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An Index of Donor Performance

By David Roodman

Abstract

The Commitment to Development Index of the Center for Global Development rates 21 rich countries on the "development-friendliness" of their policies. It is revised and updated annually. In the 2004 edition, the component on foreign assistance combines quantitative and qualitative measures of official aid, and of fiscal policies that support private charitable giving. The quantitative measure uses a net transfers concept, as distinct from the net flows concept in the net Official Development Assistance measure of the Development Assistance Committee, which does not net out interest received. The qualitative factors are three: a penalty for tying aid; a discounting system that favors aid to poorer, better-governed recipients; and a penalty for "project proliferation." The selectivity weighting approach avoids some conceptual problems inherent in the Dollar and Levin (2004) elasticity-based method. The proliferation penalty derives from a calibrated model of aid transaction cost developed in Roodman (forthcoming). The charitable giving measure is based on an estimate of the share of observed private giving to developing countries that is attributable to a) lower overall taxes (income effect) and b) specific tax incentives for giving (price effect). Despite the adjustments, overall results are dominated by differences in quantity of official aid given. This is because while there is a seven-fold range in net concessional transfers/GDP among the score countries, variation in overall aid quality across donors appears far lower, and private giving is generally small. Denmark, the Netherlands, Norway, and Sweden score highest while the largest donors in absolute terms, the United States and Japan, score in the bottom third. Standings by the 2004 methodology have been relatively stable since 1995.

An Index of Donor Performance

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Rich nations are often compared on how much they share their wealth with poorer countries. The Nordics and the Netherlands, it is noted, are the most generous with foreign assistance, while the United States gives the least aid per unit of gross domestic product. In 2002, the final reports of both the International Conference on Financing for Development, in Monterrey, Mexico, and the World Summit on Sustainable Development, in Johannesburg, judged donors on aid quantity too, calling on them all to move toward giving at least 0.7 percent of their national income in aid, as few now do. (UN 2002a, p. 9; UN 2002b, p. 52)

The measure of aid implicitly or explicitly referenced in all these comparisons and benchmarks is "net overseas development assistance" (net ODA), which is a measure of aid quantity defined by the donor-funded Development Assistance Committee (DAC) in Paris. DAC counts total grants and concessional (low-interest) loans given to developing countries, and subtracts principle repayments received from those developing countries on outstanding concessional loans (thus the "net").[2]

Yet it is widely recognized that some dollars and euros of foreign aid do more good than others. While some aid has funded vaccinations whose effectiveness can be measured in pennies per life saved, other aid has handsomely paid donor-country consultants to write policy reports that collect dust on shelves, or merely helped recipients make interest payments on old aid loans. As a result, a simple quantity metric is hardly the last word on donor performance.

This paper describes an index of donor performance that takes the standard quantity measure as a starting point. It is motivated by the desire to incorporate determinants of aid impact other quantity into the Commitment to Development Index (Roodman 2004; CGD and *FP* 2004). The aid index was introduced last year (Roodman 2003) and has since been revised in response to comments.[3] At its heart, it is an attempt to quantify some aspects of aid quality. But it also departs from net ODA in its definition of aid quantity, and in factoring in tax policies that support private giving.

Because this aid measure is designed to draw entirely from available statistics, primarily from the extensive DAC databases, many—perhaps most—important aspects of aid quality are still not reflected in the index—factors such as the realism of project designs and the effectiveness of structural adjustment conditionality. Moreover, most variation in aid quality may occur *within* donor's aid portfolios rather than across donors. As a result, while there is a sevenfold range in net ODA/GDP among the 21 rich countries scored here, the calculations in this paper reveal nothing like that sort of variation in aid quality across donors. Moreover, including private giving does not change this picture because it appears to be much smaller than official giving in most countries. Thus sheer quantity of official aid is still the dominant determinant of donors' scores on this index, as was noted last year, and as McGillivray (2003) emphasized in his critique.

Still, the measure does highlight some interesting differences among donors, and does somewhat rearrange the usual standings. Japan is especially hurt the netting out of its large

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[2] DAC considers a loan concessional if it has a grant element of at least 25 percent of the loan value, using a 10 percent discount rate.

[3] The major changes since 2003 are: no longer netting out administrative costs; no longer discounting multilateral technical cooperation as if it were tied; a "project proliferation" penalty based on the share of committed aid dollars committed in small amounts; a new selectivity weighting system that distinguishes between program and project aid; and a reward for tax policies that encourage private charitable giving.

amounts of interest received. Small donors such as Greece, Ireland, and New Zealand are pulled low by the apparent tendency to spread their small aid budgets thinly, over many projects.[4]

In the last three decades or so, researchers have taken three broad approaches to cross-country quantitative assessment of aid quality. Since at least the early 1970s, econometric studies have done of the determinants of donors' aid allocations, such as recipient's poverty rate and level of oil exports (citations are below). Though often not evaluative in character, the approach offers a way to measure one aspect of aid quality, selectivity, by using the regression coefficients on indicators of recipient need and development potential. How best to integrate such results with aid quantity into a single performance index is less obvious, however. Attempts to create a single index began with Mark McGillivray (1989, 1994), who essentially computed the weighted sum to each donor's aid disbursements to all recipients, basing weights on recipient GDP/capita as an indicator of need. The third approach is the newest and most sophisticated. Drawing on the literature on determinants of aid allocation, McGillivray, Leavy, and White (2002), formally model allocation, giving donors utility functions that depend on the commercial and geopolitical value of recipients, as well as developmental need and potential; compute optimal allocations; then penalize donors to the extent they deviate from optima.

The donor performance measure described here is closest in spirit to McGillivray's original, but more ambitious than all previous approaches in scope of the information that it combines into single index. It factors quality of recipient governance as well as poverty into the selectivity scoring system, penalizes tying of aid, handles reverse flows (debt service) in a consistent way, penalizes project proliferation (overloading recipient governments with the administrative burden of many small aid projects), and rewards tax policies that encourage private charitable giving to developing countries.

This paper details the calculations and illustrates them with 2002 data, the latest available. The first six sections describe the computations involved in rating official aid programs: their final output is "quality-adjusted aid quantity" in dollars, or simply "quality-adjusted aid." They treat multilateral and bilateral donors in parallel, so that the World Bank's main concessional lending program, for instance, can be compared for selectivity to Denmark's aid program. The section describing the proliferation penalty is informed by a new model of project proliferation costs that will be published separately (Roodman 2004b). The penultimate section describes how the quality-adjusted aid of multilaterals is allocated back to the bilaterals that fund them, in order to give national governments scores on official aid that reflect both their own aid programs and their contributions to multilaterals. The last section describes how the aid index now factors in tax policies that favor private charitable giving.

1. The starting point: gross disbursements of ODA and OA

The starting point for the calculation of quality-adjusted official aid is gross disbursements of ODA and Official Aid (OA), disaggregated by donor *and* recipient. In DAC terminology, OA is concessional aid meeting the ODA definition, except that where ODA goes to countries conventionally thought of as developing, OA goes to "Part II" countries—most European states that emerged out of the Soviet bloc and richer non-DAC members such as Israel and Singapore. DAC excludes OA from its most frequently cited statistics, perhaps out of concern that assistance to

[4] The results in this paper differ slightly from the final CDI aid results published in Roodman (2004) and CGD and *FP* (2004) because of a few small changes made after the official numbers were frozen, one of them correcting a mistake. Later footnotes describe them. The changes have minor effects on scores and ranks.

such rich countries stretches the meaning of "aid." I include OA because some Part II countries, such as Ukraine, are poorer than many Part I countries.[5] And since the selectivity adjustment (detailed below) heavily discounts aid to the richest developing countries, there is less risk that counting OA will misrepresent aid flows.

DAC reports both commitments and disbursements of ODA and OA, but its press releases normally focus on disbursement. Similarly, I use disbursements. It has been argued that commitments better indicate donor policies (Dudley and Montmarquette 1976) on the idea that recipient absorptive capacity limits largely explain any shortfalls in disbursements. But commitment-disbursement divergences could reflect bottlenecks on either side of the donor-recipient relationship. If they are large and persistent, they may reflect a tendency of certain donors to promise more than they can realistically deliver, or a failure to learn from history that certain recipients cannot absorb aid as fast as donors hope. On balance, it seems best to avoid the risk of rewarding donors for overpromising aid or systematically underestimating the capacity to absorb it, by sticking with disbursements.

Gross disbursements of ODA and OA, which I call simply "gross aid," are in the first column of Table 2. Among bilaterals, the United States gave the most gross aid to non-DAC governments in 2002, while Japan came in second. Among multilaterals, the European Commission disbursed the most, followed by the World Bank's International Development Assosiciation (IDA). (Bilateral contributions to multilaterals are not counted here. They enter later.) Most of the calculations in the aid index are done for each donor-recipient pair. The figures in Table 2, which are donor-level totals, are *not* used in the calculations, but are summaries for illustration. The final row of the table is an exception: it shows the flow for one donor-recipient pair, the United States and Colombia. I will continue the United States-Colombia in order to illustrate the actual calculations at the level of the donor-recipient pair.[6]

As described in section 4, the selectivity adjustment continues to exempt emergency aid from discounting and—new this year—applies different discounts to program and project aid. By "project aid" is meant funding for activities over which donors try to exercise detailed, ongoing control. "Program aid" is budget support, adjustment loans, debt relief, and sector-wide action programs (SWAPs)—aid over which the recipient ideally has near-complete control. Treating the three types of aid differently later necessitates splitting donors' gross aid into three categories now and carrying the distinction through.

Distinguishing emergency from non-emergency disbursements is easy since DAC provides this information in Table 2a of the DAC database. But to split non-emergency aid into project from program flows, I had to turn to the Creditor Reporting System database, also maintained by DAC. The CRS has detailed information by aid commitment. In particular, it classifies commitments according to five-digit purpose codes. Table 1 shows the 36 purpose codes that I interpreted as program aid. The remaining 205 codes I treat as project aid, except for those beginning with 7 (emergency aid) or 9 (miscellaneous items such as support to international

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[5] See http://www.oecd.org/document/45/0,2340,en_2649_34447_2093101_1_1_1_1,00.html for lists of Part I and Part II countries.

[6] Unlike in 2003, administrative costs are not subtracted from bilateral flows. Last year, I argued that "large donor-to-donor variations in their share of gross ODA may indicate inefficiencies. At any rate, netting out administrative costs gives a truer picture of the amount of aid reaching recipients, which is a legitimate basis for comparison." (Roodman 2003a) But low administrative costs may also reflect lack of monitoring and evaluation, which can reduce aid quality. I am indebted to Mark McGillivray (2003) for making this point.

NGOs).[7] Inevitably, the division is only approximate since some of the "program" codes may include project support and vice versa. Still, it seems likely that this categorization brings suseful information to the scoring of donors.

In translating this commitments data to disbursements estimates, I assumed that for each donor-recipient pair, the project-program proportions are the same for commitments as disbursements (leaving aside emergency aid). But in estimating this proportion for a given year's disbursements, I used the last three years of commitments data. Commitments often lead to disbursements over several years. Based on my examination of some extracts from the World Bank's Development Gateway project database, it appears that projects last about three years on average. Thus for 2002, projects and programs receiving commitments in 2000–02 were assumed to be active. Implicitly, I assume that a commitment in year x leads to three equal disbursements in years x, x+1, and x+2. The splitting of 2002 disbursements at the donor level is also shown in Table 2.

Table 1. Purpose codes in Creditor Reporting System database interpreted as program aid

Purpose code	Purpose name	Purpose description
11110	Education policy & admin. management	Education sector policy, planning and programmes; aid to education ministries, administration and management systems; institution capacity building and advice; school management and governance; curriculum and materials development; unspecified education a
12110	Health policy & admin. management	Health sector policy, planning and programmes; aid to health ministries, public health administration; institution capacity building and advice; medical insurance programmes; unspecified health activities.
13010	Population policy and admin. mgmt	Population/development policies; census work, vital registration; migration data; demographic research/analysis; reproductive health research; unspecified population activities.
14010	Water resources policy/admin. mgmt	Water sector policy, planning and programmes; water legislation and management; institution capacity building and advice; water supply assessments and studies; groundwater, water quality and watershed studies; hydrogeology; excluding agricultural water re
15010	Economic & dvpt policy/planning	Macro-economic, fiscal and monetary policy and planning; social planning; economic and social analysis and forecasting; structural reforms; development planning; organisational development; support to ministries involved in aid co-ordination; other minist
16110	Employment policy and admin. mgmt.	Employment policy and planning; labour law; labour unions; institution capacity building and advice; support programmes for unemployed; employment creation and income generation programmes; occupational safety and health; combating child labour.
16210	Housing policy and admin. management	Housing sector policy, planning and programmes; excluding low-cost housing and slum clearance (16220).
16310	Social/welfare services	Social legislation and administration; institution capacity building and advice; social security and other social schemes; special programmes for the elderly, orphans, the disabled, street children; social dimensions of structural adjustment; unspecified
21010	Transport policy & admin. management	Transport sector policy, planning and programmes; aid to transport ministries; institution capacity building and advice; unspecified transport; activities that combine road, rail, water and/or air transport.
22010	Communications policy & admin. mgmt	Communications sector policy, planning and programmes; institution capacity building and advice; including postal services development; unspecified communications activities.
23010	Energy policy and admin. management	Energy sector policy, planning and programmes; aid to energy ministries; institution capacity building and advice; unspecified energy activities including energy conservation.
24010	Financial policy & admin. management	Finance sector policy, planning and programmes; institution capacity building and advice; financial markets and systems.
25010	Business services	Support to trade and business associations, chambers of commerce; legal and regulatory reform aimed at improving business climate; private sector institution capacity building and advice. Where sector cannot be specified: general support to private secto
31110	Agricultural policy & admin. mgmt	Agricultural sector policy, planning and programmes; aid to agricultural ministries; institution capacity building and advice; unspecified agriculture.

[7] There are two more exceptions: codes 51000 and 60000, which are super-category codes for program aid (as I define it), are not listed in Table 1 because they are not actually used in the CRS database.

