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Setting Weights for Aggregate Indices: An Application to the Commitment to Development Index and Human Development Index

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Abstract: Aggregate indices like UNDP's Human Development Index or the Center for Global Development and Foreign Policy's Commitment to Development Index (CDI) are subject to multiple criticisms including questions regarding the system of equal weights used to construct them. This paper addresses two concerns linked to the weights used in the HDI and the CDI and develops alternative weighting schemes. It first relies on an opinion survey conducted electronically among researchers from 60 countries to construct a new, non-equal set of weights. It then addresses an issue of scaling of relevance only to the CDI. Results of the opinion survey suggest that a simple scheme based on equal weights is not only convenient but also consistent with the views of experts. However, for the CDI, a weighting system that takes scale into account makes an important difference and merits further consideration.

JEL C43, C80, O20

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1. Introduction

Aggregate indices like UNDP's Human Development Index (HDI) or the Center for Global Development (CGD) and Foreign Policy (FP)'s Commitment to Development Index (CDI) are becoming commonplace. This reflects the usefulness of simple numerical measures of performance for advocacy, for analysis, and for straightforward, non-technical comparisons. At the same time, these indices are open to many criticisms ranging from concerns with the underlying data to questions regarding the weights used to construct the aggregate indices from their constituent components. This paper addresses two concerns linked to the weights used to construct these two indices and develops alternative weighting schemes.

Both the HDI and the CDI apply a very simple weighting scheme: equal weights for each component. This is obviously convenient but also universally considered to be wrong. The ideal approach would presumably involve using as weights the impact of each component on the ultimate objective. For the HDI, this means that each of the components should receive weights according to its contribution to human development, and for the CDI, it means that each of the components should receive weights according to its contribution to the development of developing countries. This is theoretically correct but obviously infeasible given the present state of knowledge. The first question addressed in this paper, therefore, is whether there is an intermediate solution. In this context, intermediate means a solution that lies somewhere between equal weights and the ideal; and somewhere between convenient and infeasible.

The approach followed here is to rely on the opinions of informed persons. To the extent that informed persons have a good knowledge of the relationship between each component and the ultimate objective then this approach approximates the ideal. Of course, no individual, no matter how knowledgeable, can know equally well the links for all components. Hence there is a need to average across "experts". Specifically, we have undertaken an electronic survey of development researchers throughout the world to determine how they weight the different components of the two indices. The average weights emerging from this process have then been used to reconstruct the indices and to see how the new versions change country rankings. We have also explored various subgroups such as researchers from OECD countries versus researchers from non-OECD countries.

The second question addresses an issue of concern only to the CDI. As its name implies, the CDI attempts to measure commitment. But commitment is only an intermediate measure, with the ultimate goal being to measure the impact of policy effort by the OECD countries on development. Thus, the weighting system underlying the CDI measures effort with no reference to scale and therefore no reference to likely impact on developing countries. The alternative weighting system examined in this paper allows for scale and therefore is a better measure of likely impact and of the importance of changing a particular policy. (This concern does not apply to the HDI because it already measures the ultimate objective – human development.)

The rest of the paper is organized in the following manner: in section 2, we describe the two indices in brief. We then formalize the weighting system used to construct these two indices and present the proposed alternatives. In sections 3 and 4, we address the first question of the paper: Is there an alternative based on informed opinion to the system of equal weights used in both the HDI and the CDI? In section 3, we describe the population from which we have drawn our sample, the sampling methods and data collection procedures, and the basic characteristics of our respondents. In section 4, we estimate the weights based on the survey responses and apply the new weighting system to both the CDI and HDI. In section 5, we turn to the second question: Is there a method of measuring impact more closely by accounting for scale rather than simply measuring effort as in the CDI? Based on the system described in the preceding section, we identify in section 6 policy/country combinations where an improvement in effort would have the greatest impact. We conclude the paper in section 7 with implications for future research.

2. Indices, Existing and Proposed Weighting Systems

According to the UNDP, the Human Development Index (HDI) is a summary measure of human development based on three dimensions: life expectancy at birth; knowledge; and standard of living. Life expectancy at birth measures the relative achievement of each country in prolonging life. The knowledge component is a combination of two indices: adult literacy rate and combined (primary, secondary and tertiary) enrolment rate. It measures a country's relative achievement. The index for literacy and the index for enrolment are combined with adult literacy receiving a two-thirds weight and enrollment a one-third weight. The standard of living is calculated using the logarithm of adjusted GDP per capita (PPP US$).

Performance in each dimension is expressed as a value between 0 and 1 by applying the following formula:

$$\textit{Dimension Index} = \frac{\textit{actual value} - \textit{minimum value}}{\textit{maximum value} - \textit{minimum value}}$$

The HDI is then calculated as a simple average of the dimension indices. The maximum and minimum values for each of the dimensions have been established by the UNDP as follows: 85 years and 25 years for life expectancy at birth, 100% and 0% for the adult literacy rate and the combined gross enrollment ratio, and US$40,000 and US$100 for per capita income (UNDP, 2002, pp. 252-53.)

The Commitment to Development Index (CDI) constructed by the CGD and FP measures the extent to which the policy stance of the world's richest countries reflects their stated goals of advancing the development of the world's poorest countries. According to the CGD/FP (Foreign Policy 2003), CDI ranks 21 OECD countries (Luxemburg being the exception) in six policy areas: aid, trade, environment, investment, migration, and peacekeeping. The CGD/FP has estimated one index for each of the policy areas which it has later combined into an equally weighted single index called CDI.

Very briefly, aid is the quality adjusted overseas development assistance (ODA); environment measures how rich countries' actions and policies contribute to the degradation/improvement of the environment; investment includes long term capital flows to developing countries corrected by a bribe payers' index that measures the propensity of corporations from rich nations to pay bribes in developing countries; migration is a combination of the number of total legal immigrants accepted per year and aid to refugees; peacekeeping includes measures to ensure security through contributions to UN peacekeeping efforts; and trade measures revealed openness, and tariffs and non-tariff barriers that hinder developing countries' access to rich countries' markets.[2]

After the publication of the HDI for the first time in 1990, many researchers criticized its components and construction methods. As Srinavasan (1994) points out: "whether the HDI is an *internationally comparable* "measure…" is arguable" [emphasis in original, p. 240]. About the components, he argues that "their *relative* values need not be the same across individuals, countries, and socioeconomic groups" [emphasis in original]. He goes on to add that "In sum, the HDI is conceptually weak and empirically unsound, involving serious problems of noncomparability over time and space, measurement errors, and biases" (p.241). Perhaps similar criticisms can be put forward in the case of CDI too.

