicator in the MDGs. The next section details how to evaluate donor performance.

2 Assessment procedure

We evaluate donor performance and reveal which donors give high-quality aid for which sector. We suppose that good donors designate aid for specific sectors in the countries that need it most. That is, each donor should allocate a fixed aid budget for purpose p among recipients $(r = 1, ..., R)$ so as to

$$\begin{aligned} \min \quad & F(need_1, ..., need_R) \\ \text{subject to} \quad & \sum_r aid_r \leq total\ aid\ for\ purpose\ p \end{aligned} \tag{1}$$

and $need_r = N(aid_r, env_r) > 0$ where $need_r$ is recipient r's need for sector p, $F(\ )$ represents the aggregate measure of need for p, env_r denotes the exogenous environment for recipient r and aid_r is aid for recipient r. We assume that $need_r$ depends on env_r but aid_r can improve the condition of the recipient $(\partial N/\partial aid_r < 0)$. We also assume that $\partial F/\partial need_r > 0$, $\partial^2 F/\partial need_r^2 > 0$, and the second-order condition is satisfied.[6] In this case, other things equal, more aid reduces the marginal benefit of aid and the marginal benefit becomes large for a recipient with a worse environment; the absolute value of $\partial F/\partial need_r$ is large when the recipient with a bad environment

[6]See Sawada et al. (2007) for a similar optimization problem of donors with a specific functional form for $F(\ )$. In their model, $F(\ )$ is the measure of global poverty.

feels a desperate need for aid. The first-order condition for an interior solution implies that the marginal impact of aid on $F(\ )$ is equalized across recipients. It suggests that ideal donors give aid to the countries that need it most; more aid to a recipient with a worse environment. Thus, aid for p should be associated with the recipient's needs for the sector.

Using data on each donor's aid for each purpose and indicators that measure the recipient's need for aid for each purpose, we estimate

$$\frac{aid_{r,p,t}}{aid_{p,t}} = \beta_0 + \beta_1 \ln\left(1 + \frac{|\ \underline{index(p)} - index(p)_{r,t}\ |}{\underline{index(p)}}\right) + \beta_2 \ln income_{r,t} + \beta_3 \ln population_{r,t} + \beta_4 democracy_{r,t} + c_r + e_{r,t} \quad (2)$$

where $e_{r,t}$ is an error term and c_r represents the cluster effect (intragroup correlation). The dependent variable is the ratio of aid to recipient r for purpose p in period t to total aid for purpose p in that period. This ratio is explained by four variables as discussed below. Since, in reality, a donor does not necessarily give aid to all the countries, there are many cases where the dependent variable is zero. Since the amount of aid commitments cannot be negative (observations of aid at or below zero are censored), we employ the standard Tobit model to estimate (2). To address the potential endogeneity problem, we use lagged values of the explanatory variables as instruments (we use lagged values of the index and income if both are available). Moreover, to adjust standard errors for intragroup correlation, we consider the unobserved cluster effect (c_r) in the estimation.

The first two explanatory variables in (2) represent the recipient's need and play the key role in evaluating donor performance. The first variable represents recipient r's need for aid for purpose p: $index(p)_{r,t}$ is the environment for recipient r in period t measured by the indicator that corresponds to purpose p; $\underline{index(p)}$ represents the worst environment for all r and t measured by the corresponding indicator. If p represents education, then $index(p)$ can be school enrollment and small values correspond to bad environments. If p represents HIV/AIDS control, then $index(p)$ can be HIV prevalence and high values correspond to bad environments. (Data Appendix C lists purpose codes and the corresponding indicators.) This variable becomes 0 for

the recipient with $index(p)_{r,t} = \underline{index(p)}$ and positive if $index(p)_{r,t} \neq \underline{index(p)}$. This implies that, if the donor gives more aid to countries with worse environments, β_1 is negative. The second variable is the level of income for recipient r in period t. It also represents the recipient's need for aid (aid should be directed to impoverished countries regardless of purpose). As in Alesina and Dollar (2000) and Dollar and Levin (2004), we use GDP per capita to examine whether donors focus on poor countries. As in the first variable, income levels are measured by deviations from the worst environment. We appreciate donors if they have significantly negative β_1 and β_2.

We also consider two control variables. We follow the literature and include the log of population of recipient r in the initial year of period t ($\ln population_{r,t}$) from the World Bank's World Development Indicators (WDI). In the previous studies, the estimated coefficients suggest that donors allocate less aid per capita as the size of the recipient country's population increases (Alesina and Dollar, 2000; Levin and Dollar, 2005; Sawada et al., 2007). We also include the political rights index of recipient r in the initial year of period t ($democracy_{r,t}$) from Freedom House as in Alesina and Dollar (2000) and Sawada et al. (2007) to capture the effect of increasing selectivity.[7] This index can capture the potential effects of a tendency to allocate more assistance to countries with good governance, as discussed in Dollar and Levin (2004).