Purpose code	Purpose name	Purpose description
31210	Forestry policy & admin. management	Forestry sector policy, planning and programmes; institution capacity building and advice; forest surveys; unspecified forestry and agro-forestry activities.
31310	Fishing policy and admin. management	Fishing sector policy, planning and programmes; institution capacity building and advice; ocean and coastal fishing; marine and freshwater fish surveys and prospecting; fishing boats/equipment; unspecified fishing activities.
32110	Industrial policy & admin. mgmt	Industrial sector policy, planning and programmes; institution capacity building and advice; unspecified industrial activities; manufacturing of goods not specified below.
32210	Mineral/mining policy & admin. mgmt	Mineral and mining sector policy, planning and programmes; mining legislation, mining cadastre, mineral resources inventory, information systems, institution capacity building and advice; unspecified mineral resources exploitation.
32310	Construction policy and admin. mgmt	Construction sector policy and planning; excluding construction activities within specific sectors (e.g., hospital or school construction).
33110	Trade policy and admin. management	Trade policy and planning; domestic marketing, trade, service industries, patents and trademarks.
33210	Tourism policy and admin. management	
41010	Environmental policy and admin. mgmt	Environmental policy, laws, regulations and economic instruments; administrational institutions and practices; environmental and land use planning and decision-making procedures; seminars, meetings; miscellaneous conservation and protection measures not s
42010	Women in development (including multisector. WID proj. & programmes)	Including multisectoral WID projects and programmes; promotion of and support to WID groups and networks; conferences, seminars, etc.
43010	Multisector aid	
51010	Structural adjustment	When not allocable by sector.
52010	Food security programmes/food aid	Supply of edible human food under national or international programmes including transport costs; cash payments made for food supplies; project food aid; food aid for market sales; excluding emergency food aid.
53010	Balance-of-payments support	Including general programme assistance (when not allocable by sector).
53020	Budget support	Including administrative budget support.
53030	Import support (capital goods)	Capital goods and services; lines of credit.
53040	Import support (commodities)	Commodities, general goods and services, oil imports.
60010	Action relating to debt	Actions falling outside the code headings below; training in debt management.
60020	Debt forgiveness	
60030	Relief of multilateral debt	Grants or credits to cover debt owed to multilateral financial institutions; including contributions to HIPC Trust Fund.
60040	Rescheduling and refinancing	
60050	Refinancing	
60063	Debt buy-back	Purchase of debt for the purpose of cancellation.

Table 2. Gross aid by donor, with estimated breakdown by type, 2002

Donor	Total	Project	Program	Emergency	Project	Program	Emergency
		---------- (million $) ---------			--------- (percent) ---------		
Australia	777	495	184	98	64	24	13
Austria	509	323	152	34	63	30	7
Belgium	758	463	267	29	61	35	4
Canada	1,633	823	618	191	50	38	12
Denmark	1,178	788	281	110	67	24	9
Finland	291	165	84	41	57	29	14
France	5,624	2,216	3,125	284	39	56	5
Germany	4,538	2,948	1,361	229	65	30	5
Greece	123	106	10	7	86	8	5
Ireland	268	182	69	17	68	26	6
Italy	1,208	674	451	84	56	37	7
Japan	9,811	6,732	3,042	36	69	31	0
Luxembourg	119	106	0	13	89	0	11
Netherlands	2,677	1,831	633	212	68	24	8
New Zealand	92	81	0	11	88	0	12
Norway	1,193	715	226	253	60	19	21
Portugal	187	122	63	2	65	34	1
Spain	1,164	866	266	32	74	23	3
Sweden	1,351	743	304	304	55	23	22
Switzerland	826	456	203	167	55	25	20
United Kingdom	3,696	1,753	1,536	407	47	42	11
United States	13,847	7,084	5,270	1,494	51	38	11
AfDF	741	407	334	0	55	45	0
Arab Agencies	300	300	0	0	100	0	0
AsDF	1,168	862	307	0	74	26	0
CarDB	119	119	0	0	100	0	0
EBRD	72	72	0	0	100	0	0
EC	10,145	6,660	2,945	540	66	29	5
GEF	137	137	0	0	100	0	0
IDA	6,667	3,000	3,666	0	45	55	0
IDB Sp F	425	235	190	0	55	45	0
IFAD	250	207	43	0	83	17	0
Montreal Protocol	60	60	0	0	100	0	0
Nordic Dev.Fund	35	35	0	0	100	0	0
Other UN	630	630	0	0	100	0	0
SAF+ESAF(IMF)	2,936	2,936	0	0	100	0	0
UNDP	278	278	0	0	100	0	0
UNFPA	312	312	0	0	100	0	0
UNHCR	655	655	0	0	100	0	0
UNICEF	571	477	94	0	84	16	0
UNTA	478	478	0	0	100	0	0
WFP	352	352	0	0	100	0	0
U.S.-Colombia	346	322	23	0	93	7	0

2. Subtracting debt service

The next step is to net debt service out of gross aid flows. The computation is straightforward, and done in the belief that net transfers are a better measure of cost to the donor's treasury and benefit to the recipient. This departs somewhat from the approach of the DAC, whose net ODA/OA statistic is net of principal payments (on concessional loans), but not interest payments. The rationale for the DAC approach appears to be an analogy with net foreign direct investment.[8] Only return of capital is netted out of net FDI, not repatriation of earnings. Similarly, only amortization is netted out of net ODA, not interest, which can be seen as the donors' "earnings" on aid investment.

I find the analogy inapt. In the case of FDI, return of capital can be expected to reduce the host country's capital stock much more than repatriation of an equal amount of profits. Put otherwise, when foreign corporations locally reinvest profits, they generally do increase the host country's capital stock—and so net FDI counts local reinvestment as an additional flow. But when the government of Ghana sends a check to the government of Japan for $1 million, it hardly matters for either party whether it says "interest" or "principal" in the check's memo field. It seems unlikely that interest and principal payments have different effects on Ghana's capital stock and development.

Moreover, studies have found evidence of defensive lending on the part of bilateral and multilateral lenders, whereby new loans go to servicing old ones (Ratha 2001; Birdsall, Claessens, and Diwan 2002). To the extent that donors are lending to cover interest payments they receive on concessional loans, net ODA counts the defensive disbursements as aid even though they are not really aid.

For these reasons, the CDI aid index treats all debt service uniformly. "Net aid" is defined simply as "gross aid" less debt service received on concessional loans. (See Table 3.) For purposes of the project/program/emergency categorization, debt service is treated as negative program aid since its opportunity cost should be a reduction in recipient governments' discretionary spending. Among bilateral donors, this adjustment to gross aid particularly affects Japan, which received $4.8 billion in debt service on concessional loans, equal to 49 percent of its gross aid. Among bilaterals, France, Germany, Italy, and the United States are also major recipients of debt service. Among multilaterals, the development banks are too, unsurprisingly. At the upper extreme, the Inter-American Development Bank's Fund for Special Operations received debt service equal to 89% of disbursements.

[8] I base this on an excellent exchange with Simon Scott, Principal Administrator of the Statistics and Monitoring Division of the OECD's Development Co-operation Directorate, who I cannot assume was representing institutional views, but only his own views.

Table 3. Subtracting Debt Service, 2002

Donor	A. Gross aid[1]	B. Of which, program[1]	C. Amortization	D. Interest	E. Net aid	F. Of which, net program aid
	---------- (million $) ----------					
Formula:					A–C–D	B–C–D
Australia	777	184	0	0	777	184
Austria	509	152	3	2	504	147
Belgium	758	267	35	3	721	230
Canada	1,633	618	26	1	1,606	591
Denmark	1,178	281	45	9	1,124	227
Finland	291	84	7	0	283	76
France	5,624	3,125	947	0	4,678	2,178
Germany	4,538	1,361	945	356	3,237	60
Greece	123	10	0	0	123	10
Ireland	268	69	0	0	268	69
Italy	1,208	451	200	0	1,007	251
Japan	9,811	3,042	3,062	1,735	5,014	–1,755
Luxembourg	119	0	0	0	119	0
Netherlands	2,677	633	97	50	2,531	487
New Zealand	92	0	0	0	92	0
Norway	1,193	226	5	0	1,188	221
Portugal	187	63	0	1	186	63
Spain	1,164	266	154	1	1,009	111
Sweden	1,351	304	1	0	1,350	304
Switzerland	826	203	4	0	822	199
United Kingdom	3,696	1,536	102	2	3,592	1,432
United States	13,847	5,270	1,033	443	12,371	3,794
AfDF	741	334	125	97	519	112
Arab Agencies	300	0	159	0	141	–159
AsDF	1,168	307	262	156	750	–111
CarDB	119	0	56	36	27	–92
EBRD	72	0	0	0	72	0
EC	10,145	2,945	786	494	8,865	1,665
GEF	137	0	0	0	137	0
IDA	6,667	3,666	1,263	745	4,658	1,658
IDB Sp F	425	190	259	119	48	–187
IFAD	250	43	102	34	114	–93
Montreal Protocol	60	0	0	0	60	0
Nordic Dev.Fund	35	0	2	0	33	–2
Other UN	630	0	0	0	630	0
SAF+ESAF(IMF)	2,936	0	1,984	0	951	–1,984
UNDP	278	0	0	0	278	0
UNFPA	312	0	0	0	312	0
UNHCR	655	0	0	0	655	0
UNICEF	571	94	0	0	571	94
UNTA	478	0	0	0	478	0
WFP	352	0	0	0	352	0
U.S.-Colombia	346	23	39	2	305	–18

[1]From Table 2.

3. Discounting tied aid

Most bilateral donors tie some of their aid, which is to say, require the recipients to spend the money on goods and services from the donor's home country, which reduces recipient governments' freedom to shop for the best deals. Catrinus Jepma's literature survey (1991, p. 58) found that tying raised the cost of aid projects a typical 15–30 percent. This suggests that tying reduces the *value* of aid by 13–23 percent.[9,10]

The DAC tying statistics put aid commitments in three tying status categories: untied, tied, and partially untied. "Partially untied aid" comes with restrictions, but ones that are looser than those of "tied aid." By definition, partially untied aid is subject to the restriction that it must be spent on goods and services from the donor nation *or* developing countries, or else is restricted to be spent on goods and services from developing countries only. In principle, the approach taken to penalizing tying is simple. Tied aid is discounted by 20 percent (a round number in the 13–23 percent range) and partially untied aid by half that, 10 percent. No attempt is made to account for unreported, informal, de facto tying that may often occur within long-term relationships between donors and recipients.

In practice, the computation is more complex. Since the DAC tying statistics are for ODA only (not OA), it is assumed that donors tie or partially tie their OA and ODA in the same proportions. Unlike in 2003, in 2004 I used the tying information from the detailed commitment-level data in the CRS, and aggregated it up to the level of the donor-recipient pair. Since the data are for commitments, not disbursements, it is assumed that the same shares of disbursements and commitments are tied, untied, or partially untied. As with the project-program division, the trailing three years of commitments data were used. Meanwhile, I maintained the program-project-emergency distinction.[11]

Table 4 shows the results. Greece, Italy, Spain and the United States suffer most in relative terms from the tying discount. This table too summarizes calculations at the level of the donor-recipient pair. The concrete U.S.-Colombia example is in the final row of the table.[12]

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[9] Consider that a 15-percent cost increase lowers the purchasing power of aid by 1–1/1.15 = 13 percent. Similarly, a 30-percent cost increase cuts the value of aid 23 percent.

[10] Unlike last year, I do not treat all technical cooperation as tied. Last year I used donor-level aggregated tying data from DAC Table 7b, which exclude technical cooperation and forced a default assumption about the tying status of technical assistance. This year, I used the detailed commitment-level data from the Creditor Reporting System database, which shows which individual technical cooperation commitments donors actually report as tied. (Table 7b is also on a commitments basis, so the switch to the CRS database does not cause a change in this respect.)

Perhaps all technical cooperation ought to be assumed tied even if not reported as such. Or even if not, perhaps all technical cooperation deemed tied should be discounted much more than Jepma's (1991) figures suggest. Most, if not all, studies of how much tying raises costs have examined its effects on the prices of goods rather than services. Since foreign consultants typically cost a multiple of local ones, tying technical cooperation may reduce the value of aid much more than tying aid for goods, and may deserve separate treatment in the CDI. I deferred this issue to next year.

[11] For commitments that were missing tying status information, I used a number of backstops to estimate the tied fraction. If the donor was multilateral or the commitment was for debt forgiveness, I assumed the aid was untied. Otherwise, if at least part of the commitment was reported as technical cooperation, I took this as the tied share. Otherwise, I took the average tied share of all of a donor's commitments, excluding debt forgiveness, for the most recently available year.

[12] The donor-level sums for the tying penalties in Table 4 are not simple sums of the underlying values at the donor-recipient level. Using methods described in section 5, when the results were aggregated from the donor-recipient to the donor level, extrapolations were made to estimate the tying rate for aid flows otherwise lacking any tying information, such as aid to "Far East Asia unallocated."

Table 4. Penalizing tied aid, 2002

Donor	Estimated disbursements				Tying penalty						
	Total	Project	Pro-gram	Emer-gency	Total	Project	Program	Emer-gency	Total penalty/ disbursements	Net aid	Net tying-discounted aid
	---------- (million $) ----------				---------- (million $) ----------				(%)	(million $)	
Australia	777	495	184	98	76	36	28	12	10	777	701
Austria	509	323	152	34	30	23	4	3	6	504	474
Belgium	758	463	267	29	7	6	1	0	1	721	714
Canada	1,633	823	618	191	118	53	64	0	7	1,606	1,488
Denmark	1,178	788	281	110	35	29	6	1	3	1,124	1,089
Finland	291	165	84	41	13	7	5	1	5	283	270
France	5,624	2,216	3,125	284	343	214	111	18	6	4,678	4,335
Germany	4,538	2,948	1,361	229	119	72	31	16	3	3,237	3,118
Greece	123	106	10	7	22	18	3	1	18	123	101
Ireland	268	182	69	17	0	0	0	0	0	268	268
Italy	1,208	674	451	84	196	115	66	15	16	1,007	811
Japan	9,811	6,732	3,042	36	197	190	7	0	2	5,014	4,817
Luxembourg	119	106	0	13	0	0	0	0	0	119	119
Netherlands	2,677	1,831	633	212	25	23	1	0	1	2,531	2,506
New Zealand	92	81	0	11	0	0	0	0	0	92	92
Norway	1,193	715	226	253	2	1	1	0	0	1,188	1,186
Portugal	187	122	63	2	13	11	2	0	7	186	173
Spain	1,164	866	266	32	178	95	56	27	15	1,009	831
Sweden	1,351	743	304	304	10	5	4	0	1	1,350	1,340
Switzerland	826	456	203	167	2	0	1	0	0	822	820
United Kingdom	3,696	1,753	1,536	407	24	14	8	2	1	3,592	3,568
United States	13,847	7,084	5,270	1,494	1,971	860	906	205	14	12,371	10,400
AfDF	741	407	334	0	0	0	0	0	0	519	519
Arab Agencies	300	300	0	0	0	0	0	0	0	141	141
AsDF	1,168	862	307	0	0	0	0	0	0	750	750
CarDB	119	119	0	0	0	0	0	0	0	27	27
EBRD	72	72	0	0	0	0	0	0	0	72	72
EC	10,145	6,660	2,945	540	0	0	0	0	0	8,865	8,865
GEF	137	137	0	0	0	0	0	0	0	137	137
IDA	6,667	3,000	3,666	0	0	0	0	0	0	4,658	4,658
IDB Sp F	425	235	190	0	0	0	0	0	0	48	48
IFAD	250	207	43	0	0	0	0	0	0	114	114
Mont. Protocol	60	60	0	0	0	0	0	0	0	60	60
Nordic Dev.Fund	35	35	0	0	0	0	0	0	0	33	33
Other UN	630	630	0	0	0	0	0	0	0	630	630
SAF+ESAF(IMF)	2,936	2,936	0	0	0	0	0	0	0	951	951
UNDP	278	278	0	0	0	0	0	0	0	278	278
UNFPA	312	312	0	0	0	0	0	0	0	312	312
UNHCR	655	655	0	0	0	0	0	0	0	655	655
UNICEF	571	477	94	0	0	0	0	0	0	571	571
UNTA	478	478	0	0	0	0	0	0	0	478	478
WFP	352	352	0	0	0	0	0	0	0	352	352
U.S.-Colombia	346	322	23	0	49	46	3	0	14	305	256

4. Adjusting for selectivity

The most complex part of the aid component is the adjustment for selectivity. It has long been argued that an important determinants of aid effectiveness is which country the aid goes to (Easterly 2002, p. 35). Some countries need it more than others. Some countries can use it better than others—or offer an environment in which it will be more effective. There is little empirically grounded consensus, however, on what precisely donors should select for. And Steven Radelet (2004) argues the question is more complicated than that: how donors allocate aid among countries should depend on the type of aid.