2.1 Existing Weighting System

The weighting system underlying the two indices can be expressed as follows:

$$I(i) = \sum p_{ij} w_{ij}$$

where $I(i)$ is the measure of policy effort or human development of the *ith* country, p_{ij} is the policy effort or human achievement of the ith country as currently calculated by CGD/FP and UNDP for the jth category (aid, trade, etc for CGD/FP and income, life expectancy, etc for the UNDP), and w_{ij} is the weight attached to the jth category in the ith country. Currently, the weight is the same for all categories in all countries. That is:

$$w_{ij} = w \qquad \text{for all i and j.}$$

2.2 New Weighting System I

An alternative allows for the weights to vary by the importance of the category:

$$w_{ij} = w_j \qquad \text{for all i.}$$

According to this new weighting system, if a country is performing very badly with respect to an unimportant category, it's overall policy effort or human development achievement will not be affected as much as if it is performing very badly with respect to

[2] See Birdsall and Roodman (2003) for a detailed account of the construction of CDI and references there.

an important category. This alternative weighting system will be applied to both the HDI and the CDI.

2.3 New Weighting System II

Weighting system I allows the weight to vary by category. For the CDI, it may also be important to let the weight vary by country as well in order to capture the country's importance (scale) in the OECD total for that category. We can express this idea as follows:

$$w_{ij} = s_{ij} w_j$$

where s_{ij} is the share of the ith country in the OECD total for the jth category. Thus, if country i only contributes a very small share to, say, total OECD trade with developing countries, then even if its policy effort for trade is very weak, its impact on developing countries is not likely to be great.

In sum, weighting system I measures effort with no reference to scale and therefore no reference to likely impact on developing countries. Weighting system II allows for scale and therefore is a better measure of likely impact. As a result, it can be used to measure the importance of changing a particular policy, thereby allowing us to identify key policies in need of change. This may be immediately valuable for advocacy purposes. It may also be important for designing future research. For instance, we may want to identify a few policies for much more detailed research is required in order to have a better understanding of impact. With limited resources, choices will have to be made among a large number of possibilities. Weighting system II offers a way of doing this by ranking country/category combinations. That is, we calculate $p_{ij} s_{ij} w_j$ for all i and all j and rank by importance.

One important caveat needs to be kept in mind. At best, we are saying something about the *average* impact of a particular policy of a particular country on average development outcomes. However, for the development impact evaluation of a particular policy what we need to measure is its *marginal* impact on development outcomes. For instance, we want to know how a one unit change in tariff barriers from their present level is going to developing countries. However, none of the weighting systems, be it equal, weighted or scaled, currently presents a marginal analysis.

3. Data Collection and Survey Methods

To collect expert opinions and to apply the two weighting systems, we have relied on an electronic survey conducted between May and June 2003. Social scientists have a relatively long history of using mail surveys as a method of collecting data.[3] The cost of mail surveys is usually low compared to other methods and the use of e-mail can bring

[3] For a detailed account of mail surveys, see Scott 1961.

the cost down further. Therefore, if the same information can be obtained by e-mail, there is a clear cost-advantage to the electronic survey over other traditional methods.

We followed a stratified random sampling procedure in selecting the respondents. We emailed a structured questionnaire to the selected respondents and made an online version of the questionnaire available to them. The questionnaire provided a brief explanation of HDI and CDI. Researchers were then asked to weight each of the items of each index on a scale from zero to 10. In addition, the questionnaire contained questions on researchers' education, research and demographic backgrounds. Respondents were asked to fill in the questionnaire and return it by email. Alternatively, they could fill in the online version and submit it directly.

Our population consisted of 1,547 researchers coming from 125 countries covering all seven geographic regions (the World Bank classification) and all five income groups (again the World Bank classification). Table 1 shows the distribution of the population according to income and geographic groups. There are two columns under each income group: the first column shows the number of countries (labeled as C) that belong to this category and the second column (in italics) shows the number of researchers (labeled as N) that belong to those countries. For instance, the first cell (the first row and the first column) shows that there are 4 low-income countries in our population that come from the East Asia and Pacific region. The number next to it in italics shows that there are 31 researchers in our population belonging to these four countries. The bottom two rows show the total number of countries that belong to each income group and the total number of researchers that belong to those countries. Similarly the last four columns show the geographic distribution of countries and the researchers.

Table 1: Distribution of Population

Region:	Low Income		Lower Middle Income		Upper Middle Income		High Income OECD		High Income Non OECD		Total Country		Total Researcher	
	C	*N*	C	*N*	C	*N*	C	*N*	C	*N*	C	%	*N*	%
EAP	4	*31*	5	*66*	2	*28*	3	*26*	4	*24*	18	14%	*175*	11%
ECA	7	*50*	12	*162*	7	*77*	16	*307*	1	*5*	43	34%	*601*	39%
LAC	0	*0*	10	*75*	7	*42*	0	*0*	1	*1*	18	14%	*118*	8%
MENA	1	*1*	9	*74*	3	*16*	0	*0*	3	*24*	16	13%	*115*	7%
NA	0	*0*	0	*0*	0	*0*	2	*197*	0	*0*	2	2%	*197*	13%
SA	4	*178*	1	*13*	0	*0*	0	*0*	0	*0*	5	4%	*191*	12%
SSA	19	*126*	1	*1*	3	*23*	0	*0*	0	*0*	23	18%	*150*	10%
Total	35	*386*	38	*391*	22	*186*	21	*530*	9	*54*	**125**	100%	***1547***	100%
As a %	28%	*25%*	30%	*25%*	18%	*12%*	17%	*34%*	7%	*3%*	100%		100%	

EAP: East Asia and Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; MENA: Middle East and North Africa; NA: North America; SA: South Asia; SSA: Sub Saharan Africa. C: Number of Countries; N: Number of Researchers.

We had chosen 200 as a preliminary sample size which was assumed to serve our purpose of a preliminary investigation. Once the sample size was determined, we distributed the sample among the income groups such that each group received a number of respondents based on its contribution to the population. Table A1 in the appendix shows the distribution of the sample according to income groups. Though one might argue that for the CDI, one partial sample that included respondents only from rich countries (e.g., high-income OECD) and another that included respondents only from poor countries (e.g., low-income countries) would be more appropriate, since we wanted to come up with a weighting scheme for two different indices, we selected the sample

from the whole population and kept its distribution similar to the distribution of the population.

Once we knew the distribution of the sample based on income level, the next step was to distribute the respondents among the regional groups. For this, each region received a sample based on its weight in each income group. Table A2 in the appendix shows the resulting sample distribution based on region.

To determine how many respondents should come from which country within a region for a particular income group, we used each country's relative weight in the subpopulation. For example, as can be seen in Table A2, the total number of respondents that should come from the South Asia region is 25 out of which 23 should come from low-income countries and the remaining two from lower-middle income countries. Accordingly, we have distributed 23 respondents among four low-income countries of South Asia depending on the relative weight of each of the countries in the group. As a result, India received 12 respondents while Bangladesh received 3 respondents.