We use project-level data on aid from the OECD's Creditor Reporting System (CRS), which reports aid commitments for over 200 distinct purposes for all donors and recipients annually since 1973. As we will see, we use data on aid for 10 groups of purposes and for 7 five-year periods (before 1975, 1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999, 2000-2004). Unfortunately, data on indicators over time are not available in many cases. For example, data on HIV prevalence are available only for the period 2000-2004. Note that the sample of recipient countries is not identical across donors. As shown in Alesina and Dollar (2000), the direction of aid is dictated by political and strategic considerations (e.g., colonial past and political alliances). We exclude from the sample countries that have never received aid from the donor.

To estimate (2), we use indicators that measure the recipient's need for aid in each sector.

[7]The data are obtained from http://www.freedomhouse.org. The political rights index ranges from 1 (best) to 7 (worst).

Since there are more than 200 purpose codes in the CRS, it is difficult to find appropriate indicators for each of the sectors. A more practical method would be to choose a set of important sectors such as food, education and health care. In this paper, we focus on the targets in the MDGs because all donors recognize the importance of the MDGs and also because each of the targets in the MDGs has indicators to monitor the progress. These indicators measure the recipient's need for aid in each sector. It is difficult to use some of the targets in the MDGs: the indicators for Targets 11, 16 and 17 are not available for many countries; the indicators for Targets 12-15 (Goal 8) measure the donor's efforts but do not reflect the recipient's need for aid.[8] Accordingly, using 11 targets as listed in Data Appendix B and their indicators, we examine the following sectors: 1) Food; 2) Health; 3) Water supply and sanitation; 4) Basic nutrition; 5) Basic education; 6) Women in development; 7) STD control including HIV/AIDS; 8) Infectious disease control; 9) General environmental protection; 10) Telecommunications. For each of the sectors, we have several MDGs indicators that measure the recipient's need. Instead of trying to find the most appropriate one for each sector, we use all the indicators one at a time and examine whether aid is responsive to at least one of the indicators. Data Appendix C lists the CRS codes for the 10 sectors and the corresponding indicators.

Note that the first target of the MDGs is poverty reduction and the target has several poverty indices such as headcount ratio and poverty gap ratio. Since the elimination of poverty is the ultimate goal, aid should be directed to impoverished countries regardless of purpose. To examine whether donors are selective on poverty, we should use these poverty indices. However, this reduces the sample size considerably. Hence, we instead use GDP per capita, PPP (constant 2000 international dollars) from WDI. Alesina and Dollar (2000) and Dollar and Levin (2004) also use GDP per capita to examine poverty selectivity. Moreover, many empirical studies suggest that increases in income per capita are associated with reductions in poverty (Ravallion, 1995; Dollar and Kraay, 2002; Besley and Burgess, 2003). Thus, it seems reasonable to use GDP per capita as a measure of poverty.

[8] See http://devdata.worldbank.org/gmis/mdg/list_of_goals.htm for details of the MDGs.

3 Results

3.1 Estimation results for major donors

Table 1 lists the five largest donors for each purpose and each donor's share in total bilateral aid. The table shows that the five largest donors account for 60 percent to 92 percent of total aid in each sector. Hence, the selectivity of these donors can affect the overall effectiveness of aid for each sector. As shown in the bottom row of Table 1, the share of each sector in total aid ranges from 0.1 to 5.5. Aid for these 10 sectors, which are closely related to the MDGs, covers about 18 percent of total bilateral aid.[9] Tables 2-11 show the estimation results for the five largest donors in each sector. Note that each table reports the coefficient on one of the indicators that measure the need for the sector (as in Data Appendix C, there are several indicators for each sector).

Table 2 shows that malnutrition has a significantly negative effect on aid for food by the United States, Japan and Canada. The results imply that these donors give more aid for food to countries with more malnourished children (note that all the indicators including GDP per capita are measured by deviations from the worst environment). If we use GDP per capita as a measure of the recipient's need, then we can conclude that the other two large donors are also selective. Hence, the results in Table 2 suggest that the large donors that account for more than 90 percent of aid for food are selective.

Table 3 shows that infant mortality (deviations from the worst environment) has a significantly negative effect on aid for health by the United States. The results imply that only the United States gives more aid for health to countries with high rates of infant mortality. The coefficients on GDP per capita suggest that Japan, the United Kingdom and the Netherlands are also selective (if we use other indicators as a regressor, France are also selective as shown in Table 12). Thus, the results in Table 3 suggest that the large donors that account for 60 percent of aid for health are selective.