For anyone measuring selectivity, two main challenges arise: choosing a mathematical structure to distill numbers on recipient attributes and donor aid allocations into a metric; and choosing the attributes that donors are expected to select for, such as low income, good policies, or good governance. I will discuss my choices at the level of principle, then descend to the details of implementation.

Principles

The oldest approach to measuring selectivity—even if not always thought of as such—is the use of cross-country regressions to explain donors' aid allocations as a function of recipient characteristics indicating geopolitical importance (e.g, oil exports or military expenditure), commercial value (trade with donors), and development need and potential (income, governance) (Kaplan 1975; Dudley and Montmarquette 1976; McKinley and Little 1979; Mosley 1981, 1985; Maizels and Nissanke 1984; Frey and Schneider 1986; Gang and Lehman 1990; Schraeder, Hook, and Taylor 1998; Trumbull and Wall 1994; Alesina and Dollar 1998; Burnside and Dollar 2000; Collier and Dollar 2002; Birdsall, Claessens, and Diwan 2002). In general, bilateral donors appear from the studies to have been less sensitive to recipient need and potential than to geostrategic and commercial concerns. More fragmentary evidence suggests that multilaterals have been somewhat opposite. Almost all the studies that checked found a widespread bias in favor of small countries, in the sense that the elasticity of aid receipts with respect to population is less than 1.

The cross-country regression approach to measuring selectivity is conceptually consistent, but it does invite methodological challenges that it might be better to avoid with a simpler approach. This is because it embodies an attempt to *model* donor decision-making and *predict* the effects on allocations of marginal changes in recipient characteristics, all else equal. With modeling comes the risk of misspecification. If a donor's aid allocations fail to relate to the chosen variables via the chosen functional form, the results may not be meaningful. For example, if a donor specializes in one region, such as France in francophone Africa, its aid allocations will be highly nonlinear with respect to most indicators of recipient appropriateness. Similarly if a donor specializes exclusively in the poorest nations. Results may also be sensitive to the choice of regressors. The United States gives large amounts of aid to countries such as Russia and Pakistan that appear too poorly governed to make good use of aid for development. As a result, regressions that control for geopolitical value may yield a different coefficient on governance for the United States from regressions that do not. This then raises the question of whether evaluations of selectivity should abstract from donors' responsiveness to non-development concerns. Controlling for non-development concerns gives a better picture of the effects of a hypothetical marginal change in an indicator of recipient development potential. Not controlling for it gives a better picture of the general importance of development potential in allocation. It is a question, in other words, of what is meant by "selectivity."

The new paper by David Dollar and Victoria Levin (2004) stands in this tradition and faces some of these questions. The authors estimate the elasticity of a donor's aid disbursements with respect to recipient's income and governance. They answer the question with a regression without controls for commercial or geopolitical interests. It is a log-linear regression of disbursements on recipient population, GDP/capita, and "institutions/policies" as indicated by the World Bank's Country Policy and Institutional Assessment. Notably, they choose not to control for donor interest variables. They do, however, abstract from the small-country bias by controlling for population even though Collier and Dollar (2002) found that global aid could reduce poverty twice as fast if most of it were reallocated to India.

The Dollar and Levin specification also has a problem that is relatively specific to it, yet illustrates the general risk that comes with modeling. In the elasticity framework, no recipient receives zero aid from any donor—rising income or falling governance cause *percentage* reductions in aid, but never bring it to zero. Yet 1,523 out of the 4,914 the potential donor-recipient pairs in the DAC database show zero disbursements for 2002 by my count.[13] The conflict between theory and reality appears when Dollar and Levin attempt, as it were, to take the logarithms of these zeroes in order to perform their log-linear regressions. To avoid infinities, they replace zeroes with a small number, $10,000, or $0.01 million. But in logs, 0.01 becomes –4.6. For comparison, the largest gross flow in 2002, $1.3 billion from Japan to China, has a log of 7.2. If Dollar and Levin had replaced zeroes with $100 (with a log of –9.2) or $1 (–13.8) they might have gotten different results. An alternative specification that directly confronts the possibility that the distribution of aid disbursements is truncated, such as tobit specification, may be more appropriate. Below, I compare my results to theirs.

The second major approach to evaluating selectivity was initiated by McGillivray (1989, 1992). It is more radically empirical, eschewing any attempt to model allocation procedures or estimate marginal effects, and lends itself more naturally to creating an index that reflects quantity and selectivity. His index is, essentially, the weighted sum of a donor's aid disbursements to all recipients, where the weights are mathematically related to a recipient characteristic such as GDP/capita. If the weights lie between 0 and 1, they can be thought of as discounts that penalize or reward selection for desired characteristics. The ratio of the weighted index to the raw, unweighted sum in then a straightforward measure of overall selectivity.[14]

Rao (1994, 1997) pointed out that donors could maximize their scores on McGillivray's index by concentrating all their aid in the single poorest country. He argued that the source of this perverse result was the failure to consider recipients' *post-aid* GDP/capita. On the assumption that aid leads directly to GDP gains, if all aid went to the poorest country, that country's GDP/capita would rise rapidly and make it a less deserving recipient. He revised McGillivray's index to factor in both pre- and post-aid GDP. This introduced a notion of diminishing returns to aid, albeit an odd one: not diminishing returns to the effectiveness of aid in raising GDP/capita, but diminishing returns to the value of doing so.

The third approach to assessing selectivity is the newest and most sophisticated. Drawing on the cross-country literature on determinants of aid allocation, McGillivray, Leavy, and White

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[13] This excludes recipients lacking GDP, population, or (1999) CPIA data, and excludes three atypical donors: Arab Agencies, the Montreal Protocol fund, and the Caribbean Development Bank.

[14] McGillivray's original (1989) index summed aid/recipient population rather than total aid to each recipient. White (1992) questioned the implicit notion of donors "allocating" aid/recipient population: shifting $1 million in aid from small, poor Mali to large, poor India would reduce a donor's score in McGillivray's system because the aid would be lower *per capita* in India. In reply, McGillivray (1992) proposed using absolute aid rather than aid/capita, within the same basic framework.

(2002), formally model aid allocation. They endow donors with utility functions that depend on their allocation of aid among recipients of various commercial and geopolitical values, as well as levels of development need and potential; incorporate diminishing returns to aid; compute optimal allocations; and penalize donors to the extent they deviate from their optima. The approach has several disadvantages from the point of view of the CDI. It is conceptually complex. It is vulnerable to challenges analogous to those that apply to the first approach, regarding proper specification. It rewards donors for *consistently* pursuing geopolitical and commercial interests (though this could be easily changed). And it penalizes donors for aid allocations that are rather different from the ideal ones even if they do not generate much lower utility. For example, if a donor at the optimal allocation shifts aid between two identical recipients, the marginal utility cost is zero, but the marginal decline in the donor's score would be non-zero.

The approach I have taken is closest to McGillivray's original. For the purposes of the CDI, it has the advantages of conceptual simplicity—it combines quantity and quality (selectivity) in a natural way—and sticking to observable facts, thus avoiding questions about proper modeling specification. Since it does not model with smooth functional forms, it does not inherently penalize specialization in a certain region or income bracket. It lends itself to a distinguishig between subflows of aid (project, program, emergency). And it can handle net transfers even when they are negative, where some of the common functional forms cannot. (Reverse flows, like zero flows, would bedevil the elasticity approach of Dollar and Levin, for example.)

Here is a simple example of how the chosen system works. The selectivity formula introduced here, it will emerge, assigns Malawi a weight of 0.9 for project aid and Kuwait a 0.1. A donor that gave $1 million to each of these countries and no aid elsewhere would have selectivity-weighted aid of $1 million (0.9 × $1 million = $0.9 million for Malawi and 0.1 × $1 million = $0.1 million for Kuwait). The donor's "selectivity" is then the ratio of its selectivity-weighted aid to its unweighted aid—in this case 0.5. This is also the average selectivity weight of the donor's recipients, where the average is weighted by how much aid the donor gives to each recipient.

One potentially counterintuitive result of this approach, as with any approach that judges donors with reference to the same, full universe of recipients, is that a donor that is constitutionally confined to a clientele with low selectivity weights comes off poorly even if it is in some sense selective within that pool. The best example is the European Bank for Reconstruction and Development, which lends to the (relatively rich) nations of the former Eastern bloc. But for purposes of comparing bilateral donors to each other, this is actually as it should be. As will be described below, the "quality-adjusted aid quantities" of multilaterals are ultimately allocated back as credits to the bilaterals. If Germany is to be more rewarded for giving aid to Malawi than Poland, it should also be more rewarded for doing the same indirectly—giving more to the African Development Fund than the EBRD.

Having settled the question of mathematical form for measuring selectivity, there remains the question of what donors are supposed to select for. I use two indicators. The first is GDP/capita (converted to dollars on the basis of purchasing power parities). The second is the composite governance variable of Daniel Kaufman and Aart Kraay (Kaufmann, Kraay, and Mastruzzi 2003), which is the most comprehensive governance indicator available. The KK composite is an average of indicators on up to six dimensions, available data permitting: democracy, political instability, rule of law, bureaucratic regulation, government effectiveness, and corruption. The six variables are themselves synthesized from several hundred primary variables from 24 datasets. GDP/capita and the KK composite have several strengths for measuring selectivity. They have wide coverage (177 countries for PPP GDP/capita for 2002 in the World Bank *World*

Development Indicators database and 199 for the KK composite, including rich countries). They are updated regularly and made freely available. And they reflect consensus views that a) the richer a country is, the less it needs aid; and b) that institutional quality is a key determinant of development and, most likely, aid effectiveness. Notably, Craig Burnside and David Dollar, in their 2004 reprise on their influential finding that "aid works in a good policy environment," have switched from economic policy variables to the KK composite to measure "policies/institutions."

In factoring governance into the weighting, the formula distinguishes between program and project aid. It gives governance more influence in the weight for program aid because, recipient governments should in fact exercise more influence over program aid. The greater recipient ownership allowed by program aid can be expected to be healthy in the best-governed countries, the icon being Chile, and counterproductive in the worst-governed, epitomized by the Democratic Republic of Congo.[15] This embodies the advice of Radelet (2004): "donors should provide a greater share their financing as programmatic or budget support in well-governed countries, while primarily (or even exclusively) using project financing in poorly governed countries."

Before descending to particulars, it is worth reiterating that two concepts are defined here relating to selectivity. The first, selectivity-weighted aid, is a measure of aid allocations that blends quantity and quality, and is of primary interest for grading performance. It possesses the desirable properties of linearity. If a country doubles its aid to every recipient, selectivity-adjusted aid score will exactly double. If it runs two parallel aid programs, the quality-adjusted aid score of the combination is the sum of the scores for the individual programs.

The second concept is the weighted-average selectivity score of a donor's recipients—the donor's "selectivity." This measure, it must be noted, behaves strangely when it is applied to donors with net transfers much smaller than gross transfers. Consider this example. Donor X is a development bank. It disburses nothing to Recipient Y, which has program selectivity weight 0.6, but *receives* $1 million from Y in debt service, which is treated as negative program aid. It disburses the $1 million, as program aid, to Recipient Z, which has weight 0.8 for this kind of aid. Donor X's selectivity-weighted aid is thus:

$$0.6 \times (-\$1 \text{ million}) + 0.8 \times (\$1 \text{ million}) = \$0.2 \text{ million}.$$

Its score is small but positive because it has transferred funds from a less appropriate to a more appropriate aid "recipient"—perhaps an odd result, but meaningful. Now, what is the "selectivity" of Donor X?

$$\text{selectivity-weighted net transfers / total net transfers} = \$0.2 \text{ million} / 0 = \infty.$$

The donor has done some good for the developing world on net, according to the measure, with zero net disbursal of funds. It is infinitely efficient.

[15] This is a significant change from last year, at least at the conceptual level. Last year the selectivity formula used the KK score *controlling for income because* "poorer countries generally have poorer governance, so it is inconsistent to expect donors to select simultaneously for low income and high governance quality." I changed this for two reasons. First, it was not clear that low governance (on absolute scale) was less damaging to aid effectiveness in a very poor country than in a rich one. Second, it became difficult to maintain the old mathematical structure while introducing the distinction between program and project aid described.

This extreme example illustrates a counterintuitive result for donors whose net transfers are much smaller than gross transfers (because of debt service). In these cases, the donor's reported "selectivity" can lie well outside the range of its recipients' selectivity weights. For example, the IDB's Fund for Special Operations disbursed $425 million in 2002. It received $378 million in debt service, for a net aid of only $48 million. Yet it generally transferred funds from countries deemed less appropriate for aid to those deemed more appropriate and so achieved a selectivity score of 1.28 in 2002—not infinite, but higher than the selectivity weight of every recipient. Mathematically, the 1.28 is still a weighted average of selectivity factors between 0 and 1, but some of those weights (net transfers) are negative.