As regards the final step, the selection of respondents from each of the country, we selected respondents through a simple random sampling procedure. For each of the countries, researchers were arranged in ascending order according to their last names and were assigned a number. Then the respondents were selected from each of the country separately using a random number generator.

Out of 200 questionnaires, we have received 105 responses from 60 countries. Table A3 in the appendix shows the names of the countries along with the number of responses. Table 2 shows the distribution of respondents based on income and region. A comparison between Table 1 and Table 2 reveals that there is a difference between the composition of the population and the respondents. We have received more responses from researchers from the low-income and lower-middle income countries, proportionately about the right number of responses from the upper-middle and high-income Non-OECD countries, and fewer responses from the high-income OECD countries. From the response pattern, it is evident that access to email and Internet did not determine response.

Table 2: Distribution of Respondents based on Income and Region

Region	Low Income	Lower Middle Income	Upper Middle Income	High Income OECD	High Income Non-OECD	Total	As a %
EAP	3	10	1	2	2	18	17%
ECA	4	13	8	15	1	41	39%
LAC	0	7	1	0	0	8	8%
MENA	0	8	2	0	1	11	10%
NA	0	0	0	3	0	3	3%
SA	15	0	0	0	0	15	14%
SSA	9	0	0	0	0	9	9%
Total	31	38	12	20	4	105	100%
As a %	30%	36%	11%	19%	4%	100%	

EAP: East Asia and Pacific; ECA: Europe and Central Asia; LAC: Latin America and the Caribbean; MENA: Middle East and North Africa; NA: North America; SA: South Asia; SSA: Sub Saharan Africa. Countries are classified according to the World Bank's classification. See WDI 2002 for details.

In terms of respondents' characteristics, the average age is 41 years with a standard deviation of 11.43 and the average experience in the area of development research is 13

years with a standard deviation of 10.11. Among the respondents 29 percent of them are female and 71 percent male; 74.28 percent of the respondents have a PhD; 47.42 percent work for universities and 40.21 percent work for research institutes/organizations; 72.38 percent are from economics; and 60.58 of them publish their research in English.

Two sources of possible bias in our survey are: non-response bias and sampling bias. There could be two types of non-response bias: first, unit non-response and second, item non-response. When a selected respondent does not respond to any of the survey questions, thereby exhibiting unit non-response, and when he/she does not respond to some of the items of the survey, thereby exhibiting item non-response, then estimated indices suffer from non-response bias. There are two ways to tackle item non-response bias: the first is to reduce the levels of non-response; the second is to make adjustments at the analysis stage (Lynn and Jowell 96, pp. 25). In our survey, there was no item non-response. Respondents, participating in the survey answered all the questions asked in the survey. However, we did have unit non-response. To overcome this, we have used a weighted sample.

In the case of sampling bias, one potential source of bias is due to the limitation of the population from which the sample is drawn. Since the population is not all inclusive, and we have drawn from a list where researchers registered themselves (though not for the current survey purpose), there could be a possible problem of self-selection bias.

4. CDI and HDI under New Weighting System I

Table 3 shows the weights for the six different components of the CDI that we have derived based on the responses of our survey. The first two rows show the survey results based on responses from the OECD country citizens and non-OECD country citizens, respectively. The last row includes all respondents. Since the composition of actual responses in respect of OECD and non-OECD varies from the sample, we have weighted the responses based on OECD and non-OECD's share in the population.

Table 3: Weights for the CDI Components Based on the Survey

Source:	**Weights on:**					
	Aid	Trade	Investment	Migration	Peacekeeping	Environment
OECD only	0.142	0.224	0.188	0.134	0.163	0.149
	(0.063)	(0.045)	(0.059)	(0.062)	(0.062)	(0.056)
Non OECD	0.142	0.200	0.194	0.138	0.156	0.171
	(0.057)	(0.049)	(0.050)	(0.054)	(0.057)	(0.047)
All Respondents	0.142	0.208	0.192	0.136	0.158	0.163

Source: Based on GDN's primary survey 2003. Numbers in the parentheses are the standard errors.

The first observation to be made is that the weights that we have derived from the survey are not very different from equal weights. This remains valid for all the respondents and also for the two groups. Second, within the limited variation, trade receives the highest importance followed by investment while migration receives the lowest importance preceded by aid. Third, the relatively low standard deviations of the weights confirm that the results are not driven by outliers. Fourth, given the fact that none of the components has received a weight significantly lower than the equal weight (for the sake of

comparison, in the case of equal weights, each component receives a weight of 0.167), all the components that are included here are considered to be important based on the survey findings. Though there may be areas that are not included in the CDI, the six components included here are valid components.

To see the impact of academic and demographic characteristics of our surveyed respondents on weights of different components of CDI, we have regressed the weight of each component that each respondent has assigned on his/her gender, years of schooling, discipline and experience in development research.[4] Some interesting observations to note are: higher schooling slightly reduces the relative weight on trade (1.14%) and investment (1.26%) and increases the weight on migration (1.53%). In contrast to male respondents, the female respondents put more weight (2.2%) on environment than their male counterpart. In fact the effect of gender on environment is quite robust; it remains significant even when we control for income and regional characteristics. In comparison to respondents from other regions, respondents from South Asia put more weight (4.04%) on aid.

Table 4 shows the scores and ranking of countries based on equal weights and based on the weights that we have derived from our survey. To facilitate comparison, we put the CGD/FP's score and rank of the countries based on equal weight. As can be seen from the table, weighting system I has not made any dramatic changes in scores and rankings of the countries: in all cases, the Netherlands ranks top and Japan on the bottom of the league. The correlation coefficient between rank derived from equal weight and rank derived from weighting system I (all respondents) is 0.992. Given the low variations of the weights for the different components of the index, this is not a surprising outcome. The score and the ranking remain similar even when we restrict the analysis to OECD and non-OECD sub samples.

Table 4: CDI under Equal Weight and Weighting System I

Country	Equal Weight		Weighting System I					
			All Res.		OECD		Non OECD	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Netherlands	5.615	1	5.706	1	5.717	1	5.700	1
Denmark	5.548	2	5.423	3	5.479	3	5.393	3
Portugal	5.178	3	5.534	2	5.564	2	5.518	2
New Zealand	5.086	4	5.059	4	5.126	4	5.024	5
Switzerland	4.977	5	4.921	6	4.832	6	4.967	6
Germany	4.702	6	4.669	7	4.683	7	4.662	7
Spain	4.698	7	5.032	5	5.029	5	5.034	4
Sweden	4.508	8	4.518	8	4.528	8	4.512	8
Austria	4.437	9	4.477	9	4.492	9	4.469	9
Norway	4.325	10	4.081	11	4.070	12	4.087	11
United Kingdom	4.171	11	4.326	10	4.359	10	4.309	10
Belgium	4.023	12	4.072	12	4.112	11	4.050	12
Greece	3.877	13	3.981	13	4.061	13	3.939	13
France	3.764	14	3.929	14	3.982	14	3.901	14
Italy	3.584	15	3.783	15	3.832	15	3.757	15

[4] We have estimated OLS regression for each of the components of HDI and CDI. The full results have not been reported but available upon request.