Table 4 shows that aid for water supply and sanitation is not negatively related to improved

[9] As the CRS codes suggest, aid for basic health (column 1) includes aid for basic nutrition (column 4) and aid for infectious disease control (column 8).

water source. Using the other indicator (sanitation facilities) does not alter the results qualitatively. These results imply that none of the major donors are selective on the recipient's need for water supply and sanitation although the coefficients on GDP per capita suggest that Germany, the United States and the Netherlands are selective.

Table 5 shows that malnutrition (deviations from the worst environment) has a significantly negative effect on aid for basic nutrition by the Netherlands and Japan. The results imply that these donors give more aid for basic nutrition to countries with more malnourished children. The coefficients on GDP per capita suggest that the United States is also selective. Aid by these three donors accounts for more than 60 percent of aid for this sector.

Table 6 shows that aid for basic education is not negatively related to school enrollment. Using the other two indicators (persistence to grade 5 and literacy rate) does not alter the results qualitatively. These results imply that none of the major donors are sensitive to the indicators.[10] However, the coefficients on GDP per capita suggest that all the donors are selective.

Table 7 shows that aid for women in development is not negatively related to the ratio of girls to boys in school. Using the other two indicators (ratio of young literate females to males and seats held by women in national parliament) does not alter the results qualitatively. These results imply that none of the major donors are sensitive to the indicators. However, the coefficients on GDP per capita suggest that all the donors are selective.

Table 8 shows that HIV prevalence (deviations from the worst environment) has a significantly negative effect on aid for STD control including HIV/AIDS by all five donors. The results imply that these donors (the aid from which accounts for more than 80 percent of aid for this sector) are selective. Hence, we can conclude that aid for this sector meets the recipient's needs.

Table 9 shows that incidence of tuberculosis (deviations from the worst environment) has a significantly negative effect on aid for infectious disease control by all major donors except Germany. The coefficients on GDP per capita suggest that all the donors are sensitive to income levels. The results imply that these donors (the aid from which accounts for more than 70 percent

[10]The insignificant coefficients may suggest that the indicators do not necessarily reflect the recipient's need for education. The insignificant or positive effect of school enrollment in Table 3 may be due to selection bias (in the case where data on education is available only for countries with high education levels). However, the indicators for education levels are available for many countries and there is no evidence of the selection bias.

of aid for this sector) are selective.

Table 10 shows that aid for general environmental protection is not negatively related to GDP per unit of energy use. Using the other two indicators (forest area and CO2 emissions) does not alter the results qualitatively. These results imply that none of the donors are sensitive to the indicators. However, the coefficients on GDP per capita suggest that all the donors except Japan are selective.

Table 11 shows that telephone mainlines have a significantly negative effect on aid for telecommunications by France. The coefficients on GDP per capita suggest that Japan, Germany and Canada are sensitive to income levels. These results suggest that the large donors that account for more than 70 percent of aid for telecommunications are selective.

Tables 2-11 also demonstrate that the two control variables have a significant effect on aid as in the literature. The recipient's population size has a significantly positive but small effect in most cases; a one-percent increase in population size leads to a less than one-percent increase in aid. These small coefficients reflect the small country bias. The political rights index has a significantly negative effect for Canada (in Tables 2, 9 and 11), Japan (in Table 6), the Netherlands (in Tables 4, 6, 8 and 10), Sweden (in Table 8), the United Kingdom (in Table 3) and the United States (in Tables 2-5 and 8-10). The results suggest that these donors are selective on policy and institutions in the sense that they give less aid to less democratic countries. The results are consistent with the policy elasticities in Dollar and Levin's (2004) Table 9.

3.2 Donor performance

Finally, we evaluate donor performance by investigating which donors are selective in which sectors. We estimate equation (2) using each of the MDGs indicators in Data Appendix C. Table 12 shows the results for all the 10 sectors; "A" represents $\beta_1 < 0$ (at the 10 percent significance level) for at least one indicator and "B" represents $\beta_2 < 0$ when none of the indicators shows that β_1 is significantly negative (that is, donors with B are selective at least on income levels). Table 12 demonstrates that for all the sectors at least half of the donors are selective. However,

there are few As for some sectors. This may suggest that the indicators are not relevant; for example, the indicators such as forest area may not necessarily reflect the recipient's need for environmental protection.