One can avoid such results by measuring selectivity of gross disbursements only, which I call "gross selectivity." In the abstract example above, Donor X has gross selectivity of $0.2 million/$1 million = 0.2—a small but positive value. This result seems more meaningful than infinity, but comes at the expense of ignoring the debt service received from Recipient Y.

The sometimes-strange behavior of the preferred selectivity measure introduced here, which I call "net selectivity," does not mean it is inherently flawed. Rather, it points up another subtlety in the question of what is meant by selectivity. The picture conjured by the word "selectivity" is of a donor that only sends funds outward. In fact, donors not only distribute their own money but redistribute that of recipients. What does selectivity mean in such a context? Is a donor that bestows all its net transfers on Malawi almost perfectly selective? Or is it falling far short of the theoretical ideal by failing to transfer billions of dollars from Kuwait to Malawi?

To repeat, these questions are important for understanding how to measure selectivity of donors, but their answers to do not affect the present exercise. In the present framework, what matters most for comparing donors is the index, selectivity-weighted net aid, and this is not subject to the same conceptual problems, the same infinities. In the above example, $0.2 million is a meaningful value for selectivity-weighted net aid.

Implementation

The flow to which selectivity weights are applied is the output of the previous step in the construction of the aid performance measure, namely "tying-discounted net aid." Project, program, and emergency aid are treated separately because how appropriate a country is for aid depends not only on its income, governance, etc., but also on the type of aid. Some forms of aid may work better in countries that seem unpromising for aid. And some forms of aid will work better than others within a given country, depending on recipient characteristics such as governance quality. The coarse three-way division is meant to acknowledge the complexity of aid giving in a way that is practical given the available data.

To be precise, emergency aid is completely exempted from discounting since it may be quite appropriate for even poorly governed or middle-income countries. Project and program aid are discounted; separate factors reflecting income and governance are multiplied to produce a single combined factor for each recipient and aid type. The governance factor is linearly related to a country's KK governance score. For project aid, it ranges by design between 0.25 and 0.75.[16] The country with the lowest governance score, the Democratic Republic of Congo, defines the bottom of that range, getting the 0.25, while Chile anchors the top. For program aid, the scale is stretched to 0.0–1.0. (See Figure 1.) Thus aid to better-governed countries is favored

[16] This is for 2002. In back-calculating the index I use the same linear transformation, for comparability over a time, and should do the same for coming years. So the weight ranges shift somewhat over time.

over aid to worse-governed countries, all else equal, be it project or program aid. And within any given country the preference between project and program aid depends on its governance. In Chile, project aid is discounted relative to program aid (a multiplier of 0.75 instead of 1.0) while the opposite is true in the DRC (0.25 instead of 0.0).

The second factor is a linear function of a country's log real 2002 GDP/capita. Hong Kong (GDP/capita of $23,200) gets a 0 and Sierra Leone, the poorest country with data (real GDP/capita of $450), defines the upper end. (See Figure 2.) This upper end is not 1.0, as one might expect, but 1.96, a number chosen so that the highest *combined* selectivity weight (the product of the governance and income factors) for either program or project aid, *is* 1.0. (It happens to be for program aid to Madagascar.)[17] Table 5 summarizes the weight computations.[18]

This system implies several valuations, which are meant to be minimally arbitrary. First, non-emergency program aid to the highest-weighted recipient (in 2002, Madagascar) is precisely as meritorious as emergency aid to any country, since the latter is not discounted. All other aid is valued less. Second, because of the multiplicative weighting structure, non-emergency aid to the richest country is valueless no matter how well-governed it is: by virtue of being the richest its income weight is zero. Similarly, program aid to the worst-governed country is also valueless regardless of how poor it is. Governance quality and income level are each seen as conditioning the other's relevance for aid effectiveness.

Last year, the weights were computed differently. They were a linear function of log real GDP/capita and KK score *controlling for* log real GDP/capita, and were confined by design to 0.5–1.0. Thus governance and income were combined additively rather than multiplicatively, and weights were generally higher. Since the purpose of this index is to compare donors to each other, an across-the-board lowering of weights should not affect results much—only to the extent that donors differ in how much emergency aid they give, since lower weights give undiscounted emergency aid more relative value. Indeed, a sensitivity test (Roodman 2003x) showed that ranging the weights between 0.0 and 1.0 in last year's system had little effect on the results. It does render meaningless and direct comparison with last year's results (in % of GDP terms).

The real test of any such weighting system is whether its results match priors. That is for the reader to judge. Overall, the new weighting system shows a fairly strong correspondence to the old one.

Figure 3 is a scatter plot of this year's project weights against the weights from last year's system (which did not distinguish between project and program aid). For comparability, the figure uses the 2001 data that went into last year's aid component. The correlation is 0.92. Figure 4 does the same for the new program aid weights, in which governance plays a larger role; the correlation here is 0.74. Evidently governance is a larger source of variation in the program weights this year than it was in the overall weights last year.

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[17] One can also think of this as setting the upper end for income weights at 1.0, then multiplying them by the governance weights for program and project aid, and then multiplying all the combined weights by 1.96 so that the final set of weights does range between 0 and 1.

[18] Because of a programming error I discovered after the 2004 Commitment to Development Index numbers were frozen, income factors were scaled so that Sierra Leone got a 2.27 rather than 1.96. As a result, the maximum combined factor (for program aid to Madagascar) was 1.16 rather than 1.0. I switched to 1.96 in this paper not because I believe it is more correct, but because it is less arbitrary. The rescaling causes an across-the-board 13.7% reduction in the value of non-emergency selectivity-weighted aid. Were it not for the exemption of emergency aid from weighting, this change would have no effect on relative scores for official aid performance. But because of this exemption, the relative standing of countries that gave emergency aid disproportionately in 2002—notably top-ranked Sweden—improves slightly.

The results of applying the weights to tying-discounted net aid for 2002 are in the next section.

Figure 1. Illustration of governance selectivity weight computation, 2002

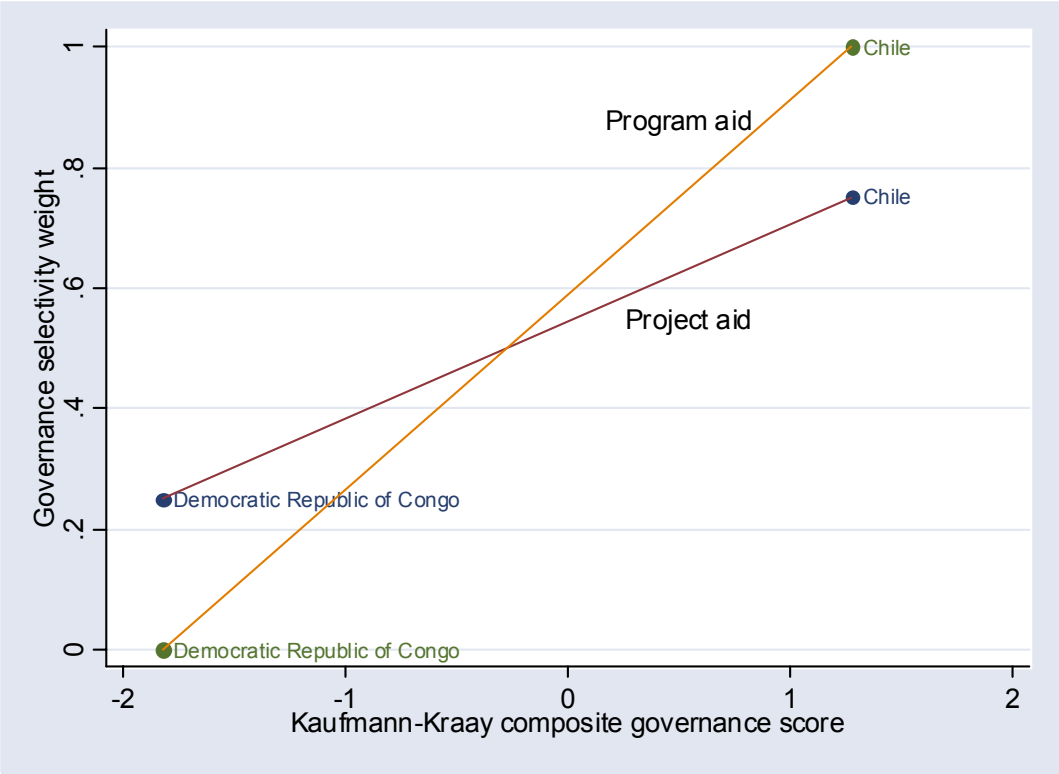


Figure 2. Illustration of income selectivity weight computation, 2002

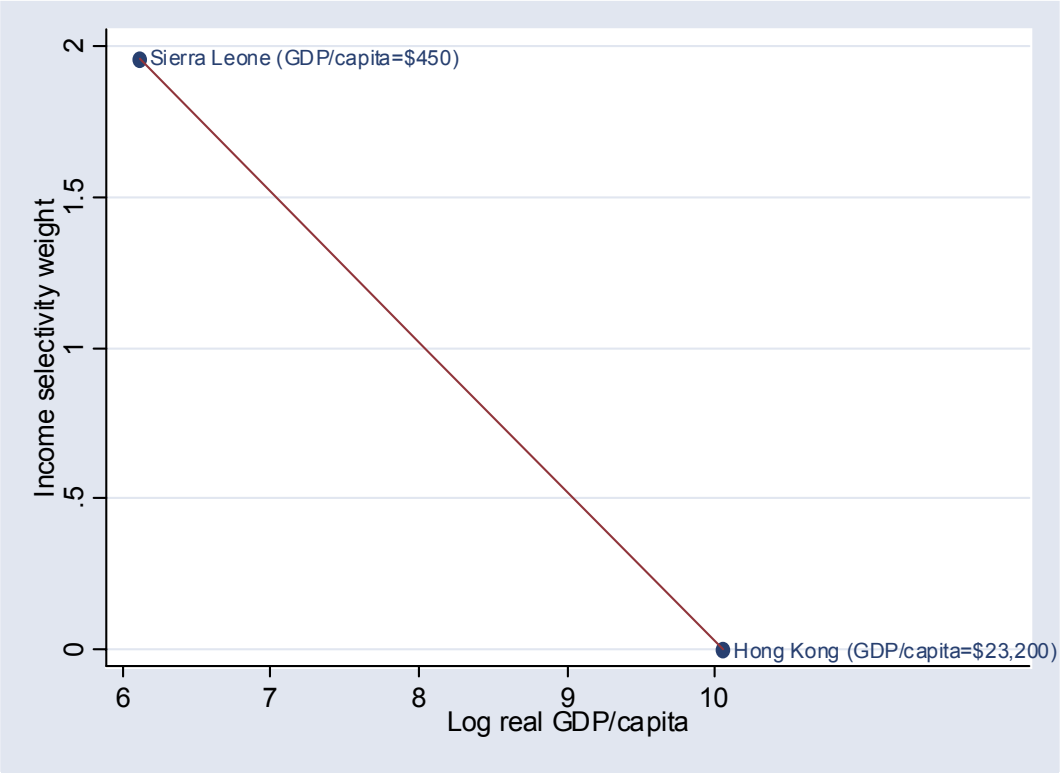


Table 5. Computation of selectivity weights

Country name	A. Real GDP/capita, 2002 ($)	B. Log real GDP/capita	C. GDP selectivity multiplier	D. Kaufmann-Kraay composite governance score, 2002	E. Governance selectivity multiplier, project aid	F. Governance selectivity multiplier, program aid	G. Combined selectivity multiplier, project aid	H. Combined selectivity multiplier, program aid
Formula:		Log A	(linear map of B to 0–2.27 range)		(linear map of D to 0.25–0.75 range)	(linear map of D to 0–1 range)	C × E	C × F
Madagascar	650	6.48	1.78	–0.07	0.53	0.56	0.94	1.00
Mongolia	1,462	7.29	1.38	0.21	0.58	0.65	0.79	0.90
Malawi	519	6.25	1.89	–0.42	0.47	0.45	0.90	0.85
Benin	913	6.82	1.61	–0.26	0.50	0.50	0.81	0.81
Mali	777	6.66	1.69	–0.35	0.49	0.47	0.82	0.80
Mauritania	1,337	7.20	1.42	–0.08	0.53	0.56	0.75	0.79
Tanzania	493	6.20	1.92	–0.54	0.46	0.41	0.88	0.79
Burkina Faso	896	6.80	1.62	–0.31	0.49	0.49	0.80	0.79
Senegal	1,359	7.21	1.41	–0.16	0.52	0.53	0.73	0.75
Mozambique	1,009	6.92	1.56	–0.40	0.48	0.46	0.75	0.71
Zambia	713	6.57	1.73	–0.57	0.45	0.40	0.78	0.69
Ghana	1,815	7.50	1.27	–0.16	0.52	0.54	0.66	0.68
Niger	685	6.53	1.75	–0.64	0.44	0.38	0.77	0.67
Moldova	1,267	7.14	1.45	–0.43	0.47	0.45	0.68	0.65
Dominica	4,660	8.45	0.80	0.65	0.65	0.80	0.52	0.64
Lesotho	2,011	7.61	1.22	–0.21	0.51	0.52	0.62	0.63
India	2,276	7.73	1.16	–0.19	0.51	0.53	0.59	0.61
Eritrea	848	6.74	1.65	–0.73	0.43	0.35	0.70	0.58
ST. VINCENT AND GR.	4,748	8.47	0.79	0.42	0.61	0.72	0.48	0.57
Samoa	4,757	8.47	0.79	0.42	0.61	0.72	0.48	0.57
Ethiopia	641	6.46	1.79	–0.84	0.41	0.32	0.73	0.56