Ireland	3.556	16	3.656	17	3.736	16	3.614	17
Finland	3.515	17	3.689	16	3.721	17	3.672	16
Canada	3.442	18	3.519	18	3.587	18	3.483	18
Australia	3.150	19	3.303	19	3.389	19	3.259	19
United States	2.555	20	2.821	20	2.921	20	2.769	20
Japan	2.437	21	2.604	21	2.605	21	2.604	21

Source: CDI and analysis based on GDN's primary survey 2003.

We have gone through a similar exercise for the HDI. Table 5 shows the weights for the three different components, life expectancy, education and GDP, of the HDI that we have derived based on the responses to our survey. Similar to Table 3, we have divided the sample according to the respondents from OECD and non-OECD countries. Surprisingly, despite the criticism of the equal weights from many researchers, the weights that emerge from the survey are not significantly different from equal weights (notice the very low standard errors of the derived weights).

Table 5: Weights for the HDI Components Based on the Survey

	Weights on:		
	Life Expectancy	Education	GDP
OECD only	0.341	0.317	0.341
	(0.072)	(0.089)	(0.112)
Non OECD	0.317	0.345	0.339
	(0.068)	(0.073)	(0.062)
All Respondents	0.325	0.335	0.340

Source: Based on GDN's primary survey 2003. Numbers in the parentheses are the standard errors.

In the case of the impact of academic and demographic characteristics of our surveyed respondents on weights of different components of HDI, respondents with economics background put more weight on GDP (statistically insignificant) and less weight (3.69%) on knowledge than the non-economists. Economists' lower emphasis on knowledge than the non-economists remains statistically significant even with additional controls.

Table 6 shows the human development rank and human development scores of the top ten and bottom ten countries based on equal weights and weighting system I. Table A4 in the appendix shows the HDI ranking of all countries. As can be predicted from the derived weight, the new weighting system does not make any dramatic change in the ranking of countries. The correlation coefficient between rank derived from equal weights and rank derived from weighting system I (all respondents) is 0.999. However, due to a higher than equal weight on GDP and a lower than equal weight on life expectancy (all respondents), the USA now stands on the top. For the bottom ten countries, changes are even less than for the top ten countries and Sierra Leone continues to rank the lowest.

Table 6: HDI under Equal Weight and Weighting System I: Top 10 and Bottom 10 Countries

	Equal Weight		Weighting System I					
			All Res.		OECD		Non OECD	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Norway	0.942	1	0.941	2	0.939	2	0.941	3
Sweden	0.941	2	0.940	6	0.939	4	0.941	6
Canada	0.940	3	0.940	4	0.939	1	0.941	5

Belgium	0.939	4	0.941	3	0.939	6	0.941	2
Australia	0.939	5	0.940	5	0.939	5	0.941	4
United States	0.939	6	0.941	1	0.939	3	0.942	1
Iceland	0.936	7	0.937	8	0.936	7	0.938	8
Netherlands	0.935	8	0.937	7	0.935	8	0.938	7
Japan	0.933	9	0.930	10	0.930	9	0.930	10
Finland	0.930	10	0.930	9	0.929	10	0.931	9
Mali	0.386	164	0.386	164	0.387	164	0.385	164
Central African Rep.	0.375	165	0.374	165	0.373	165	0.375	165
Chad	0.365	166	0.367	166	0.366	166	0.367	166
Guinea-Bissau	0.349	167	0.350	167	0.349	167	0.351	167
Ethiopia	0.327	168	0.327	168	0.326	168	0.327	168
Burkina Faso	0.325	169	0.323	170	0.326	169	0.322	170
Mozambique	0.322	170	0.324	169	0.322	170	0.325	169
Burundi	0.313	171	0.314	171	0.312	171	0.315	171
Niger	0.277	172	0.280	172	0.283	172	0.278	173
Sierra Leone	0.275	173	0.277	173	0.275	173	0.278	172

The weights that we have derived from the survey and applied to recalculate the HDI and CDI carry some important implications. First, the different components that have been combined to construct CDI and HDI are valid components since none of them have received a low or zero weight. All the components currently used in the HDI and the CDI should be retained. Second, an unweighted (equal weights) index is not necessarily misleading. It is at least consistent with expert opinion. And third, the fact that the standard deviations are small in all cases suggests that a broadly similar view regarding the relative importance of each component is widely held. That said, the weight on a particular component can be influenced by the respondent's academic, demographic and geographic characteristics among others suggesting that care should be taken in drawing conclusions on weights from small, non-representative samples.

5. CDI under New Weighting System II

Weighting System II is specific to the CDI. Since it takes scale – the share of the ith country in the OECD total for the jth category – into account, we have calculated the OECD total for each of the six categories included in CDI. For three categories – aid, migration and peacekeeping – we have taken all the subcomponents that CGD/FP has considered in constructing these categories and we have allocated the same weights as CGD/FP to each of the subcomponents of these three categories. For the remaining three categories – investment, trade and environment – we could not include all the subcomponents that constituted CDI. Exclusion is primarily due to technical reasons and is not biased towards any particular area. The implications of excluding some of the components of investment, trade and environment are discussed later. Once we had calculated the OECD total for each of the six categories, we derived each country's relative contribution to the OECD total in each of the categories.

For **aid,** CGD/FP have used official development assistance to developing countries adjusted for debt payments, type of recipients (richer versus poorer developing

countries), conditionalities of donor countries, and policies of recipient countries.[5] The adjusted measure of aid is named "quality adjusted aid" in CDI. We have aggregated this adjusted measure and derived the relative share of each country in the total of quality adjusted aid.

Among the two components that CGD/FP have used to calculate the scores in **investment** – FDI flows to developing countries corrected with the Transparency International's Bribe Payer Index (67% weight) and rich countries restrictions on pension funds for investment in developing countries (33% weight) – we have taken the first one only. Since it was not possible to aggregate a policy area, we excluded it. Note that this exclusion makes some changes to countries' scores in the investment component. Though the two scores, with and without the inclusion of policy on pension funds, result in some changes in country rankings, they remain correlated (correlation coefficient is 0.634).

For **migration**, CGD/FP have used two subcomponents, legal migrant inflows and refuge burden sharing, and weighted them at 90% and 10%, respectively. We have considered both subcomponents in our scaling and assigned weights similar to those used by CGD/FP.

For **peacekeeping**, we have considered both subcomponents of the CDI -- monetary contributions to UN peacekeeping and personnel contributions valued in monetary terms -- aggregated them, and derived the relative contribution of each country in peacekeeping.