Table 12 shows that Switzerland, Spain, France, the Netherlands, Norway and the United States have more than four As. Since each donor has 2.9 As on average, these donors are relatively selective. If we take into account the number of Bs as well, then Canada, Germany, Denmark, the United Kingdom, Ireland and Italy are selective in more than nine sectors (7.7 sectors on average). Previous studies such as Alesina and Dollar (2000) and Dollar and Levin (2004) suggest that the Nordic countries allocate more assistance to poor countries while the results for large donors are mixed. Our results from sectoral data show that not only the Nordic countries but also large donors such as the United States and France are selective; France has five As and the United States and Germany are selective in all 10 sectors. As in Sawada et al. (2007), our results suggest that Canada, the Netherlands, and the United Kingdom also are selective and allocate more assistance to poor countries.

As long as the number of sectors that are selective is concerned, our results suggest that Japan is least selective among major donors; Japan is selective only in six sectors.[11] Clearly, the number of As and Bs in Table 12 does not necessarily reflect the donor's overall aid quality. This paper focuses on the 10 sectors that are closely related to the MDGs and they cover less than 20 percent of total bilateral aid. Most of the sectors are related to direct assistance to the poor; aid for economic infrastructure, which can play the key role in reducing poverty by promoting growth, is neglected in this paper. For donors who focus on economic infrastructure, Table 12 does not provide fair assessment. Note that Japan has traditionally been strong in giving aid for infrastructural development (Cassen and Associates, 1994, p.206). Sawada et al. (2007) show that Japan is selective on poverty using grant data. In fact, our results also show that Japan is selective in sectors with a large share of grant such as food, health and basic education. Note that these sectors account for about 10 percent of total bilateral aid, and Japan is one of the largest donors in these three sectors as shown in Table 1. Thus, while the number of As and Bs

[11] Japan has As for basic nutrition and infectious disease control. Note that aid for basic health includes aid for these two sectors.

is relatively small, Japan provides a large amount of highly quality aid in the specific areas.

Using more recent data does not alter the qualitative results above. Table 13 shows the results for the 1990-1994 and 2000-2004 (after the Millennium Declaration) subsamples. We report the results for aid for four sectors (the MDGs indicators in these sectors are available for both subsamples).[12] The results do not provide clear evidence that the selectivity of aid increases recently in these sectors; the United States and the Netherlands become selective in telecommunications (purpose 10), Japan and Germany become selective in basic education (purpose 5), and France becomes selective in general environmental protection (purpose 9). However, as in purposes 9 and 10, donors do not necessarily increase the selectivity of aid even after the Millennium Declaration.

At this time, it is difficult to explain why some donors are more selective than others. For all 22 donors, the MDGs play some role in determining aid allocation; however, all the donors except the Netherlands and the United Kingdom have no formal model for aid allocation (Jones et al., 2005). By coincidence, they are very selective as shown in Table 12.

4 Conclusions

This paper evaluates donors by investigating which donors are selective in which sectors. While many studies focus on selectivity, none of them uses sectoral data on aid. The contribution of this paper is to investigate whether aid meets the recipient's needs using sectoral data. Examining aid for 10 (groups of) sectors among more than 200 distinct purposes may not be enough to evaluate overall donor performance. However, the 10 sectors are closely related to the main targets of the MDGs that come from the Millennium Declaration signed by the 189 members of the United Nations; it is undeniable that aid for these 10 sectors is most urgently needed.

Our main results are as follows. The majority of donors are selective in each of the 10 sectors. Most large donors (except Japan) are selective in more than nine sectors. In this sense, the donors give high-quality aid. However, there is no clear evidence that the selectivity of aid

[12] Unfortunately, observations for relatively new and small donors (Spain, Greece, Ireland, Luxembourg, New Zealand, Portugal) do not include aid flows before 1995 in most sectors. The same is true in some sectors such as STD control including HIV/AIDS because of data availability for the indicators.

has increased after the Millennium Declaration in 2000. It should be noted that we evaluate donors based on selectivity not on the impact of aid. A further direction of this study will be to evaluate donor performance based on the effectiveness of aid and to examine whether selective donors contribute to the achievement of the MDGs.

Data Appendix

A. List of donors

code	name	share (percent)	code	name	share (percent)
AUS	Australia	2.0	GRC	Greece	0.1
AUT	Austria	0.8	IRL	Ireland	0.2
BEL	Belgium	1.1	ITA	Italy	3.2
CAN	Canada	3.6	JPN	Japan	22.6
CHE	Switzerland	1.6	LUX	Luxembourg	0.1
DEU	Germany	10.7	NLD	Netherlands	5.3
DNK	Denmark	1.9	NOR	Norway	1.9
ESP	Spain	1.6	NZL	New Zealand	0.1
FIN	Finland	0.6	PRT	Portugal	0.3
FRA	France	8.2	SWE	Sweden	3.7
GBR	United Kingdom	7.1	USA	United States	23.3

Note: The member countries of the OECD's Development Assistance Committee (DAC) are listed. Share is calculated using the cumulative bilateral aid (ODA commitments, constant USD2004) 1973-2005 from OECD.stat (http://stats.oecd.org/).