Country name	A. Real GDP/capita, 2002 ($)	B. Log real GDP/capita	C. GDP selectivity multiplier	D. Kaufmann-Kraay composite governance score, 2002	E. Governance selectivity multiplier, project aid	F. Governance selectivity multiplier, program aid	G. Combined selectivity multiplier, project aid	H. Combined selectivity multiplier, program aid
Gambia	1,525	7.33	1.35	–0.53	0.46	0.42	0.62	0.56
Bolivia	2,089	7.64	1.20	–0.38	0.48	0.46	0.58	0.56
Jamaica	3,341	8.11	0.96	–0.03	0.54	0.58	0.52	0.56
Cape Verde	4,238	8.35	0.85	0.22	0.58	0.66	0.49	0.56
Vanuatu	2,485	7.82	1.11	–0.27	0.50	0.50	0.56	0.55
Nepal	1,171	7.07	1.49	–0.66	0.44	0.37	0.65	0.55
Sri Lanka	3,052	8.02	1.01	–0.12	0.52	0.55	0.53	0.55
Guinea-Bissau	689	6.54	1.75	–0.84	0.41	0.32	0.71	0.55
Morocco	3,335	8.11	0.97	–0.05	0.54	0.57	0.52	0.55
St. Lucia	4,857	8.49	0.78	0.37	0.60	0.71	0.47	0.55
Cambodia	1,459	7.29	1.38	–0.59	0.45	0.39	0.62	0.54
Jordan	3,634	8.20	0.92	–0.01	0.54	0.58	0.50	0.54
Kenya	878	6.78	1.63	–0.81	0.41	0.32	0.67	0.53
Viet Nam	1,982	7.59	1.22	–0.48	0.46	0.43	0.57	0.53
Uganda	1,199	7.09	1.47	–0.74	0.42	0.35	0.63	0.51
Togo	1,291	7.16	1.44	–0.72	0.43	0.35	0.61	0.51
Comoros	1,452	7.28	1.38	–0.69	0.43	0.36	0.60	0.50
Chile	8,463	9.04	0.50	1.28	0.75	1.00	0.38	0.50
Honduras	2,231	7.71	1.17	–0.49	0.46	0.43	0.54	0.50
Armenia	2,618	7.87	1.09	–0.40	0.48	0.46	0.52	0.50
Yemen	693	6.54	1.75	–0.94	0.39	0.28	0.68	0.49
Grenada	6,186	8.73	0.66	0.50	0.62	0.75	0.41	0.49
Solomon Islands	1,342	7.20	1.42	–0.75	0.42	0.35	0.60	0.49
Belize	5,229	8.56	0.74	0.22	0.58	0.66	0.43	0.49
Namibia	5,674	8.64	0.70	0.32	0.59	0.69	0.42	0.48
Philippines	3,560	8.18	0.93	–0.22	0.51	0.52	0.47	0.48
Botswana	7,298	8.90	0.58	0.77	0.67	0.84	0.38	0.48
Costa Rica	7,497	8.92	0.56	0.81	0.67	0.85	0.38	0.48
Papua New Guinea	1,895	7.55	1.25	–0.64	0.44	0.38	0.55	0.47
Panama	5,286	8.57	0.74	0.16	0.57	0.64	0.42	0.47
Guyana	3,617	8.19	0.93	–0.25	0.50	0.51	0.47	0.47
Egypt	3,276	8.09	0.97	–0.37	0.48	0.47	0.47	0.46
Fiji	4,733	8.46	0.79	–0.03	0.54	0.58	0.43	0.46
Djibouti	1,795	7.49	1.27	–0.71	0.43	0.36	0.55	0.45
El Salvador	4,138	8.33	0.86	–0.18	0.51	0.53	0.44	0.45
Bangladesh	1,537	7.34	1.35	–0.78	0.42	0.34	0.56	0.45
Thailand	6,009	8.70	0.67	0.25	0.58	0.67	0.39	0.45
Bulgaria	6,115	8.72	0.66	0.26	0.58	0.67	0.39	0.44
Kyrgyz Rep.	1,391	7.24	1.40	–0.85	0.41	0.31	0.57	0.44
Peru	4,358	8.38	0.83	–0.22	0.51	0.51	0.42	0.43
Tunisia	5,824	8.67	0.69	0.11	0.56	0.62	0.39	0.43
Latvia	7,935	8.98	0.53	0.64	0.65	0.79	0.34	0.42
China	3,961	8.28	0.88	–0.34	0.49	0.48	0.43	0.42
Romania	5,600	8.63	0.71	0.01	0.54	0.59	0.39	0.42
Sierra Leone	451	6.11	1.96	–1.16	0.36	0.21	0.70	0.41
Lebanon	3,756	8.23	0.91	–0.44	0.47	0.44	0.43	0.40
Pakistan	1,783	7.49	1.28	–0.84	0.41	0.31	0.52	0.40
Cameroon	1,515	7.32	1.36	–0.91	0.40	0.29	0.54	0.40
Guatemala	3,476	8.15	0.94	–0.53	0.46	0.42	0.43	0.39
Swaziland	3,986	8.29	0.88	–0.43	0.47	0.45	0.42	0.39
Albania	3,517	8.17	0.94	–0.52	0.46	0.42	0.43	0.39
Rwanda	1,081	6.99	1.53	–1.02	0.38	0.26	0.58	0.39
Malaysia	7,897	8.97	0.54	0.45	0.62	0.73	0.33	0.39
Lithuania	8,865	9.09	0.48	0.69	0.65	0.81	0.31	0.39
Syria	2,996	8.01	1.02	–0.66	0.44	0.37	0.45	0.38
Dominican Republic	5,486	8.61	0.72	–0.17	0.52	0.53	0.37	0.38
Chad	892	6.79	1.62	–1.09	0.37	0.23	0.60	0.38
Ecuador	3,050	8.02	1.01	–0.66	0.44	0.37	0.44	0.38
Brazil	6,653	8.80	0.62	0.02	0.55	0.59	0.34	0.37

Country name	A. Real GDP/capita, 2002 ($)	B. Log real GDP/capita	C. GDP selectivity multiplier	D. Kaufmann-Kraay composite governance score, 2002	E. Governance selectivity multiplier, project aid	F. Governance selectivity multiplier, program aid	G. Combined selectivity multiplier, project aid	H. Combined selectivity multiplier, program aid
Mauritius	9,321	9.14	0.45	0.70	0.66	0.81	0.30	0.37
Trinidad & Tobago	8,067	9.00	0.53	0.34	0.60	0.69	0.31	0.37
ANTIGUA & BARBUDA	9,379	9.15	0.45	0.68	0.65	0.81	0.29	0.36
Estonia	10,367	9.25	0.40	0.94	0.69	0.89	0.28	0.36
Gabon	5,621	8.63	0.71	–0.28	0.50	0.50	0.35	0.35
Tajikistan	811	6.70	1.67	–1.17	0.35	0.21	0.59	0.35
Laos	1,485	7.30	1.37	–1.03	0.38	0.25	0.51	0.35
Mexico	7,707	8.95	0.55	0.13	0.56	0.63	0.31	0.34
Central African Rep.	1,061	6.97	1.54	–1.13	0.36	0.22	0.55	0.34
Guinea	1,793	7.49	1.27	–0.99	0.38	0.27	0.49	0.34
Nigeria	753	6.62	1.71	–1.20	0.35	0.20	0.60	0.34
Ukraine	4,173	8.34	0.85	–0.59	0.45	0.39	0.38	0.34
South Africa	8,969	9.10	0.47	0.39	0.61	0.71	0.29	0.34
Indonesia	2,778	7.93	1.06	–0.84	0.41	0.31	0.43	0.33
Congo, Rep.	856	6.75	1.64	–1.19	0.35	0.20	0.58	0.33
Malta	11,649	9.36	0.34	1.16	0.73	0.96	0.25	0.33
Cote d'Ivoire	1,328	7.19	1.42	–1.10	0.37	0.23	0.52	0.33
Croatia	8,823	9.09	0.48	0.29	0.59	0.68	0.28	0.33
Georgia	1,939	7.57	1.24	–1.00	0.38	0.26	0.47	0.33
Uruguay	10,727	9.28	0.38	0.70	0.66	0.81	0.25	0.31
FYROM-Macedonia	5,543	8.62	0.71	–0.48	0.47	0.43	0.33	0.31
Hungary	11,621	9.36	0.34	0.96	0.70	0.89	0.24	0.31
St. Kitts-Nevis	9,599	9.17	0.44	0.35	0.60	0.70	0.26	0.31
Azerbaijan	2,757	7.92	1.06	–0.96	0.39	0.28	0.41	0.29
Tonga	5,634	8.64	0.70	–0.54	0.46	0.41	0.32	0.29
KAZAKHSTAN	5,106	8.54	0.75	–0.67	0.43	0.37	0.33	0.28
Colombia	5,371	8.59	0.73	–0.66	0.44	0.37	0.32	0.27
Bosnia-Herzegovina	4,902	8.50	0.77	–0.73	0.42	0.35	0.33	0.27
Uzbekistan	1,426	7.26	1.39	–1.22	0.35	0.19	0.48	0.27
Barbados	13,774	9.53	0.26	1.24	0.74	0.98	0.19	0.26
Burundi	543	6.30	1.87	–1.40	0.32	0.14	0.59	0.25
Algeria	4,901	8.50	0.77	–0.81	0.41	0.32	0.32	0.25
Iran	5,611	8.63	0.71	–0.73	0.43	0.35	0.30	0.25
Russia	7,016	8.86	0.60	–0.55	0.45	0.41	0.27	0.24
Venezuela	4,626	8.44	0.80	–0.88	0.40	0.30	0.32	0.24
Paraguay	3,912	8.27	0.89	–1.01	0.38	0.26	0.34	0.23
Belarus	4,730	8.46	0.79	–0.98	0.39	0.27	0.31	0.21
Saudi Arabia	11,800	9.38	0.34	–0.05	0.53	0.57	0.18	0.19
Zimbabwe	2,018	7.61	1.22	–1.34	0.33	0.15	0.40	0.19
Angola	1,817	7.50	1.27	–1.36	0.32	0.15	0.41	0.19
Haiti	1,397	7.24	1.40	–1.40	0.32	0.13	0.44	0.19
Bahrain	14,216	9.56	0.24	0.53	0.63	0.76	0.15	0.18
Argentina	9,378	9.15	0.45	–0.58	0.45	0.40	0.20	0.18
Slovenia	15,711	9.66	0.19	0.99	0.70	0.90	0.14	0.18
Sudan	1,741	7.46	1.29	–1.40	0.32	0.14	0.41	0.17
Turkmenistan	4,091	8.32	0.86	–1.30	0.33	0.17	0.29	0.14
Kuwait	16,553	9.71	0.17	0.36	0.60	0.70	0.10	0.12
Israel	17,518	9.77	0.14	0.56	0.63	0.77	0.09	0.11
Cyprus	18,757	9.84	0.11	0.88	0.68	0.87	0.07	0.09
Macao	19,147	9.86	0.10	0.53	0.63	0.76	0.06	0.07
CONGO, DEM.REP.	537	6.29	1.87	–1.82	0.25	0.00	0.47	0.00
Hong Kong, China	23,223	10.05	0.00	1.16	0.73	0.96	0.00	0.00

Figure 3. Comparisons of overall weights in 2003 system with project weights in 2004 system using 2001 data

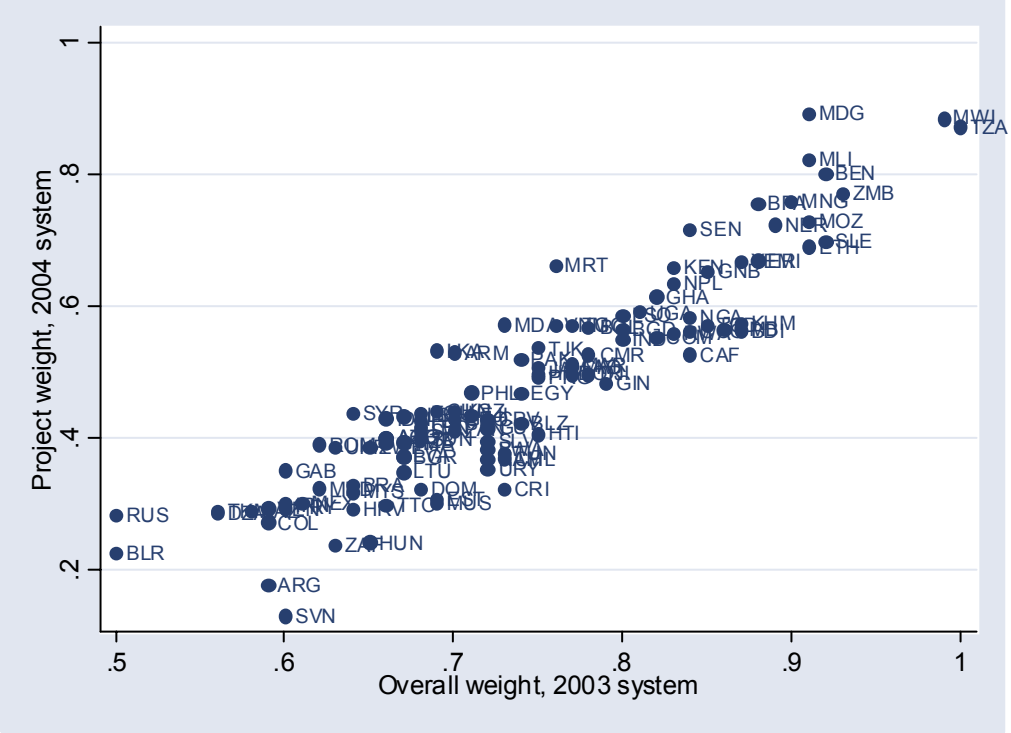
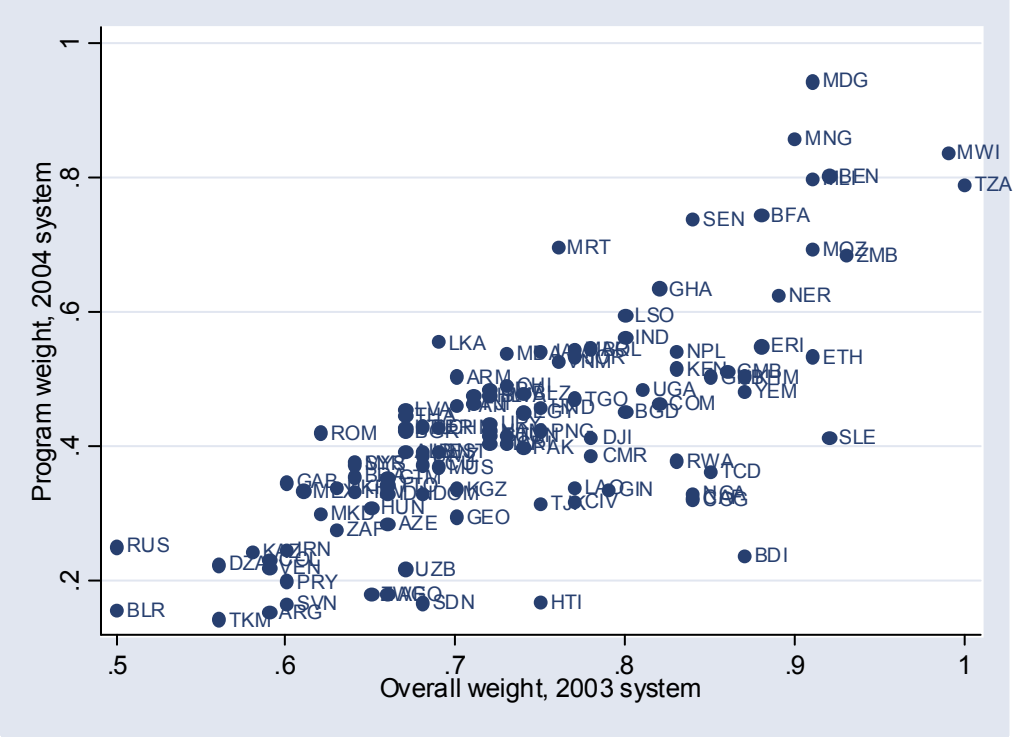


Figure 4. Comparisons of 2003 overall and 2004 program weights using 2001 data



5. Aggregation to the donor level

In the 2004 methodology, one more quality adjustment still needs to be made—for project proliferation. But for reasons described below, this occurs after the results of the previous step—selectivity-weighted, tying-discounted net aid by donor and recipient—are aggregated up to the level of the donor.