There are four components that constitute the measure of **environment** in CDI: 1) *depletion of shared commons* through greenhouse gas emissions (67% weight), ozone depleting substance consumption (16.5% weight), and fishing subsidies (16.5% weight); 2) *financial contribution* to the Global Environment Facility (50% weight), and the Montreal Protocol (50% weight); 3) *treaty ratifications*; and 4) *advancement of the environment friendly technology* through wind capacity addition (50% weight) and government funding for R&D on conservation and renewable energies (50% weight). In the CDI, the weights for the above four components, depletion of shared commons, financial contribution, treaty ratifications, and advancement of the environment friendly technology, are 67%, 8.25%, 8.25%, and 16.5%, respectively. In our relative measure, we have included 1), 2), and 4) with weights of 67%, 16.5%, and 16.5%, respectively. We have excluded the treaty ratifications since it was not possible to make any relative ranking. Note that this exclusion does not make any notable difference to scores: the correlation coefficient between the two scores -- with treaty and without treaty -- is 0.992.

CGD/FP's **trade** measure consists of two major components: first, an aggregate measure of protection comprising tariffs and non-tariff barriers and domestic production subsidies; and second, revealed openness consisting of measures of total imports from developing countries. For our scaling purpose, we have taken the "revealed openness" of each country and expressed it as a share. However, dropping trade protection makes a major

[5] For details, see FP (2003) and Roodman (2003)

change in the score. Though the two scores -- with aggregate protection measures and without aggregate protection measures -- are positively correlated (the correlation coefficient is 0.574), scaling related to trade needs to be interpreted with cautions.

To isolate the impact of scaling, we have recalculated the CDI incorporating the preceding modifications. Table A5 in the appendix shows the modified CDI. It shows the score of each country in each of the six areas and the rank of the countries based on the average score consisting of all six areas. As discussed above, out of six possible areas, we have excluded some of the components of three areas namely, trade, investment and environment. However, these exclusions have not made substantial changes in ranking. Using equal weights, the correlation coefficient between the original ranks (shown in the last column of Table A5) and the ranks based on the modified scores is 0.899.

Table A6 in the appendix shows the share of each country in the corresponding OECD total. Except for migration, the US has the largest share in all of the six categories. Australia has a negative share in investment (-1.4%) due to the net outflow of investment from developing countries to Australia for the period concerned. Japan has the lowest share in peacekeeping (0.069%) perhaps due to historical reasons. It also has a relatively low share in investment (6.1%) and migration (7.7%) given that it is the second largest economy. Taking all six categories into account, the US has the largest share on average (28.7%) followed by Germany (13.1%), and Ireland has the lowest share (0.512%) on an average preceded by Finland (0.63%).

Table A6 in the appendix gives us the s_{ij} for weighting system II. Since we have already derived w_j for all i (Table 3), and we will take p_{ij} from the modified CDI (Table A5), we are now ready to apply weighting system II. However, before doing so, we make a final adjustment in p_{ij} – we modify the score of the ith country in the jth area by subtracting the respective mean of the jth category from the ith country's score in the jth category.[6] This will reveal more clearly each country's policy stance in each area compared to the average policy stance of all OECD countries in that area. Note that this adjustment in scores does not change the ranking of countries by the modified CDI (Table A5 in appendix).

Table 7 shows the scores and ranks of countries based on a weighting system that takes into account both scale and weight. Due to the importance of scale and due to the low variation among the three sources of weights (all respondents, OECD sub sample, and non OECD sub sample), weighting system II yields a similar rank for all three samples. To facilitate comparison, we have included scores and ranks of the countries based on weighting system I. Since we have modified the CDI as noted above, the scores and ranks presented here under weighting system I are not directly comparable with the scores and ranks presented in Table 4.

Table 7: CDI under Weighting System I and II

Country	Weighting System I	Weighting System II

[6] A detailed analysis of scales, weights and scores can be obtained from the authors upon request.

	All Res.		All Res.		OECD		Non OECD	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Spain	2.36	2	38.71	1	37.89	1	39.13	1
Switzerland	2.68	1	22.91	2	22.37	2	23.19	2
Germany	0.55	8	14.50	3	14.29	3	14.61	3
Netherlands	2.16	3	11.77	4	11.57	4	11.87	4
Portugal	2.10	4	5.22	5	5.16	5	5.24	5
Denmark	1.53	5	4.45	6	4.51	6	4.42	6
Sweden	0.81	7	2.62	7	2.61	7	2.62	7
Norway	-0.06	10	2.20	8	2.24	8	2.18	8
Austria	1.08	6	2.09	9	2.05	10	2.11	9
Italy	-0.88	16	1.98	10	2.14	9	1.89	10
Greece	-0.45	14	1.90	11	1.98	12	1.86	11
France	-0.18	11	1.76	12	2.02	11	1.63	12
New Zealand	-0.70	15	0.31	13	0.25	13	0.34	13
Belgium	0.19	9	0.17	14	0.19	14	0.16	14
Finland	-0.40	13	-0.15	15	-0.15	16	-0.16	15
Australia	-2.52	21	-0.16	16	-0.16	17	-0.16	16
Ireland	-1.23	17	-0.17	17	-0.14	15	-0.18	17
United Kingdom	-0.31	12	-2.32	18	-2.14	18	-2.40	18
Canada	-2.01	18	-4.95	19	-4.92	19	-4.97	19
Japan	-2.39	20	-19.24	20	-19.42	20	-19.14	20
United States	-2.34	19	-67.14	21	-65.87	21	-67.81	21

Source: CDI and analysis based on GDN's primary survey 2003.

As can be seen from Table 7, weighting system II has made substantial changes in scores of the countries. The correlation coefficient between the scores derived from weighting system I (all respondents) and the scores derived from weighting system II (all respondents) is 0.667. There is also a substantial change in ranking. Now, Spain stands at the top of the league followed by Switzerland and Germany, and the USA stands at the bottom of the league preceded by Japan. In the case of Spain, its policy stance is above average in three areas and below average in the remaining three areas. This is similar to Norway. However, unlike Norway which is well below the average in trade, Spain's policy stance is not very far from the average and as a result, and due to the scale effect, the country stands on top of the league. The correlation coefficient between the rank derived from weighting system I (all respondents) and the rank derived from weighting system II (all respondents) is 0.874.

Though US has the highest share in all of the policy areas with the exception of migration (Table A6 in the appendix), it has a below average policy stance in all six areas. Compared to the USA, Japan has a policy stance below the OECD average in all six areas and below the USA on average. However, due to the adjustment of scales that we take into account, it ranks above the USA. This implies that a below average policy of Japan has a lower development impact than the same policy stance when pursued by the USA. Similarly the Netherlands has an above average policy stance in five areas (Table A5 in the appendix). However, its average share in six categories is 3.5% of the OECD total. Therefore, when we consider both, policy stance and development impact in the weighting system II, the Netherlands ranks 4th on the overall ranking among the OECD countries despite its second best policy stance.