B. The selected targets from the MDGs

Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day

Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger

Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

Target 4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio

Target 7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS

Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

Target 9: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation

Target 18: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications

C. The CRS purpose codes and the MDGs indicators

1. **Food (code 52010)** Target 2 indicators:

   Malnutrition prevalence, weight for age (% of children under 5)

   Prevalence of undernourishment (% of population)

2. **Health (code 12110-12282)** Target 5 and Target 6 indicators:

   Births attended by skilled health staff (% of total)

   Mortality rate, under-5 (per 1,000)

   Mortality rate, infant (per 1,000 live births)

   Immunization, measles (% of children ages 12-23 months)

3. **Water supply and sanitation (code 14010-14081)** Target 10 indicators:

   Improved water source (% of population with access)

   Improved sanitation facilities (% of population with access)

4. **Basic nutrition (code 12240)** Target 2 indicators:

   Malnutrition prevalence, weight for age (% of children under 5)

   Prevalence of undernourishment (% of population)

5. **Basic education (code 11220-11240)** Target 3 indicators:

   School enrollment, primary (% gross)

   Persistence to grade 5, total (% of cohort)

   Literacy rate, youth total (% of people ages 15-24)

6. **Women in development (code 42010)** Target 4 indicators:

   Ratio of girls to boys in primary and secondary education (%)

   Ratio of young literate females to males (% ages 15-24)

   Proportion of seats held by women in national parliament (%)

7. **STD control including HIV/AIDS (code 13040)** Target 7 indicators:

   Female adults with HIV (% of population ages 15-49 with HIV)

   Prevalence of HIV, total (% of population ages 15-49)

8. **Infectious disease control (code 12250)** Target 8 indicators:

   Incidence of tuberculosis (per 100,000 people)

   Tuberculosis cases detected under DOTS (%)

9. **General environmental protection (code 41010-41082)** Target 9 indicators:

   Forest area (% of land area)

   GDP per unit of energy use (constant 2000 PPP per kg of oil equivalent)

   CO2 emissions (metric tons per capita)

10. **Telecommunications (code 22020)** Target 18 indicators:

    Telephone mainlines (per 1,000 people)

Note: Five-year averages of each indicator are used for estimation. All the variables are obtained from the World Bank's WDI CD-ROM.

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Table 1: The five largest donors in each sector: cumulative bilateral aid 1973-2005

	Purpose of Aid									
	1	2	3	4	5	6	7	8	9	10
largest	USA	USA	JPN	USA	USA	NLD	USA	USA	JPN	JPN
	(69)	(23)	(36)	(45)	(21)	(21)	(51)	(36)	(35)	(43)
2nd	JPN	JPN	DEU	NLD	GBR	NOR	GBR	GBR	USA	FRA
	(7)	(14)	(16)	(13)	(19)	(17)	(17)	(21)	(16)	(18)
3rd	GBR	GBR	USA	JPN	NLD	CAN	SWE	JPN	DEU	DEU
	(6)	(11)	(11)	(8)	(11)	(15)	(6)	(8)	(9)	(11)
4th	CAN	FRA	FRA	SWE	JPN	USA	CAN	CAN	NLD	ITA
	(6)	(6)	(8)	(7)	(11)	(11)	(5)	(5)	(9)	(5)
5th	DEU	NLD	NLD	CAN	SWE	DNK	NLD	DEU	FRA	CAN
	(4)	(6)	(5)	(6)	(8)	(8)	(5)	(4)	(4)	(4)
Sector's share in total bilateral aid (percent)										
	5.5	3.2	5.0	0.1	1.1	0.1	0.7	0.5	1.4	1.7

Note: Figures in parentheses are the donor's share (percent) in total bilateral aid for each sector. See Data Appendix A for the list of donor codes and Data Appendix C for the list of aid purposes.

Table 2: Estimation results for the five largest donors: Food

	USA	JPN	GBR	CAN	DEU
malnutrition	-0.052	-0.401	-0.087	-0.194	-0.062
	(0.027)*	(0.150)***	(0.114)	(0.110)*	(0.046)
GDP per capita	-0.003	-0.028	-0.087	-0.000	-0.016
	(0.004)	(0.014)**	(0.040)**	(0.008)	(0.006)***
population	0.003	-0.019	0.002	0.009	0.003
	(0.002)*	(0.006)***	(0.008)	(0.003)***	(0.002)
democracy	-0.002	-0.004	-0.002	-0.004	0.000
	(0.001)**	(0.004)	(0.007)	(0.002)*	(0.002)
observations	159	159	134	162	134

Note: The Tobit model with endogenous regressors is used. The dependent variable is food aid (code 52010). Malnutrition and GDP per capita are measured by deviations from the worst environment. Instruments are the lagged values of malnutrition and GDP per capita. Figures in parentheses are standard errors. Intragroup correlation is adjusted. The superscripts *, **, *** indicate significance at 10, 5, 1 percent, respectively. See Data Appendix A for the list of donor codes.