In principle, this aggregation is matter of simple sums. But data problems intrude. Not all aid in the DAC database is fully disaggregated by recipient country, partly because administrative costs at headquarters are hard to allocate, partly because aid can support projects or programs intended to benefit an entire region or continent. The United States, for example, gave $2.486 billion in gross ODA in 2002 to "Least developed countries unspecified," $117 million to "Americas Unspecified," and a separate $22 million to "North and Central America Unallocated." In addition, it is impossible to assign selectivity weights to some recipients for lack of values for GDP/capita or the KK composite. These aid flows too cannot be discounted for selectivity without further assumptions.

Leaving out project or program aid that cannot be directly discounted for selectivity, whether for lack of specificity as to recipient or lack of recipient selectivity weight, would understate donors' contributions. So such aid was incorporated as follows. For each sub-continental region, as defined in the DAC database, such aid was discounted by the donor's average selectivity discount for project or program aid that *could* be directly discounted. An example: for Canada's aid to Sub-Saharan Africa in 2002, the average selectivity weight for project disbursements that are allocated down to the country level, and that go to countries with known selectivity weights, is 0.66. So the same weight was applied to Canadian project disbursements to "South of Sahara Unallocated," and to its project disbursements to Liberia, whose lack of GDP data prevented it from getting its own selectivity weight.[19] Once this discounting was done, all selectivity-discounted aid to the region was summed. This procedure repeated at the level of the continent, then the level of the Part, then the level of the aid recipient universe.[20]

Table 6 shows the results. The table reports the two measures of donor selectivity discussed earlier. In column C is "gross selectivity"—the average recipient selectivity factor of a donor's recipients, weighted by gross disbursements of project, program, and emergency aid. In column F is the preferred measure, "net selectivity." In general, the results are similar, though somewhat less so for donors that receive large flows of debt service, the IDB Fund for Special Operations being the most dramatic example.

Greece earned the lowest net selectivity score among bilaterals in 2002. Japan and the United States also scored low—Japan because of its focus on its increasingly affluent East Asian

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[19] In making these extrapolations, unlike in 2003, project and program disbursements were actually treated separately from debits against them—the tying penalties and debt service. Not doing this sometimes led to absurd results. A donor could receive $1 million net from a low-weighted country and then give a net $1.1 million (untied), to a high-weighted country in the same region, such that its *weighted* net transfer was $–0.4 million and its *unweighted* net transfer was $–0.1 million. Its average "selectivity" for the region would then have been $–0.4 million/$–0.1 million = 4. If the donor also gave $10 million to a country in the same region without a selectivity weight, the algorithm would have weighted this flow by 4, for $40 million in "selectivity-discounted" aid. This problem arises fundamentally from the mixing of positive and negative flows and net transfers. The solution is to do separate weight extrapolations for gross aid and the accumulated debits against it, then combine the two weighted flows with opposite signs.

[20] The DAC database divides Part II counties not into continents but into two major groups—former eastern bloc nations, and relatively rich non-DAC members. For the present calculations, these two groups are treated as "continents."

neighborhood, the United States because of large transfers to low-weighted countries such as Colombia, Israel, and Russia. At the high end are Ireland, Italy, Sweden, and Switzerland, followed closely by Denmark and the United Kingdom.

The new Dollar-Levin results on selectivity provide an interesting check on my own. They apply their method to gross non-emergency disbursements averaged over three subperiods: 1985–89, 1990–94, 1995–99. To make a direct comparison, I back-calculated my approach to 1995—not further because the Kaufmann-Kraay governance scores only start in 1996.[21] I computed gross selectivity excluding emergency aid for each donor and year, then averaged over 1995–99. There is a clear relationship between the two measures, with a correlation of 0.46, but also significant unique variation in each. (See Figure 5.) It would take further study to determine what the major source of difference is—the difference in definition of selectivity (marginal vs. average), the difference in governance indicator used, the project-program distinction in my index, or issues of sensitivity to specification choice in the Dollar and Levin approach.

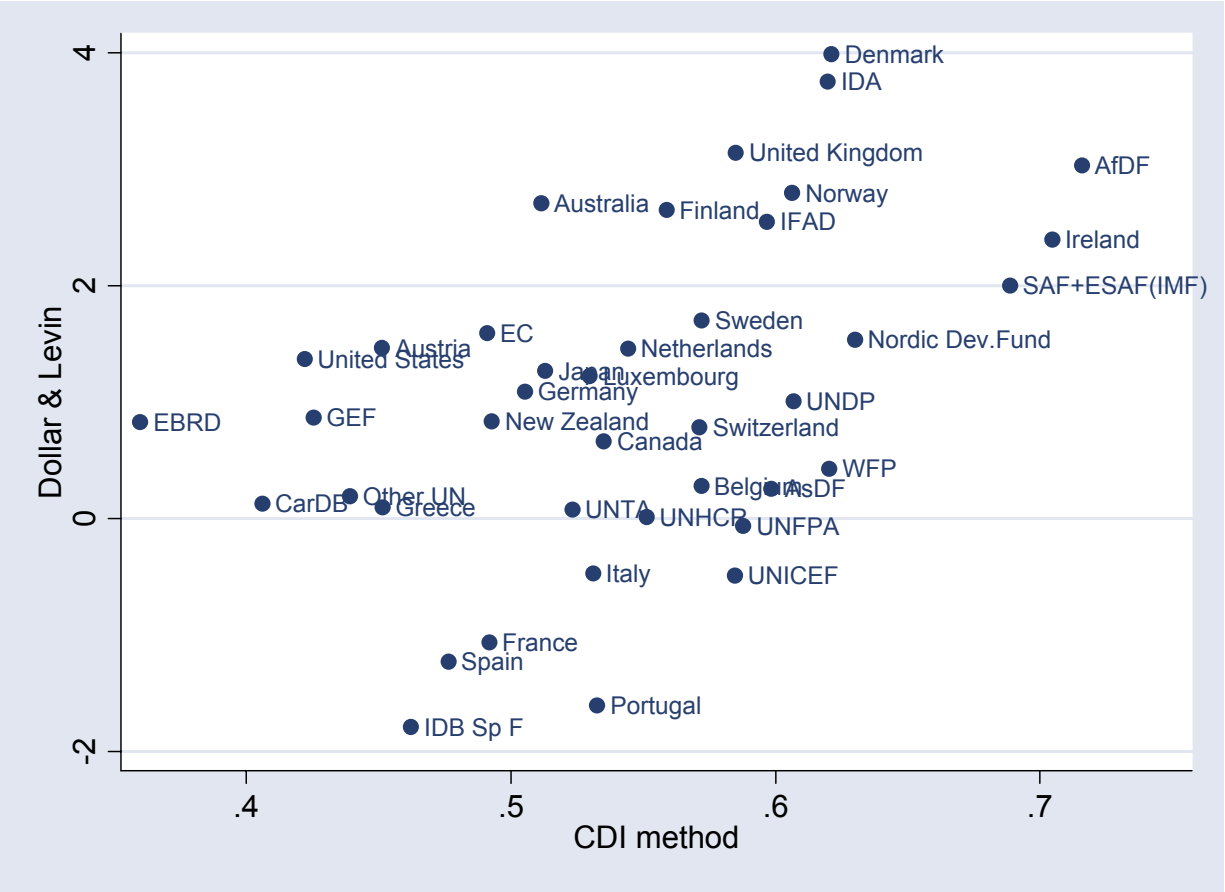
[21] The Kaufmann-Kraay variables are available for even years in 1996–2002. For odd years, I used the previous year's values, except that for 1995 I used 1996 values.

Table 6. Discounting for selectivity

Donor	A. Gross aid[1]	B. Gross aid, weighted	C. Gross selectivity	D. Net aid[1]	E. Net aid, weighted	F. Net selectivity	G. Net tying discounted aid[1]	Selectivity-weighted, net tying discounted aid
	--- (million $) ---			--- (million $) ---			--- (million $) ---	
Formula:			B/A			E/D		
Australia	777	439	0.56	777	439	0.56	701	394
Austria	509	267	0.52	504	264	0.52	474	247
Belgium	758	434	0.57	721	415	0.55	714	411
Canada	1,633	893	0.55	1,606	879	0.54	1,488	815
Denmark	1,178	723	0.61	1,124	697	0.59	1,089	668
Finland	291	171	0.59	283	169	0.58	270	159
France	5,624	2,544	0.45	4,678	2,144	0.38	4,335	1,942
Germany	4,538	2,347	0.52	3,237	1,815	0.40	3,118	1,731
Greece	123	51	0.41	123	51	0.41	101	42
Ireland	268	174	0.65	268	174	0.65	268	174
Italy	1,208	787	0.65	1,008	700	0.58	812	566
Japan	9,811	4,581	0.47	5,014	2,372	0.24	4,816	2,320
Netherlands	2,677	1,535	0.57	2,531	1,461	0.55	2,506	1,445
New Zealand	92	51	0.56	92	51	0.56	92	-2
Norway	1,193	769	0.64	1,188	766	0.64	1,186	765
Portugal	187	95	0.51	186	94	0.50	173	87
Spain	1,164	546	0.47	1,009	482	0.41	831	374
Sweden	1,351	879	0.65	1,350	879	0.65	1,341	873
Switzerland	826	524	0.63	822	522	0.63	820	521
United Kingdom	3,696	2,210	0.60	3,592	2,157	0.58	3,567	2,141
United States	13,847	6,756	0.49	12,371	6,137	0.44	10,400	5,117
AfDF	741	442	0.60	519	334	0.45	519	330
AsDF	1,168	628	0.54	750	438	0.37	750	438
CarDB	119	50	0.42	27	7	0.06	27	7
EBRD	72	27	0.38	72	27	0.38	72	27
EC	10,145	4,578	0.45	8,865	4,079	0.40	8,865	4,070
GEF	137	59	0.43	137	59	0.43	137	59
IDA	6,667	3,594	0.54	4,658	2,638	0.40	4,658	2,615
IDB Sp F	425	199	0.47	48	54	0.13	48	53
IFAD	250	140	0.56	114	74	0.30	114	73
Mont. Protocol	60	27	0.45	60	27	0.45	60	27
Nordic Dev.Fund	35	23	0.67	33	22	0.64	33	22
Other UN	630	275	0.44	630	275	0.44	630	275
SAF+ESAF(IMF)	2,936	1,789	0.61	951	750	0.26	951	750
UNDP	278	165	0.60	278	165	0.60	278	165
UNFPA	312	175	0.56	312	175	0.56	312	175
UNHCR	655	347	0.53	655	347	0.53	655	347
UNICEF	571	318	0.56	571	318	0.56	571	318
UNTA	478	248	0.52	478	248	0.52	478	248
WFP	352	207	0.59	352	207	0.59	352	207
U.S.-Colombia	346	109	0.31	305	98	0.32	256	82

[1]From previous tables.

Figure 5. Average selectivity of non-emergency disbursements, 1995–99, Dollar and Levin (1994) method versus Commitment to Development Index method



6. Penalizing proliferation

"Project proliferation," "fragmentation," and "lack of coordination" have long been cited as major problems for aid effectiveness. Donors often act at cross-purposes—one donor's trains won't run on another's tracks, literally or metaphorically. Or donors overload recipient ministries with mission visitations and project reporting requirements (Acharya, de Lima, and Moore 2003). For this reason, the 2004 CDI aid component includes a new penalty for project proliferation.[22]

Though the transaction costs of aid are widely thought to be substantial, they have mostly defied direct measurement. For example, Brown et al. (2000) set out to measure aid transaction costs in Vietnam but ended up obtaining only anecdotal information. A pair of recent papers has made fresh contributions to analyzing the extent of proliferation and indirectly measuring its costs. Arnab Acharya, Ana Fuzzo de Lima, and Mick Moore (2003) developed indexes of donors' tendency to *proliferate* (disperse) aid among recipients, and of the tendency of recipients' aid to be *fragmented* among many donors. Stephen Knack and Aminur Rahman (2004) measured fragmentation similarly, and found it to be predictive of lower recipient bureaucratic quality. They theorized that donors out-compete recipient governments for the scarce resource of skilled local workers.

[22] I thank Robert Picciotto for the suggestion that inspired this change.

The inputs to the indexes of proliferation and fragmentation in these papers are data on aid disbursements by donor and recipient, from Table 2a of the DAC database. Given that dataset, the indexes are logical first steps toward measuring proliferation. But this style of analysis also has disadvantages. The Acharya, de Lima, and Moore proliferation index does not discriminate between concentrating aid in India and concentrating it in Vanuatu, yet presumably concentration in Vanuatu would overwhelm local absorptive capacity. It does not draw a distinction between, on the one hand, donors that tend to enter sectors and countries already crowded with other donors' projects and, on the other, donors that tend to avoid crowded country-sectors, thereby reducing administrative burdens on particular line ministries. Finally, it does not distinguish between project and program aid even though one rationale for program aid is that it reduces transaction costs of aid.

Roodman (forthcoming) develops a model of proliferation that uses a richer dataset to make all these distinctions. The model takes most of its data from the detailed commitment-level CRS database rather than DAC Table 2a. It is calibrated against the example of Tanzania, which last year declared a "mission holiday," during which only the most urgent visits would be accepted from donor officials. This is taken as a sign that the marginal cost of aid in Tanzania, as currently supplied, has matched its marginal benefit. The model's output is a coarse estimate of the marginal "proliferation cost" of each donor's aid activities in each recipient country and sector. The cost is assumed to occur when a project diverts scarce recipient-side resources such as administrative capacity from other aid projects and programs in the same sector, thus reducing their effectiveness and value.