6. Which Policy Areas and by Whom?

Based on the results derived from weighting system II, it is now possible to identify policy-country combinations where more effort will translate into the biggest policy impact. To identify these, we have calculated $p_{ij} s_{ij} w_j$ for all i and all j and reported the results in Table 8. In deriving these scores, we have used weights from all respondents (the bottom row of Table 3) since there would not be any significant difference if we restrict the respondents to the various subgroups (OECD respondents versus non-OECD respondents).

Table 8: Score in Each Category under Weighting System II (All Respondents)

	Score in:						Country
	Aid	Trade	Investment	Migration	Peacekeeping	Environment	Total
Australia	-0.334	-0.459	1.981	-0.095	-0.359	-0.896	-0.161
Austria	-0.073	0.244	1.287	0.720	-0.202	0.110	2.087
Belgium	0.079	0.292	-0.266	0.129	-0.118	0.053	0.170
Canada	-0.615	-2.060	-1.208	2.114	-0.725	-2.457	-4.951
Denmark	2.989	0.209	-0.245	0.063	1.318	0.118	4.452
Finland	-0.033	0.157	-0.190	-0.096	-0.110	0.117	-0.155
France	-0.116	1.668	-2.076	-0.830	2.911	0.203	1.761
Germany	-1.542	2.413	-3.371	15.104	-0.268	2.166	14.502
Greece	-0.105	0.145	0.000	-0.207	2.057	0.007	1.897
Ireland	-0.059	0.121	0.000	0.043	-0.027	-0.244	-0.166
Italy	-0.977	1.384	-0.754	-0.956	2.709	0.570	1.975
Japan	-3.633	-6.385	-4.831	-2.527	-0.038	-1.822	-19.235
Netherlands	3.404	0.051	7.893	0.187	-0.187	0.423	11.771
New Zealand	-0.044	-0.842	0.000	0.908	0.359	-0.074	0.306
Norway	1.308	-0.435	-0.085	0.075	1.557	-0.220	2.200
Portugal	-0.086	0.135	4.418	-0.159	0.836	0.071	5.215
Spain	-0.407	0.720	38.889	-0.817	-0.599	0.923	38.708
Sweden	1.943	0.293	0.226	-0.004	-0.103	0.264	2.619
Switzerland	0.028	-0.591	21.342	1.766	-0.042	0.404	22.907
United Kingdom	-0.261	1.823	-2.672	-0.843	-0.537	0.175	-2.315
United States	-6.974	-9.217	-16.538	-5.779	-8.578	-20.057	-67.144
Category Total	-5.508	-10.335	43.801	8.796	-0.146	-20.165	

Source: Analysis based on data from CGD/FP and GDN primary survey 2003.

The bottom row of Table 8 shows the average score for each category. Remember that without taking scale into account, the average for each category would be zero. However, when allowance is made for scale, we can arrive at a non-zero measure of impact. On this basis, the three areas that seem obvious candidates for improved policy effort are environment, trade and aid in that order. Remember, however, that our trade score should be read with caution for reasons noted earlier. Similarly, the last column of Table 8 gives the country total. This column allows us to identify countries that need to improve their policy most according to their expected impact on developing countries. In order of impact, these countries are the United States, Japan, New Zealand, Canada, United Kingdom, Ireland, Australia and Finland.

The most interesting aspect of Table 8, however, is the individual cells. From these we can determine which policy-country combination has the potential to generate the biggest benefit for developing countries. For example, while there are 15 countries that score below the OECD average in aid (Table A5 in the appendix), the total impact of aid could

be positive if only the USA improves its policy to the OECD average. This scale effect is even more pronounced in the case of environment. There are 14 countries that have an above average policy effort (Table A5 in the appendix). However, due to the USA's below average policy, the overall impact is negative. Even if the other six countries with below average performance improve their policy to the OECD average, the overall impact in environment will still remain negative unless the US changes its policy.

These examples illustrate the overwhelming role played by scale. To provide one further illustration, consider the eight policy-country combinations where a change in policy would have the greatest impact on developing countries. In order of importance, they are: USA-environment; USA-investment; USA-trade; USA-peacekeeping, USA-aid, Japan-trade, USA-migration and Japan-investment. This evidence suggests that differences in country or economic size are a much more important factor in determining impact than differences in policy effort.

7. Conclusions and Implications for Future Research

In this paper we have drawn on the opinions of researchers to re-weight the CDI and HDI in an attempt to move away from the simplistic reliance on equal weights. And we have proposed and applied an additional modification to the CDI to take scale into account so that we move closer to a measure of impact on developing countries. These two efforts lead to three conclusions for future research.

Despite the widespread criticism of equal weights, the weights derived from researchers do not vary substantially from equal weights. Therefore, a weighting scheme that keeps equal weight for all its components is not only simple and convenient but it also reflects well the opinion of experts. Our first conclusion, therefore, is that to test this preliminary conclusion further, future research along these lines should either survey a very different sample, say, policy-makers for example, or employ very different methods such as carefully structured interviews.

Turning to the issue of scale, it is clear that if a country has a high (low) share in a particular area and the policy of the country is above (below) average, a weighting system incorporating scale magnifies (shrinks) the impact on overall ranking. The significance of the current research is that it lends some quantification to this proposition. Indeed the evidence suggests that the application of a system that accommodates scale to CDI leads to a substantial change in country rankings. The evidence suggests that scale is a much more important factor than policy effort in determining impact on developing countries. This does not mean that policy effort is uninteresting. It is of great interest. But it does mean, and this is our second conclusion for future research, that scale should be a factor high on the research agenda as efforts are made to move CDI from a focus on effort to a concern with impact.

Finally, as efforts get under way to conduct detailed impact studies, the quantitative impact of different policy-country combinations as revealed by Table 8 could be used to direct attention to the most important areas for future research. This, our third

conclusion, suggests, for example, that the same research effort could have a much higher pay-off for developing countries if it were directed towards environmental policy in the USA than if it were directed towards aid policy in Finland. That said, it is worth recalling that all the measures discussed in this paper focus on average measures rather than marginal ones. Hopefully, the detailed impact studies now being organized will be able to deal with this point at least to some degree and, hopefully, the guidance provided by averages in selecting case studies will prove useful for marginal analysis.

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Appendix

Table A1: Sample distribution based on Income

Income group	# of Researchers	As a %	# of Respondents
Low Income	386	25.0	50
Lower Middle Income	391	25.3	51
Upper Middle Income	186	12.0	24
High Income OECD	530	34.3	69
High Income Non OECD	54	3.5	7
Total	1547	100.0	200

Countries are classified according to the World Bank's classification. See WDI 2002 for details.