Table 3: Estimation results for the five largest donors: Health

	USA	JPN	GBR	FRA	NLD
infant mortality	-0.037	0.128	0.139	-0.028	0.027
	(0.022)*	(0.034)***	(0.055)***	(0.026)	(0.031)
GDP per capita	-0.006	-0.019	-0.046	-0.002	-0.021
	(0.002)***	(0.004)***	(0.012)***	(0.003)	(0.005)***
population	0.004	0.007	0.011	0.004	0.006
	(0.001)***	(0.001)***	(0.003)***	(0.002)***	(0.001)***
democracy	-0.002	0.001	-0.007	-0.001	-0.001
	(0.001)***	(0.001)	(0.003)**	(0.001)	(0.001)
observations	536	536	536	536	536

Note: The Tobit model with endogenous regressors is used. The dependent variable is aid for health (code 12110-12282). Infant mortality and GDP per capita are measured by deviations from the worst environment. Instruments are the lagged values of infant mortality and GDP per capita. Figures in parentheses are standard errors. Intragroup correlation is adjusted. The superscripts *, **, *** indicate significance at 10, 5, 1 percent, respectively. See Data Appendix A for the list of donor codes.

Table 4: Estimation results for the five largest donors: Water supply and sanitation

	JPN	DEU	USA	FRA	NLD
water source	0.009	0.009	0.205	0.002	0.016
	(0.008)	(0.007)	(0.130)	(0.010)	(0.013)
GDP per capita	-0.002	-0.007	-0.064	-0.003	-0.020
	(0.004)	(0.003)***	(0.036)*	(0.004)	(0.006)***
population	0.012	0.006	0.025	0.005	0.013
	(0.003)***	(0.002)***	(0.015)*	(0.001)***	(0.004)***
democracy	0.000	-0.000	-0.008	0.003	-0.006
	(0.002)	(0.001)	(0.005)*	(0.002)	(0.003)**
observations	210	210	210	210	210

Note: The Tobit model with endogenous regressors is used. The dependent variable is aid for water supply and sanitation (code 14010-14081). Improved water source and GDP per capita are measured by deviations from the worst environment. Instruments are the lagged value of GDP per capita. Figures in parentheses are standard errors. Intragroup correlation is adjusted. The superscripts *, **, *** indicate significance at 10, 5, 1 percent, respectively. See Data Appendix A for the list of donor codes.

Table 5: Estimation results for the five largest donors: Basic nutrition

	USA	NLD	JPN	SWE	CAN
malnutrition	0.014	-0.289	-2.392	-0.076	-0.047
	(0.023)	(0.174)*	(1.273)*	(0.098)	(0.081)
GDP per capita	-0.010	-0.016	0.403	0.020	-0.018
	(0.003)***	(0.032)	(0.178)**	(0.536)	(0.012)
population	0.004	0.030	0.083	0.073	0.013
	(0.002)**	(0.020)	(0.083)	(0.033)**	(0.006)**
democracy	-0.003	-0.020	0.051	0.007	0.003
	(0.001)**	(0.015)	(0.075)	(0.021)	(0.005)
observations	159	159	159	299	159

Note: The Tobit model with endogenous regressors is used. The dependent variable is aid for basic nutrition (code 12240). Malnutrition and GDP per capita are measured by deviations from the worst environment. Instruments are the lagged values of malnutrition and GDP per capita (for Sweden, GDP per capita only). Figures in parentheses are standard errors. Intragroup correlation is adjusted. The superscripts *, **, *** indicate significance at 10, 5, 1 percent, respectively. See Data Appendix A for the list of donor codes.