The model was originally designed for use in the index, but because the theory and implementation are fairly complex in their details, and because the model is tenuously calibrated to empirical data, it seemed best not to use it directly.[23] Instead, I regressed the model's results for total proliferation cost as a share of gross disbursements, aggregated at the donor level and discounted for selectivity, against a set of more straightforward potential indicators of proliferation cost, such as the number of aid commitments under $100,000, average recipient GDP, and the share of project aid in total aid. The *share of aid commitment dollars committed in amounts less than $100,000* turned out to have a correlation of 0.78 with the full model's results, and other indicators could explain little additional variation.[24] (This is not the percentage of distinct aid *commitments* made in amounts below $100,000.) In a simple regression without a constant term, the slope was 3.4.[25] Interestingly, this suggests that the emphasis of Acharya, de Lima, and Moore on a donor's dispersal within the universe of recipients is somewhat misplaced. The number of distinct projects an aid flow supports may matter more for proliferation cost. Indeed the model results are, if anything, negatively correlated with their index.

The upshot is a simple formula for the proliferation penalty in the present aid index:

$$\text{share of aid commitment dollars committed in quanta less than \$100,000} \times 3.4 \times \text{gross aid}.$$

[23] Thanks to Paul Isenman, Steven Radelet, Peter Timmer, and John Williamson, among others, for persuading me of this.

[24] Within a fairly wide range, the exact cutoff does not matter much. Cut-offs of $25,000, $50,000, or $200,000 all gave almost the same correlation.

[25] In the computations for the 2004 CDI, the coefficient used was 4.0. I use 3.4 here because of the change in selectivity weights described in footnote 18 after the CDI numbers were frozen. Reducing the selectivity weights reduced the selectivity-weighted proliferation costs, the dependent variable in the regression.

Unlike all calculations described before, these are carried out at the donor level, not the donor-recipient level. Table 7 shows the results. Ireland, Norway, Portugal, Spain, and UNICEF appear to be major funders of small projects.[26] Unfortunately, many multilaterals did not report the requisite data to DAC; I assigned them a proliferation cost of 0. It is reassuring that most of the multilaterals that did report got low or 0 proliferation penalties. And a 0 is clearly appropriate for the only major multilateral not reporting, the IMF.

Since this is the final quality consideration factored into the aid index, the result of subtracting this penalty from the previous step's results is, at last, "quality-adjusted aid quantity" (or simply "quality-adjusted aid") for each donor, whether bilateral or multilateral, as shown in Table 7. Strikingly, Spain and New Zealand emerge with zero or negative scores for their bilateral aid programs because of relatively low selectivity and a high apparent tendency to fund small projects.

[26] New Zealand has not reported CRS data since 1995, making it is impossible to compute the share of its aid commitments dollars committed in amounts under $100,000. So results from the full proliferation model, which involve a set of extrapolations, were used. In the calculations for the 2004 CDI, the same was done for Denmark, which reported all its technical cooperation commitments as a single entry in 2002. In this paper, however, I decided to use Denmark's data for 2001, which disaggregated technical cooperation. This seemed more accurate, and happened to substantially improve Denmark's overall score.

Table 7. Calculation of proliferation penalty and quality-adjusted aid by donor, 2002

Donor	A. Gross aid, 2002[1]	B. Share of aid commitment $ in quanta <$100,000	C. Prolif-eration penalty	D. Selectivity-weighted, net tying discounted aid[1]	E. Quality-adjusted aid
	(million $)	(%)	---------- (million $) ----------		
Formula:			B × 3.4 × A		D–C
Australia	777	3.9	104	394	291
Austria	509	4.2	72	247	175
Belgium	758	5.7	148	411	264
Canada	1,633	1.5	85	815	730
Denmark	1,178	0.4[2]	14	668	654
Finland	291	4.0	39	159	120
France	5,624	1.5	294	1,942	1,648
Germany	4,538	1.0	151	1,731	1,580
Greece	123	9.9	41	42	1
Ireland	268	13.7	125	174	49
Italy	1,208	0.0	1	566	565
Japan	9,811	0.0	8	2,320	2,311
Netherlands	2,677	0.8	70	1,445	1,375
New Zealand	92	0.0	0	-2	-2
Norway	1,193	8.2	334	765	431
Portugal	187	9.3	59	87	28
Spain	1,164	9.7	382	374	-8
Sweden	1,351	2.3	107	873	765
Switzerland	826	2.1	59	521	462
United Kingdom	3,696	0.5	64	2,141	2,076
United States	13,847	0.3	154	5,117	4,963
AfDF	741	0.0	0	330	330
AsDF	1,168	0.0	0	438	438
CarDB	119	N/A	0	7	7
EBRD	72	N/A	0	27	27
EC	10,145	0.2	72	4,070	3,998
GEF	137	N/A	0	59	59
IDA	6,667	0.0	0	2,615	2,615
IDB Sp F	425	0.0	0	53	53
IFAD	250	0.0	0	73	73
Montreal Protocol	60	N/A	0	27	27
Nordic Dev.Fund	35	N/A	0	22	22
Other UN	630	N/A	0	275	275
SAF+ESAF(IMF)	2,936	N/A	0	750	750
UNDP	278	N/A	0	165	165
UNFPA	312	N/A	0	175	175
UNHCR	655	N/A	0	347	347
UNICEF	571	10.8	211	318	107
UNTA	478	N/A	0	248	248
WFP	352	0.0	0	207	207

[1]From previous tables. [2]Figure is for 2001 for lack of complete 2002 data.

7. Allocating multilateral quality-adjusted aid to bilaterals

Since the motivation for this exercise is to compare national governments, it is important to give bilaterals credit for their contributions to multilateral institutions. This final step in computing the index of *official* aid performance is done following established DAC methodology. Bilaterals receive credit for the aid programs of multilaterals in proportion to the bilaterals' contributions to those multilaterals during the same year. For example, since France accounted for 5.96 percent of contributions to the IDA during 2002, it received 5.96 percent of the IDA's quality-adjusted aid of $2.6 billion, or $156 million.[27] (See Table 8.)

The penultimate column of Table 8 is the final measure of official aid performance: quality-adjusted aid as a share of donor GDP. GDP figures are converted to dollars using market exchange rates, and are from World Bank (2003).

Despite the quality adjustments, what most distinguishes donors from each other in this index is still the sheer quantity of aid they disburse, especially when measured as true net transfers. Denmark, the Netherlands, Norway, and Sweden are large donors by DAC's net ODA measure, and they score highest on this one too, with at least 0.38% of GDP for 2002. The two largest donors in absolute terms, Japan and the United States score low, Japan at 0.09%, the United States at 0.06%. Unlike last year, however, they are no longer the bottom two in the rankings. This time, Greece, New Zealand, and Spain score lower than Japan because of the new proliferation penalty.

The final column of Table 8 offers a quantitative measure of aid quality: the ratio of quality-adjusted aid to net aid. New Zealand and Ireland again appear near the bottom, at 9% and 30% respectively, because of proliferation[28]; Portugal scores low (34%) because of proliferation and low selectivity; and Spain and Greece are low (25% and 31%) because those factors and high tying. The leaders are the Netherlands (52%), the United Kingdom (52%), Denmark and Switzerland (54%), Sweden (55%), and Italy (56%). Italy comes out on top, despite high tying, because of minimal proliferation and high selectivity.

Although the final scores are expressed as percentages of GDP, they should not be compared to other variables so expressed, such as net ODA, only to each other. The selectivity adjustment could have super-weighted aid to the most appropriate recipients rather than discounting aid to the less appropriate ones. This equally meaningful (and arbitrary) choice would make little difference for the relative results, but would raise scores across the board.

I back-calculated this index of official aid performance to explore the time-series as well as cross-sectional variation in scores. What set the starting point of the time frame was the availability of the Kaufmann-Kraay governance variable. It is available for even years in 1996–2002. For odd years, I used the following year's score, and this allowed me to calculate the index for 1995–2002. Total quality-adjusted aid/GDP of bilaterals was fairly stable over this short period. The simple average was 0.20% in 1995 and 0.21% in 2002, and the correlation of 1995 and 2002 scores was 0.93.[29] (See Figure 6.)

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[27] A few small multilaterals, such as the Central American Bank for Economic Integration received contributions in 2002 but did not themselves report to DAC on their own aid allocations (examples include). This made it impossible to compute their quality-adjusted aid and allocate it back to bilaterals. To prevent contributions to these unscored multilaterals from being dropped, a simple extrapolation was performed based on each bilateral's ratio of quality-adjusted allocated back from scored multilaterals to contributions the donor made to those multilaterals.

[28] However, the proliferation penalty for New Zealand is highly approximate because of missing data. See note 26.

[29] These figures exclude Greece, which did not report to DAC for 1995, and may have given essentially no aid.

Aid quality (quality-adjusted aid/net aid) was more volatile, though mostly within the 40–60% range. Its average was 44% in 1995 and 43%. The most dramatic result here is the wild swings for the small donors that get large proliferation penalties, especially Greece, New Zealand, and Spain. Ireland is deemed such a proliferation in some years that its aid program appears to do more harm than good. The correlation between the 1995 and 2002 scores is 0.70, but the correlation with 2002 dropped as low as 0.40 in 1997 because of the Ireland's score of –60% that year. While it seems likely Ireland is indeed a "proliferator" by the standards of its peers, this volatility in results does also suggest that it would be valuable to explore how to refine the computation of the proliferation penalty. Perhaps, for example, there could be special treatment for grants to NGOs or technical cooperation.

Table 8. Allocating multilateral quality-adjusted aid to bilaterals, 2002

		Net aid			Quality-adjusted aid					
Country	Gross aid	Bilateral	Multilateral	Total	Bilateral	Multilateral	Total	GDP	**Adjusted aid/GDP**	Adjusted/Net aid
	(million $)	----- (million $) -----			----- (million $) -----			(million $)	----- (%) -----	
Australia	1,003	777	225	1,003	291	116	407	411,000	**0.10**	41
Austria	721	504	212	716	175	117	292	203,000	**0.14**	41
Belgium	1,211	721	453	1,173	264	256	520	248,000	**0.21**	44
Canada	2,155	1,606	522	2,128	730	256	986	716,000	**0.14**	46
Denmark	1,863	1,124	684	1,809	654	325	979	175,000	**0.56**	54
Finland	540	283	249	532	120	127	246	131,000	**0.19**	46
France	8,068	4,678	2,444	7,121	1,648	1,612	3,260	1,410,000	**0.23**	46
Germany	7,140	3,237	2,602	5,839	1,580	1,281	2,861	1,980,000	**0.14**	49
Greece	292	123	169	292	1	89	90	133,000	**0.07**	31
Ireland	426	268	157	426	49	80	128	120,000	**0.11**	30
Italy	2,547	1,008	1,338	2,346	565	762	1,327	1,180,000	**0.11**	57
Japan	12,445	5,014	2,634	7,648	2,311	1,401	3,712	3,980,000	**0.09**	49
Netherlands	3,660	2,531	983	3,514	1,375	464	1,839	414,000	**0.44**	52
New Zealand	124	92	32	124	-2	14	12	58,200	**0.02**	9
Norway	1,757	1,188	564	1,752	431	289	720	189,000	**0.38**	41
Portugal	356	186	169	356	28	92	119	121,000	**0.10**	34
Spain	1,883	1,009	720	1,729	-8	447	439	650,000	**0.07**	25
Sweden	2,094	1,350	743	2,094	765	396	1,161	230,000	**0.50**	55
Switzerland	1,018	822	192	1,014	462	87	549	268,000	**0.20**	54
United Kingdom	5,571	3,592	1,875	5,466	2,076	792	2,869	1,550,000	**0.19**	52
United States	16,749	12,371	2,902	15,274	4,963	1,432	6,395	10,400,000	**0.06**	42