Table A2: Sample distribution based on Region

	Low Income	Lower Middle Income	Upper Middle Income	High Income OECD	High Income non-OECD	Total
EAP	4	9	4	3	3	23
ECA	6	21	10	40	1	78
LAC	0	10	5	0	0	15
MENA	0	10	2	0	3	15
NA	0	0	0	25	0	25
SA	23	2	0	0	0	25
SSA	16	0	3	0	0	19
Total	50	51	24	69	7	200

Countries are classified according to the World Bank's classification. See WDI 2002 for details.

Table A3: Distribution of Sample According to Country

Country	Number of Respondent	As a %	Cumulative %
Algeria	1	0.95	0.95
Argentina	2	1.90	2.86
Armenia	1	0.95	3.81
Australia	1	0.95	4.76
Bangladesh	2	1.90	6.67
Belarus	1	0.95	7.62
Belgium	1	0.95	8.57
Bolivia	1	0.95	9.52
Brazil	1	0.95	10.48
Bulgaria	2	1.90	12.38
Cameroon	1	0.95	13.33
China	2	1.90	15.24
Croatia	1	0.95	16.19
Czech Republic	1	0.95	17.14
Egypt	2	1.90	19.05
England	1	0.95	20.00
France	2	1.90	21.90
Georgia	1	0.95	22.86
Germany	1	0.95	23.81
Greece	1	0.95	24.76
Guatemala	1	0.95	25.71
Hungary	2	1.90	27.62
India	7	6.67	34.29
Indonesia	2	1.90	36.19
Iran	1	0.95	37.14
Israel	1	0.95	38.10
Italy	2	1.90	40.00
Japan	2	1.90	41.90
Jordan	1	0.95	42.86
Kazakhstan	1	0.95	43.81
Kenya	2	1.90	45.71
Korea	1	0.95	46.67
Lebanon	1	0.95	47.62
Morocco	1	0.95	48.57
Netherlands	2	1.90	50.48
Nigeria	3	2.86	53.33
Norway	1	0.95	54.29
Pakistan	4	3.81	58.10
Peru	2	1.90	60.00
Philippines	3	2.86	62.86

Poland	2	1.90	64.76
Romania	1	0.95	65.71
Russia	7	6.67	72.38
Singapore	2	1.90	74.29
Slovenia	1	0.95	75.24
Spain	1	0.95	76.19
Switzerland	1	0.95	77.14
Taiwan	1	0.95	78.10
Tanzania	1	0.95	79.05
Thailand	3	2.86	81.90
Tunisia	1	0.95	82.86
Turkey	1	0.95	83.81
UK	5	4.76	88.57
USA	7	6.67	95.24
Uganda	1	0.95	96.19
Ukraine	1	0.95	97.14
Uzbekistan	1	0.95	98.10
Vietnam	1	0.95	99.05
Zimbabwe	1	0.95	100.00
Total	105	100	

Table A4: HDI: Ranking of Countries – Equal Weights and Weights Based on the Survey

Country	Equal Weight	Ranks based on Survey		
		All Respondents	OECD only	Non OECD only
Norway	1	2	2	3
Sweden	2	6	4	6
Canada	3	4	1	5
Belgium	4	3	6	2
Australia	5	5	5	4
United States	6	1	3	1
Iceland	7	8	7	8
Netherlands	8	7	8	7
Japan	9	10	9	10
Finland	10	9	10	9
Switzerland	11	14	11	14
France	12	13	13	12
United Kingdom	13	11	14	11
Denmark	14	16	18	15
Austria	15	12	12	13
Luxembourg	16	15	15	18
Germany	17	18	17	17
Ireland	18	17	16	16
New Zealand	19	19	19	19
Italy	20	20	20	21
Spain	21	21	21	20
Israel	22	22	22	22
Hong Kong, China (SAR)	23	24	23	25
Greece	24	25	25	23
Singapore	25	23	24	24
Cyprus	26	26	26	26
Korea, Rep. of	27	27	29	27
Portugal	28	28	27	28
Slovenia	29	29	28	29
Malta	30	30	30	30
Barbados	31	31	31	31
Brunei Darussalam	32	32	32	32
Czech Republic	33	33	33	33
Argentina	34	34	34	34
Hungary	35	35	38	35
Slovakia	36	37	37	36
Poland	37	38	39	37
Chile	38	39	36	39
Bahrain	39	36	35	38
Uruguay	40	40	40	40
Bahamas	41	41	41	41
Estonia	42	42	42	42
Costa Rica	43	43	43	43
Saint Kitts and Nevis	44	44	45	44
Kuwait	45	47	47	47

United Arab Emirates	46	46	44	46
Seychelles	47	45	46	45
Croatia	48	49	48	49
Lithuania	49	48	49	48
Trinidad and Tobago	50	51	51	50
Qatar	51	52	52	53
Antigua and Barbuda	52	50	50	51
Latvia	53	53	53	52
Mexico	54	55	55	55
Cuba	55	54	54	54
Belarus	56	56	56	56
Panama	57	57	57	57
Belize	58	58	58	59
Malaysia	59	61	59	62
Russian Federation	60	59	62	58
Dominica	61	62	60	61
Bulgaria	62	60	61	60
Romania	63	64	65	63
Libyan Arab Jamahiriya	64	63	63	64
Macedonia, TFYR	65	65	64	65
Saint Lucia	66	69	67	69
Mauritius	67	66	66	67
Colombia	68	67	69	66
Venezuela	69	68	68	68
Thailand	70	71	71	70
Saudi Arabia	71	70	70	71
Fiji	72	72	74	72
Brazil	73	74	76	74
Suriname	74	73	73	73
Lebanon	75	77	75	78
Armenia	76	78	78	76
Philippines	77	76	77	75
Oman	78	75	72	79
Kazakhstan	79	79	80	77
Ukraine	80	81	81	80
Georgia	81	83	83	83
Peru	82	80	79	81
Grenada	83	82	82	82
Maldives	84	86	88	86
Turkey	85	84	84	84
Jamaica	86	85	85	87
Turkmenistan	87	87	89	85
Azerbaijan	88	89	87	88
Sri Lanka	89	88	86	89
Paraguay	90	90	90	90
Saint Vincent and the Grenadines	91	91	91	92
Albania	92	93	93	93
Ecuador	93	92	92	91
Dominican Republic	94	94	94	94
Uzbekistan	95	96	98	95
China	96	95	95	96
Tunisia	97	98	96	98
Iran, Islamic Rep. of	98	97	97	97
Jordan	99	100	100	100
Cape Verde	100	99	99	99
Samoa (Western)	101	101	101	101
Kyrgyzstan	102	102	103	102
Guyana	103	104	104	103
El Salvador	104	103	102	104
Moldova, Rep. of	105	106	106	106
Algeria	106	107	105	107
South Africa	107	105	108	105
Syrian Arab Republic	108	108	107	108
Viet Nam	109	109	109	109
Indonesia	110	111	110	111
Equatorial Guinea	111	110	111	110
Tajikistan	112	112	112	112
Mongolia	113	113	113	113
Bolivia	114	114	114	114
Egypt	115	115	115	116