Table 6: Estimation results for the five largest donors: Basic education

	USA	GBR	NLD	JPN	SWE
school enrollment	0.013	0.232	0.028	0.011	0.119
	(0.019)	(0.062)***	(0.030)	(0.017)	(0.062)*
GDP per capita	-0.020	-0.060	-0.034	-0.024	-0.066
	(0.007)***	(0.015)***	(0.008)***	(0.005)***	(0.020)***
population	0.009	0.028	0.010	0.006	0.016
	(0.004)***	(0.012)**	(0.003)***	(0.003)**	(0.008)**
democracy	-0.002	-0.008	-0.008	-0.006	-0.007
	(0.002)	(0.006)	(0.003)***	(0.002)***	(0.007)
observations	237	237	237	237	237

Note: The Tobit model with endogenous regressors is used. The dependent variable is aid for basic education (code 11220-11240). School enrollment and GDP per capita are measured by deviations from the worst environment. Instruments are the lagged values of school enrollment and GDP per capita. Figures in parentheses are standard errors. Intragroup correlation is adjusted. The superscripts *, **, *** indicate significance at 10, 5, 1 percent, respectively. See Data Appendix A for the list of donor codes.

Table 7: Estimation results for the five largest donors: Women in development

	NLD	NOR	CAN	USA	DNK
girls/boys in school	0.059	0.065	0.075	-0.020	0.101
	(0.033)*	(0.028)**	(0.044)*	(0.082)	(0.136)
GDP per capita	-0.018	-0.019	-0.021	-0.022	-0.087
	(0.006)***	(0.005)***	(0.008)***	(0.011)**	(0.031)***
population	0.010	0.009	0.024	0.019	0.068
	(0.003)***	(0.003)***	(0.007)***	(0.009)**	(0.021)***
democracy	-0.002	-0.001	-0.002	-0.013	-0.029
	(0.002)	(0.001)	(0.003)	(0.008)	(0.013)**
observations	184	184	184	184	184

Note: The Tobit model with endogenous regressors is used. The dependent variable is aid for women in development (code 42010). Ratio of girls to boys in school and GDP per capita are measured by deviations from the worst environment. Instruments are the lagged values of ratio of girls to boys in school and GDP per capita. Figures in parentheses are standard errors. Intragroup correlation is adjusted. The superscripts *, **, *** indicate significance at 10, 5, 1 percent, respectively. See Data Appendix A for the list of donor codes.

Table 8: Estimation results for the five largest donors: STD control including HIV/AIDS

	USA	GBR	SWE	CAN	NLD
HIV prevalence	-0.045	-0.185	-0.140	-0.106	-0.090
	(0.014)***	(0.059)***	(0.033)***	(0.025)***	(0.016)***
GDP per capita	-0.009	-0.037	-0.021	-0.020	-0.013
	(0.002)***	(0.014)***	(0.006)***	(0.005)***	(0.004)***
population	0.005	0.031	0.013	0.014	0.007
	(0.001)***	(0.009)***	(0.003)***	(0.003)***	(0.002)***
democracy	-0.001	-0.003	-0.006	0.000	-0.004
	(0.001)*	(0.003)	(0.002)**	(0.002)	(0.001)***
observations	115	115	115	115	115

Note: The Tobit model with endogenous regressors is used. The dependent variable is aid for STD control including HIV/AIDS (code 13040). HIV prevalence and GDP per capita are measured by deviations from the worst environment. Instruments are the lagged value of GDP per capita. Figures in parentheses are standard errors. Intragroup correlation is adjusted. The superscripts *, **, *** indicate significance at 10, 5, 1 percent, respectively. See Data Appendix A for the list of donor codes.

Table 9: Estimation results for the five largest donors: Infectious disease control

	USA	GBR	JPN	CAN	DEU
tuberculosis	-0.025	-0.374	-0.342	-0.115	-0.055
	(0.013)**	(0.146)***	(0.200)*	(0.054)**	(0.080)
GDP per capita	-0.009	-0.080	-0.071	-0.020	-0.032
	(0.002)***	(0.024)***	(0.023)***	(0.008)***	(0.015)**
population	0.005	0.057	0.040	0.019	0.028
	(0.001)***	(0.022)***	(0.017)**	(0.006)***	(0.015)*
democracy	-0.002	-0.000	-0.010	-0.011	0.000
	(0.001)***	(0.009)	(0.007)	(0.004)***	(0.005)
observations	255	255	255	255	140

Note: The Tobit model with endogenous regressors is used. The dependent variable is aid for infectious disease control (code 12250). Incidence of tuberculosis and GDP per capita are measured by deviations from the worst environment. Instruments are the lagged value of GDP per capita. Figures in parentheses are standard errors. Intragroup correlation is adjusted. The superscripts *, **, *** indicate significance at 10, 5, 1 percent, respectively. See Data Appendix A for the list of donor codes.