Figure 6. Total quality-adjusted aid/GDP by bilateral donor, 1995–2002

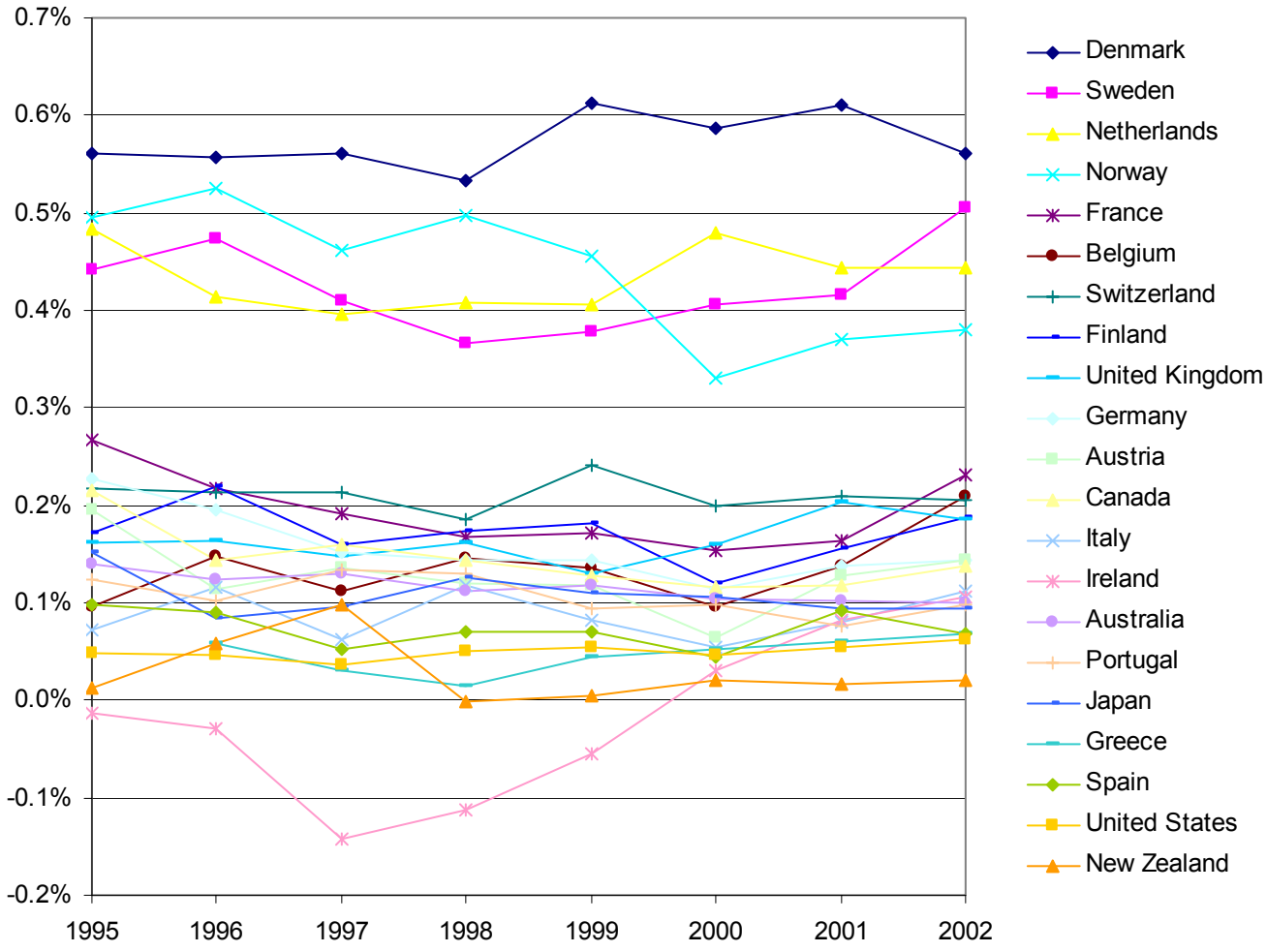
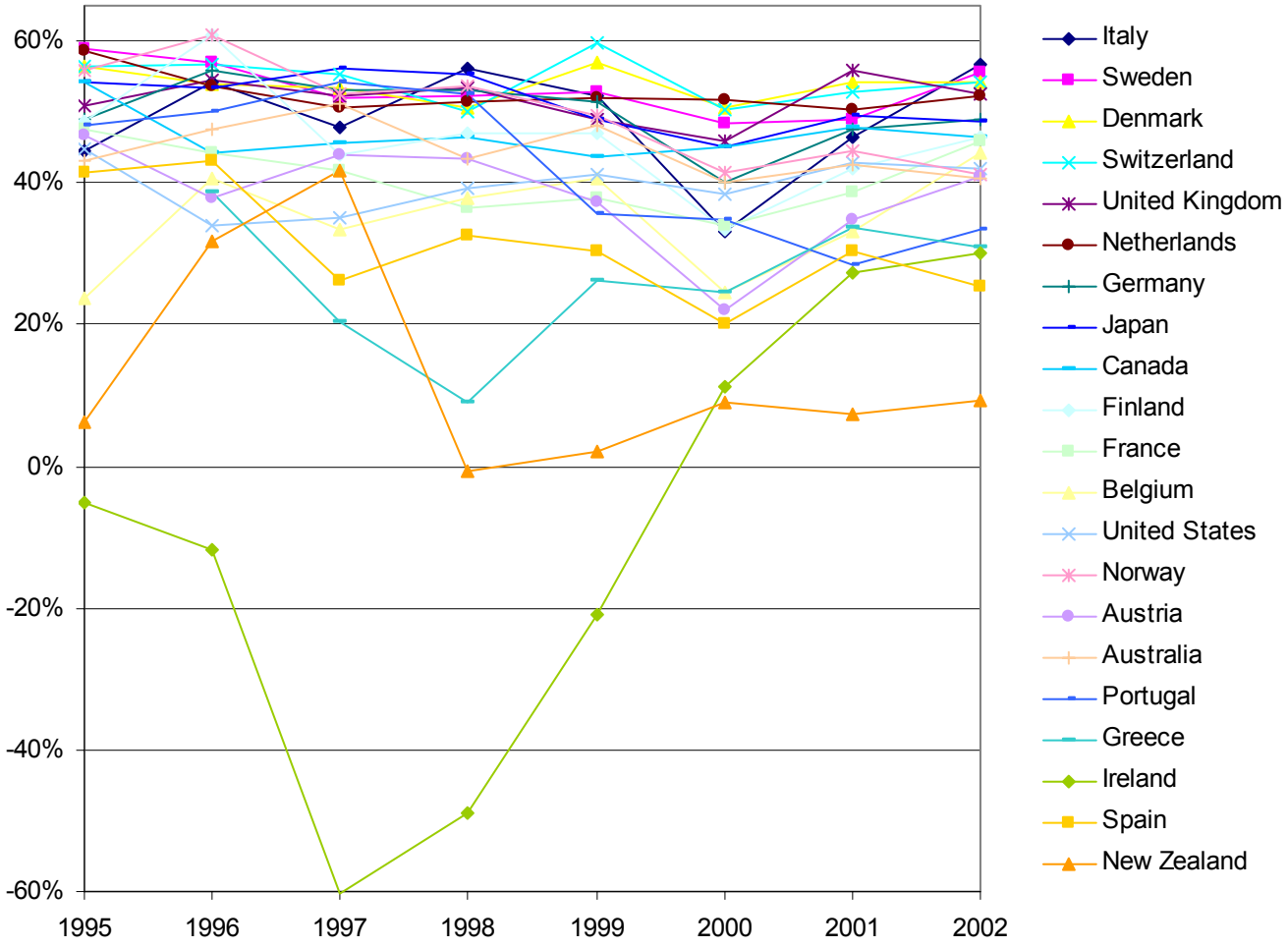


Figure 7. Total quality-adjusted aid/net aid by bilateral donor, 1995–2002



8. Rewarding tax policies that support private giving[30]

One frequent comment on the first CDI was that it ought to reward countries for private charitable giving to developing countries. Yes, U.S. official aid, say, is low compared to GDP, but aren't Americans generous as private citizens? In response, the new edition of the aid index factors in private giving. But since the aid component is supposed to assess government policy, it did not seem appropriate to simply add private giving to public. The decision to give privately is influenced, but not made, by governments. The approach now taken in the CDI is to estimate the proportional increase in giving caused by each country's tax policies, compare that to actual giving, then work backwards to estimate how much giving would have occurred in the absence of the policies and how much is a credit to their presence. Two aspects of fiscal policy are considered. First are targeted income tax incentives that lower the "price" of giving. Second is the total

[30] Alicia Bannon contributed to this section.

tax revenue/GDP ratio: lower taxes leave citizens and corporations with more after-tax income to give to charity.[31]

The approach taken here will seem simplistic to some and too sophisticated to others. To make the calculations practical, we had to make several major simplifying assumptions. Each country's tax policies are complex and idiosyncratic. No two households are in exactly the same financial position, and so the tax codes present different incentives to different households. And of course different people respond to the same incentives differently. On the other hand, the sophistication of the calculations, such as it is, should not be read to imply that believe that our estimates of the effects of policy on giving cannot be greatly improved. We do believe they represent a reasonable way to incorporate some policy indicators into the index with appropriate weighting. And it seems unlikely that major changes in methodology affect the overall results much.

All but three CDI countries—Austria, Finland, and Sweden—offer income tax deductions or credits for charitable giving.[32] These incentives lower the price of giving in the sense that a dollar of forgone after-tax income buys more than a dollar of charity. Charitable donations can fund the operations of non-profit groups working in developing countries, such as Oxfam and CARE, or they can go to foundations that fund such projects. We treated all income tax incentives for charitable giving as deductions; that is, we treat them as reducing the price of giving by "the" marginal income tax rate.

We translated the presence of a tax incentive into a estimated for the increase in charity in two steps. First, we used a crude but available proxy for the marginal income tax rate faced by the households with above-average incomes that generate most charity. This proxy is the share of gross wage earnings going to income tax for workers at 167% of the income level of the average production worker (OECD 2003b, p. 80). Thus, for example, this tax rate is 22.6% for the United States, so incentives in the U.S. tax code are treated as reducing the price of charitable giving by 22.6%. Second, we couple this with an estimate of "the" price elasticity of giving. Recent research puts it at around 0.5 in the United States (Andreoni 2001). Thus, if a representative individual in the United States faced a marginal tax rate of 22.6%, full deductibility of charitable contributions would multiply giving by a factor of $(1 - 0.226)^{-0.5} = 1.137$, for a 13.7% increase.

The procedure is similar for the effect of having lower total taxes. When the overall tax ratio is lower individuals have more money to give to charity. Thus, while high tax rates *increase* the incentive to give when we look at the price effects of tax deductions, they *decrease* the incentive to give when we look at income effects. Among the 21 scored countries, the tax revenue/GDP ratio in 2001 ranged between 27.3% (in Japan) to 51.4% (in Sweden) (OECD 2003a, p. 72). To reward countries for lower tax ratios, we needed a baseline against which to define lowness. We chose Sweden's tax ratio, the hightest. We coupled this with an estimate of the income of elasticity of giving at 1.1 (Andreoni 2001). The United States, to continue the example, is treated as having reduced its total tax burden from Sweden's 51.4% to the actual 28.9%. This raises the privately claimed share of GDP from 48.6% to 71.1%, an increase of 46.3% relative to the baseline.[33] As a result, the lower U.S. tax burden is estimated to multiply charity by

[31] This is not a simplistic endorsement of low taxes or high budget deficits.

[32] This information was compiled by CGD from various sources. Details are available upon request.

[33] Some share of the revenue funds transfer payments, which the recipients may use as they please, including for charitable giving. The precise effect of this redistribution on giving is difficult to know because it depends on such factors as the difference in income between the typical taxpayer and typical transfer recipient. This seems like too complicated an issue to address.

$$\left(\frac{1-0.289}{1-0.514}\right)^{1.1} = 1.520, \text{ for a } 52.0\% \text{ increase.}$$

The two multipliers are then multiplied, inverted, and applied against observed giving in order to estimate giving in the absence of these favorable policies. Observed giving is "grants by NGOs" from DAC Table 1; it counts contributions by foundations and individuals, which do ordinarily go through NGOs, but exclude official aid that is channeled through NGOs. The result is a set of estimates for the dollar increase in private giving to developing countries caused by fiscal policy. In the U.S. case, the multipliers combine to 1.727. Observed giving of $5.66 billion in 2002 is 72.7% above $3.27 billion, so U.S. policy is credited for the difference, $2.38 billion. (See Table 9.)

To incorporate the results on charitable giving attributed to policy into the main quality-adjusted aid measure, it was necessary to discount the results for quality in parallel fashion. As noted above, quality-adjusted aid cannot be directly compared or added to simple aid totals. Moreover, private giving too can go to countries that are more or less appropriate for aid, and can contribute to the problems of project proliferation, for example, by siphoning off talented administrators from government service. So as a rough adjustment in the absence of information on the quality of private aid, the CDI discounts policy-induced private giving by the simple average of the quality discounts for the bilaterals' own aid programs, which is 62%.[34,35]

Incorporating private giving turns out to have marginal effects on the scores. In the case of the United States, a country often pointed to as a stingy public donor and a generous source of private charity, a country where one might expect a large effect, the result is $908 in quality-adjusted charitable giving attributed to tax policy. Added to the country's $6.37 billion in official quality-adjusted aid, this raises the final U.S. score on the aid index from 0.06% to 0.07% of GDP.

[34] The aid component of the 2004 CDI erroneously *multiplied* charitable giving by about this factor rather than *discounting* by it. The effect was to somewhat exaggerate the value of charitable giving–related policies.

[35] The discount is relative to net aid. The 62% average excludes New Zealand because of the low confidence in its proliferation cost estimate.

Table 9. Calculation of policy-induced charitable giving

Country	A. Tax incen-tive?	B. Mar-ginal in-come tax rate (%)[1]	C. Increase in giving with incen-tive (%)	D. Tax reve-nue/GDP, 2001 (%)	E. Giving increase because of smaller gov't (%)	F. Com-bined in-crease	G. Grants by NGOs[2]	H. Giving in absence of favorable tax policies	Giving attributed to tax policies
		---------- (%) ----------					---------- (million $) ----------		
Formula:			(1–A×B)^price elasticity–1[3]		((1–D)/(1–51.4%))^ income elasticity–1[4]	(1+C)× (1+E)–1		F/(1+G)	H–G
Australia	1	32.0	21.3	30.1	49.2	80.9	229	127	103
Austria	0	17.3	0.0	45.4	13.7	13.7	54	47	6
Belgium	1	34.4	23.5	45.8	12.7	39.2	69	49	19
Canada	1	24.8	15.3	35.1	37.5	58.5	277	175	102
Denmark	1	41.5	30.7	49.8	3.6	35.5	17	12	4
Finland	0	32.8	0.0	46.1	12.1	12.1	10	9	1
France	1	17.9	10.4	45.0	14.6	26.5	203	160	42
Germany	1	29.5	19.1	36.8	33.5	59.0	770	484	286
Greece	1	7.6	4.0	36.9	33.3	38.6	5	4	1
Ireland	1	22.2	13.4	29.9	49.6	69.6	78	46	32
Italy	1	24.2	14.9	42.0	21.5	39.5	32	23	9
Japan	1	9.4	5.1	27.3	55.7	63.6	165	101	64
Netherlands	1	21.2	12.7	39.5	27.2	43.3	236	165	71
N. Zealand	1	25.7	16.0	33.8	40.5	63.0	21	13	8
Norway	1	28.4	18.2	43.3	18.5	40.0	404	288	115
Portugal	1	12.2	6.7	33.5	41.2	50.7	5	3	2
Spain	1	17.8	10.3	35.2	37.2	51.4	118	78	40
Sweden	0	30.8	0.0	51.4	0.0	0.0	18	18	0
Switzerland	1	14.6	8.2	30.6	48.0	60.1	186	116	70
U.K.	1	18.2	10.6	37.3	32.3	46.3	328	224	104
U.S.	1	22.6	13.7	28.9	52.0	72.7	5,656	3,274	2,381

[1]Income tax as % of gross wage earnings (2002)—single individual at 167% income level of the average production worker. [2]Data for latest available year. [3]Price elasticity of giving taken to be –0.5. [4]Income elasticity of giving taken to be 1.1.

Table 10. Quality-adjusted aid quantity with multilateral aid allocated back to bilaterals

Country	A. Quality-adjusted official aid[1]	B. Charitable giving credited to policy	C. Quality-adjusted charitable giving credited to policy	**Adjusted (aid+charitable giving)/GDP**
	---------- (million $) ----------			**(%)**
Formula:			B × 0.38	**(A + C)/GDP**
Australia	407	103	39	**0.11**
Austria	292	6	2	**0.15**
Belgium	520	19	7	**0.21**
Canada	986	102	39	**0.14**
Denmark	979	4	2	**0.56**
Finland	246	1	0	**0.19**
France	3,260	42	16	**0.23**
Germany	2,861	286	109	**0.15**
Greece	90	1	1	**0.07**
Ireland	128	32	12	**0.12**
Italy	1,327	9	4	**0.11**
Japan	3,712	64	24	**0.09**
Netherlands	1,839	71	27	**0.45**
New Zealand	12	8	3	**0.03**
Norway	720	115	44	**0.40**
Portugal	119	2	1	**0.10**
Spain	439	40	15	**0.07**
Sweden	1,161	0	0	**0.50**
Switzerland	549	70	27	**0.21**
United Kingdom	2,869	104	40	**0.19**
United States	6,395	2,381	908	**0.07**

[1]From Table 8.

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