Honduras	116	117	116	117
Gabon	117	116	117	115
Nicaragua	118	119	118	119
Sao Tome and Principe	119	118	119	118
Guatemala	120	120	120	120
Solomon Islands	121	121	121	121
Namibia	122	122	123	122
Morocco	123	123	122	123
India	124	125	124	125
Swaziland	125	124	125	124
Botswana	126	126	126	126
Myanmar	127	128	127	128
Zimbabwe	128	127	130	127
Ghana	129	129	128	129
Cambodia	130	130	131	130
Vanuatu	131	131	129	132
Lesotho	132	132	133	131
Papua New Guinea	133	133	132	133
Kenya	134	135	136	134
Cameroon	135	134	135	136
Congo	136	136	137	135
Comoros	137	137	134	137
Pakistan	138	140	139	140
Sudan	139	138	138	138
Bhutan	140	141	140	141
Togo	141	139	141	139
Nepal	142	142	142	142
Lao People's Dem. Rep.	143	143	143	143
Yemen	144	144	144	144
Bangladesh	145	145	145	145
Haiti	146	146	146	147
Madagascar	147	147	147	146
Nigeria	148	148	148	148
Djibouti	149	150	150	150
Uganda	150	149	149	149
Tanzania, U. Rep. of	151	151	152	151
Mauritania	152	152	151	152
Zambia	153	153	156	153
Senegal	154	155	153	156
Congo, Dem. Rep. of the	155	156	155	155
Côte d'Ivoire	156	154	154	154
Eritrea	157	157	158	157
Benin	158	158	157	158
Guinea	159	159	159	159
Gambia	160	161	161	162
Angola	161	160	160	161
Rwanda	162	162	162	163
Malawi	163	163	163	160
Mali	164	164	164	164
Central African Republic	165	165	165	165
Chad	166	166	166	166
Guinea-Bissau	167	167	167	167
Ethiopia	168	168	168	168
Burkina Faso	169	170	169	170
Mozambique	170	169	170	169
Burundi	171	171	171	171
Niger	172	172	172	173
Sierra Leone	173	173	173	172

Table A5: Modified Commitment to Development Index: Equal Weights

Country	Aid	Trade	Investment	Migration	Peacekeeping	Environment	Rank	Average	Original Rank
Australia	1.74	4.20	-2.38	3.72	2.84	1.81	19	1.99	19
Austria	2.83	6.96	7.83	6.51	2.55	5.32	6	5.33	9
Belgium	3.50	6.96	4.09	4.49	3.46	4.52	10	4.50	12
Canada	1.70	1.00	2.91	6.10	2.39	1.24	18	2.56	18
Denmark	9.00	6.96	3.67	4.45	7.06	4.99	5	6.02	2
Finland	2.96	6.96	3.56	1.27	2.87	5.20	15	3.80	17
France	3.13	6.96	3.55	0.83	5.18	4.54	11	4.03	14
Germany	2.11	6.96	3.21	8.14	3.81	5.56	8	4.97	6

Greece	1.46	6.96	0.00	1.56	9.00	4.23	14	3.87	13
Ireland	2.57	6.96	0.00	4.45	3.72	1.20	17	3.15	15
Italy	1.40	6.96	0.50	1.07	5.27	5.09	16	3.38	15
Japan	1.21	4.01	0.87	1.55	0.47	3.60	21	1.95	21
Netherlands	6.93	6.96	10.96	4.45	3.48	5.50	2	6.38	1
New Zealand	1.70	3.25	0.00	9.00	6.87	3.05	13	3.98	4
Norway	6.61	1.71	4.62	4.63	7.37	2.46	9	4.57	10
Portugal	2.18	6.96	14.37	1.01	6.82	4.93	4	6.05	3
Spain	2.37	6.96	17.64	1.77	2.93	5.62	3	6.22	6
Sweden	6.98	6.96	5.59	3.95	1.33	6.02	7	5.14	8
Switzerland	3.31	2.16	19.56	9.00	0.11	7.31	1	6.91	5
United Kingdom	3.04	6.96	2.72	3.12	3.60	4.44	12	3.98	11
United States	0.81	4.52	1.72	2.32	1.46	1.00	20	1.97	20

Table A6: Share of Each Country in OECD Total

Country	Share of each country in:						Average
	Aid	Trade	Investment	Migration	Peacekeeping	Environment	
Australia	1.6%	1.5%	-1.4%	2.7%	2.1%	2.3%	1.5%
Austria	1.3%	0.9%	2.4%	2.1%	0.9%	0.6%	1.4%
Belgium	2.0%	1.1%	1.5%	1.8%	1.6%	0.9%	1.5%
Canada	2.9%	2.1%	3.0%	7.3%	3.0%	5.1%	3.9%
Denmark	3.6%	0.8%	1.0%	1.0%	2.7%	0.9%	1.6%
Finland	0.9%	0.6%	0.7%	0.3%	0.7%	0.7%	0.6%
France	10.1%	6.0%	7.4%	1.9%	14.7%	3.4%	7.3%
Germany	9.8%	8.7%	9.8%	26.5%	14.0%	9.5%	13.1%
Greece	0.4%	0.5%	0.0%	0.6%	2.6%	0.8%	0.8%
Ireland	0.6%	0.4%	0.0%	0.7%	0.8%	0.5%	0.5%
Italy	3.8%	5.0%	0.9%	2.4%	12.8%	3.8%	4.8%
Japan	12.8%	18.8%	6.1%	7.7%	0.1%	19.5%	10.8%
Netherlands	6.5%	0.2%	0.0%	2.8%	2.6%	2.0%	3.5%
New Zealand	0.2%	1.7%	6.9%	1.3%	0.8%	0.4%	0.7%
Norway	2.7%	0.5%	1.2%	0.8%	2.9%	0.8%	1.5%
Portugal	0.6%	0.5%	2.5%	0.4%	1.8%	0.6%	1.1%
Spain	3.4%	2.6%	16.0%	2.7%	3.8%	3.9%	5.4%
Sweden	3.6%	1.1%	2.0%	1.4%	0.2%	0.9%	1.5%
Switzerland	2.0%	0.8%	7.6%	2.6%	0.1%	0.8%	2.3%
United Kingdom	10.6%	6.6%	6.1%	7.3%	10.2%	4.0%	7.5%
United States	20.4%	39.6%	26.3%	25.6%	21.9%	38.7%	28.7%

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