Table 10: Estimation results for the five largest donors: General environmental protection

	JPN	USA	DEU	NLD	FRA
GDP/energy use	0.051	0.012	0.034	0.026	0.023
	(0.018)***	(0.006)**	(0.016)**	(0.012)**	(0.009)***
GDP per capita	-0.016	-0.014	-0.030	-0.041	-0.013
	(0.012)	(0.004)***	(0.013)**	(0.013)***	(0.005)***
population	0.041	0.004	0.026	0.013	0.006
	(0.011)***	(0.002)*	(0.009)***	(0.004)***	(0.003)**
democracy	-0.003	-0.003	-0.009	-0.013	0.003
	(0.005)	(0.002)*	(0.006)	(0.005)***	(0.002)
observations	405	339	405	405	405

Note: The Tobit model with endogenous regressors is used. The dependent variable is aid for general environmental protection (code 41010-41082). GDP per unit of energy use and GDP per capita are measured by deviations from the worst environment. Instruments are the lagged value of GDP per capita. Figures in parentheses are standard errors. Intragroup correlation is adjusted. The superscripts *, **, *** indicate significance at 10, 5, 1 percent, respectively. See Data Appendix A for the list of donor codes.

Table 11: Estimation results for the five largest donors: Telecommunications

	JPN	FRA	DEU	ITA	CAN
telephone mainlines	0.009	-0.014	0.020	-0.021	0.013
	(0.008)	(0.004)***	(0.029)	(0.034)	(0.010)
GDP per capita	-0.027	0.002	-0.111	0.020	-0.034
	(0.015)*	(0.009)	(0.066)*	(0.072)	(0.019)*
population	0.019	0.008	0.044	0.059	0.031
	(0.004)***	(0.003)***	(0.014)***	(0.017)***	(0.009)***
democracy	0.002	0.001	-0.004	-0.005	-0.009
	(0.003)	(0.003)	(0.011)	(0.015)	(0.003)***
observations	591	591	591	591	591

Note: The Tobit model with endogenous regressors is used. The dependent variable is aid for telecommunications (code 22020). Telephone mainlines and GDP per capita are measured by deviations from the worst environment. Instruments are the lagged value of GDP per capita. Figures in parentheses are standard errors. Intragroup correlation is adjusted. The superscripts *, **, *** indicate significance at 10, 5, 1 percent, respectively. See Data Appendix A for the list of donor codes.

Table 12: Selectivity of aid for 22 donors

	Purpose of Aid										# of
	1	2	3	4	5	6	7	8	9	10	A+B (A)
AUS	A	B	B		B	B	A	A			7 (3)
AUT		B	B	A	B	B	A	B			7 (2)
BEL	A	B	B		B		B	A	B		7 (2)
CAN	A	B	B		B	B	A	A	B	B	9 (3)
CHE	A	B	B	A	B	B	A	A	B		9 (4)
DEU	A	B	B	B	B	B	A	B	B	B	10(2)
DNK	A	B	B	A	B	B	A	B	B	B	10(3)
ESP	A	B		A	B		A	A			6 (4)
FIN		B		A	B	B	A	A	B		7 (3)
FRA		B			A	A	A	A	B	A	7 (5)
GBR	B	B	B	A	B	B	A	A		B	9 (3)
GRC		B				A		B		B	4 (1)
IRL	B	B	A	B	B	B	A	A	B	B	10(3)
ITA	A	B	B	B	B	B	A	B	B		9 (2)
JPN	A	B		A	B			A		B	6 (3)
LUX	B				A		A	B			4 (2)
NLD	B	B	B	A	B	B	A	A	B	A	10(4)
NOR	A	B	B	A	B	B	A	A	B	B	10(4)
NZL	B	B				A	A			A	5 (3)
PRT		A	A			B		A	B	B	6 (3)
SWE		B	B		B	B	A	B	B	B	8 (1)
USA	A	A	B	B	B	B	A	A	B	B	10(4)

Note: "A" represents $\beta_1 < 0$ at the 10 percent significance level for at least one indicator. "B" represents the case where β_2 is significantly negative when β_1 is not significantly negative. See Data Appendix A for the list of donor codes and Data Appendix C for the list of aid purposes.

Table 13: Selectivity of aid after the Millennium Declaration: the nine largest donors

purpose	2		5		9		10	
year	1990	2000	1990	2000	1990	2000	1990	2000
USA	A	B	B	B	B	B		B
JPN	B	B		B				
DEU	B	B		B	A	B		
FRA	A	A	A	A		B		
GBR	B	B	B	B	B		B	
NLD	B	B	B	B	B	B		A
SWE	B	B	B	B	B	B		
CAN	A	A	A	B	B	B		
ITA	B	B	A	B	B			

Note: "A" represents $\beta_1 < 0$ at the 10 percent significance level for at least one indicator. "B" represents the case where β_2 is significantly negative when β_1 is not significantly negative. See Data Appendix A for the list of donor codes and Data Appendix C for the list of aid purposes.